

the technical supplement

Barataria-Terrebonne Action Plans

FINAL DRAFT
June 1996
CCMP - Part 3 of 4

The Barataria-Terrebonne National Estuary Program

The *Technical Supplement - Barataria-Terrebonne Action Plans* is the third of four documents that will make up the *Comprehensive Conservation and Management Plan (CCMP)* for the Barataria-Terrebonne basins:

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| <i>The Estuary Compact</i> | CCMP - Part 2 |
| <i>The Technical Supplement</i> | CCMP - Part 3 |
| <i>Appendix</i> | CCMP - Part 4 |

To obtain additional copies of the *Technical Supplement* or other program plans, projects, reports or studies, contact:

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| References | 399 |
| APA | American Planning Association |
| BEA | U.S. Bureau of Economic Analysis |
| BLS | U.S. Bureau of Labor Statistics |

Foreword

| | |
|---|--------------|
| BMP | Best |
| Management Practice | |
| BOD | Biochemical |
| Oxygen Demand | |
| BTES | Barataria- |
| Terrebonne Estuary System | |
| BTMC | Barataria- |
| Terrebonne Management Conference | |
| BTNEP | Barataria- |
| Terrebonne National Estuary Program | |
| BTPO | Barataria- |
| Terrebonne Program Office | |
| CAC | Citizens |
| Advisory Committee | |
| CCEER | Center for |
| Coastal Energy and Environmental Resources (Louisiana State University) | |
| CCMP | |
| Comprehensive Conservation and Management Plan | |
| cfs | Cubic feet |
| per second | |
| CFSA | Consolidated |
| Farm Services Administration | |
| CLIWS | Center for |
| Louisiana Inland Water Studies (University of Southwestern Louisiana) | |
| CMD | Coastal |
| Management Division (LDNR) | |
| CPI | Consumer |
| Price Index | |
| CPPAP | |
| Comprehensive Public Participation Action Plan | |
| CRCL | Coalition to |
| Restore Coastal Louisiana | |
| CRTF | Coastal |
| Restoration Trust Fund | |
| CWA | Clean Water |
| Act | |
| CWPPRA | Coastal |
| Wetlands Planning, Protection and Restoration Act | |
| CZM | Coastal Zone |
| Management | |
| DDT | |
| Dichlorodiphenyl-Trichloroethylene | |
| DIGIS | Discharger |
| Geographic Information System | |
| DIMS | Data and |
| Information Management System | |
| DO | Dissolved |
| Oxygen | |
| DSP | Diarrhetic |

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| | |
|--|---------------|
| Shellfish Poisoning | |
| EIS | |
| Environmental Impact Statement | |
| EMAP | Estuarine |
| Monitoring and Assessment Program | |
| EPA | U. S. |
| Environmental Protection Agency | |
| FDA | U. S. Food |
| and Drug Administration | |
| FTP | File Transfer |
| Protocol | |
| FY | Fiscal Year |
| GCBO | Gulf Coast |
| Bird Observatory | |
| GIS | Geographic |
| Information System | |
| GIWW | Gulf |
| Intracoastal Waterway | |
| GOMP | Gulf of |
| Mexico Program | |
| HNC | Houma |
| Navigational Canal | |
| HTTP | Hyper Text |
| Transfer Protocol | |
| IPM | Integrated |
| Pest Management | |
| K-16 | Kindergarten |
| through College | |
| LCES | Louisiana |
| Cooperative Extension Service | |
| LDAF | Louisiana |
| Department of Agriculture and Forestry | |
| LDCRT | Louisiana |
| Department of Culture, Recreation and Tourism | |
| LDED | Louisiana |
| Department of Economic Development | |
| LDEQ | Louisiana |
| Department of Environmental Quality | |
| LDHH | Louisiana |
| Department of Health and Hospitals | |
| LDNR | Louisiana |
| Department of Natural Resources | |
| LDOE | Louisiana |
| Department of Education | |
| LDOTD Louisiana Department of Transportation and Development | |
| LDWF | Louisiana |
| Department of Wildlife and Fisheries | |
| LEQSF | Louisiana |

Foreword

| | |
|---|---------------|
| Environmental Quality Support Fund | |
| LFA | Louisiana |
| Forestry Association | |
| LFAAC | Louisiana |
| Fur and Alligator Advisory Council | |
| LGO | Louisiana |
| Governor's Office | |
| LNC | Louisiana |
| Nature Conservancy | |
| LOSCO | Louisiana |
| Oil Spill Coordinator's Office | |
| LaSIP | Louisiana |
| Systemic Initiative Program | |
| LUMCON | Louisiana |
| Universities Marine Consortium | |
| LWF | Louisiana |
| Wildlife Federation | |
| MAPS | Monitoring |
| Avian Productivity and Survivorship | |
| MOA | |
| Memorandum of Agreement | |
| MOU | |
| Memorandum of Understanding | |
| MSA | Metropolitan |
| Statistical Area | |
| NBS | U. S. |
| National Biological Service | |
| NEP | National |
| Estuary Program | |
| NEPA | National |
| Environmental Policy Act | |
| NHP | Natural |
| Heritage Program (LDWF) | |
| NMFS | U. S. |
| National Marine Fisheries Service | |
| NOAA | U. S. |
| National Oceanic and Atmospheric Administration | |
| NPDES | National |
| Pollution Discharge Elimination System | |
| NPS | U. S. |
| National Park Service | |
| NRC | National |
| Response Center | |
| NRCS | U. S. Natural |
| Resources Conservation Service (USDA) | |
| NSF | National |
| Science Foundation | |
| OCS | Outer |
| Continental Shelf | |

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| | |
|-------------------------------|-------------|
| OSPRA | Oil Spill |
| Prevention and Response Act | |
| PAH | Polynuclear |
| Aromatic Hydrocarbon | |
| POTW | Publicly- |
| Owned Treatment Works | |
| ppt | Parts per |
| thousand | |
| SAV | Submerged |
| Aquatic Vegetation | |
| SIC | Standard |
| Industry Classification | |
| SLEC | South |
| Louisiana Economic Council | |
| SSC | Southern |
| Science Center (NBS) | |
| TMDL | Total |
| Maximum Daily Load | |
| TSS | Total |
| Suspended Solids | |
| USACOE | U. S. Army |
| Corps of Engineers | |
| USCG | U. S. Coast |
| Guard | |
| USDA | U. S. |
| Department of Agriculture | |
| USFWS | U. S. Fish |
| and Wildlife Service | |
| USGS | U. S. |
| Geological Survey | |
| WPIC | Wetlands |
| Permitting Information Center | |
| WRDA | Water |
| Resources Development Act | |

The action plans included in this document are the collective work of the Management Conference of the Barataria-Terrebonne National Estuary Program. Each plan reflects the input of the entire Management Conference, through numerous Conference Workshops, Committee and Alliance meetings and other discussions, as well as the public, through several public meetings held throughout the Barataria and Terrebonne basins. A complete listing of Management Conference, Committee and Alliance members is included in Part 4 of the CCMP, the *Appendix*.

Assisting the Management Conference in the preparation of these action plans were a number of consultants:

David Moore and Robert Rivers of the College of Urban and Public Affairs (CUPA) at the University of New Orleans were responsible for monitoring and documenting Alliance and Management Conference

Foreword

meetings, as well as providing technical support throughout the plan development process. In addition, CUPA was responsible for compiling, editing and producing the *Technical Supplement*, as well as the other parts of the CCMP.

Carlos Zervigon and Julianna Padgett of Zervigon International were retained to provide professional facilitation services throughout the plan development process.

The COSTS AND ECONOMIC CONSIDERATIONS sections of each plan were prepared under the direction of Elise Bacon of Apogee Research, Inc.

The FUNDING STRATEGY sections in each plan were prepared under the direction of Marc Blaustein of Northridge Environmental Management Consultants. Contributing to this effort was an inventory of potential funding sources prepared by Lisa McDonald of Hazen and Sawyer, Environmental Engineers and Scientists.

The EVALUATION METHODS sections of each plan were prepared by Denise Reed and Nancy Rabalais of the Louisiana Universities Marine Consortium (LUMCON), Rodney Emmer of Rodney E. Emmer and Associates, Inc., John Trowbridge of Southeastern Louisiana University, and Lawrence McKenzie of the Applied Technology Research Corporation.

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The *Technical Supplement* is arguably the most important element of the Comprehensive Conservation and Management Plan (CCMP) for the Barataria-Terrebonne National Estuary Program, as it consists of the detailed actions recommended by the participants in the BTNEP. It reflects the broad base of involvement and support that have characterized this effort over the years, the vast array of problems which face the Barataria-Terrebonne basins, and the comprehensive approach needed to address them.

The Barataria-Terrebonne National Estuary Program

In 1990, the U.S. Environmental Protection Agency (EPA) and the State of Louisiana formed a novel partnership. Their goal was not only to protect the estuary from further degradation, but to undertake programs that would begin to check man-made or natural damage that had already occurred to habitats throughout the estuary. The partnership is called the Barataria-Terrebonne National Estuary Program (BTNEP). BTNEP was created under the EPA's National Estuary Program, established in Section 320 of the Clean Water Act. It is administered and funded by the EPA and the State of Louisiana. Under this program, a set of plans and implementation schedules must be developed within five years after an estuary's nomination and acceptance into the program. Thus far, 28 estuaries of national significance have been selected to participate in the National Estuary Program and are in various stages of plan development or implementation.

The culminating achievement of BTNEP is the development of the CCMP, which combines the required plans and implementation schedules into a coordinated action to address the estuary's needs for the next 25 years. The CCMP specifically works to overcome the priority problems identified for the estuary by enlisting all of the affected stakeholders, establishing priorities, and coordinating efforts. In the Barataria-Terrebonne basins, the priority problems have been identified as: hydrologic modification, sediment reduction, habitat loss, eutrophication,

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pathogen contamination, toxic substances, and changes to living resources. The 51 action plans contained within this document work to directly address these problems, as well as the numerous institutional and societal factors which contribute to them.

The CCMP is an advisory document which is meant to serve as guidance for the preservation and restoration efforts throughout the Barataria-Terrebonne Estuary over the next 25 years. Acceptance of the CCMP and the Action Plans contained in it by agencies or other entities that constitute the BTNEP Management Conference does not commit any agency or entity to implement the CCMP or any of its action plans.

Action Plan Development

The CCMP was developed by the BTNEP Management Conference, a group of individuals appointed by the Governor of Louisiana to represent government agencies at the federal, state and local levels, environmental organizations, business and industry, landowners, academic experts, and the general public. This group has met numerous times over the past five years to identify priority problems, establish goals and priorities, and ultimately formulate the action plans which make up this document. Contributing to this process was the input received from the general public, through several public meetings which were held in communities throughout the estuary. Thus, the 51 plans included here are the product of an innovative attempt to establish consensus among all stakeholders of the estuary, and effectively meet the estuary's most critical management needs.

Organization

For each of the 51 plans that follow, a standard format was used, to ensure consistency in plan development as well as to create a 'comfort level' for the reader, allowing for comparison and evaluation of the plans and location of entries:

OBJECTIVES - Intended outcome of the plan.

DESCRIPTION - Concise statement of the action.

BACKGROUND/MAJOR ISSUES - Status, trends and probable causes of problems.

BENEFITS - Who or what will be the beneficiary of the action.

IMPLEMENTATION SCHEDULE - When and how will the action be accomplished.

LEAD AND SUPPORT IMPLEMENTORS - Agencies and/or institutions which will oversee the action.

COSTS AND ECONOMIC CONSIDERATIONS - The financial obligations of the action.

FUNDING STRATEGY - How the plan will be funded.

EVALUATION METHODS - How the success of the action will be assessed.

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| CZM | Coastal Zone |
| Management | |
| DDT | |
| Dichlorodiphenyl-Trichloroethylene | |
| DIGIS | Discharger |
| Geographic Information System | |
| DIMS | Data and |
| Information Management System | |
| DO | Dissolved |
| Oxygen | |
| DSP | Diarrhetic |

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| | |
|--|---------------|
| Shellfish Poisoning | |
| EIS | |
| Environmental Impact Statement | |
| EMAP | Estuarine |
| Monitoring and Assessment Program | |
| EPA | U. S. |
| Environmental Protection Agency | |
| FDA | U. S. Food |
| and Drug Administration | |
| FTP | File Transfer |
| Protocol | |
| FY | Fiscal Year |
| GCBO | Gulf Coast |
| Bird Observatory | |
| GIS | Geographic |
| Information System | |
| GIWW | Gulf |
| Intracoastal Waterway | |
| GOMP | Gulf of |
| Mexico Program | |
| HNC | Houma |
| Navigational Canal | |
| HTTP | Hyper Text |
| Transfer Protocol | |
| IPM | Integrated |
| Pest Management | |
| K-16 | Kindergarten |
| through College | |
| LCES | Louisiana |
| Cooperative Extension Service | |
| LDAF | Louisiana |
| Department of Agriculture and Forestry | |
| LDCRT | Louisiana |
| Department of Culture, Recreation and Tourism | |
| LDED | Louisiana |
| Department of Economic Development | |
| LDEQ | Louisiana |
| Department of Environmental Quality | |
| LDHH | Louisiana |
| Department of Health and Hospitals | |
| LDNR | Louisiana |
| Department of Natural Resources | |
| LDOE | Louisiana |
| Department of Education | |
| LDOTD Louisiana Department of Transportation and Development | |
| LDWF | Louisiana |
| Department of Wildlife and Fisheries | |
| LEQSF | Louisiana |

Foreword

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| Nature Conservancy | |
| LOSCO | Louisiana |
| Oil Spill Coordinator's Office | |
| LaSIP | Louisiana |
| Systemic Initiative Program | |
| LUMCON | Louisiana |
| Universities Marine Consortium | |
| LWF | Louisiana |
| Wildlife Federation | |
| MAPS | Monitoring |
| Avian Productivity and Survivorship | |
| MOA | |
| Memorandum of Agreement | |
| MOU | |
| Memorandum of Understanding | |
| MSA | Metropolitan |
| Statistical Area | |
| NBS | U. S. |
| National Biological Service | |
| NEP | National |
| Estuary Program | |
| NEPA | National |
| Environmental Policy Act | |
| NHP | Natural |
| Heritage Program (LDWF) | |
| NMFS | U. S. |
| National Marine Fisheries Service | |
| NOAA | U. S. |
| National Oceanic and Atmospheric Administration | |
| NPDES | National |
| Pollution Discharge Elimination System | |
| NPS | U. S. |
| National Park Service | |
| NRC | National |
| Response Center | |
| NRCS | U. S. Natural |
| Resources Conservation Service (USDA) | |
| NSF | National |
| Science Foundation | |
| OCS | Outer |
| Continental Shelf | |

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| | |
|-------------------------------|-------------|
| OSPRA | Oil Spill |
| Prevention and Response Act | |
| PAH | Polynuclear |
| Aromatic Hydrocarbon | |
| POTW | Publicly- |
| Owned Treatment Works | |
| ppt | Parts per |
| thousand | |
| SAV | Submerged |
| Aquatic Vegetation | |
| SIC | Standard |
| Industry Classification | |
| SLEC | South |
| Louisiana Economic Council | |
| SSC | Southern |
| Science Center (NBS) | |
| TMDL | Total |
| Maximum Daily Load | |
| TSS | Total |
| Suspended Solids | |
| USACOE | U. S. Army |
| Corps of Engineers | |
| USCG | U. S. Coast |
| Guard | |
| USDA | U. S. |
| Department of Agriculture | |
| USFWS | U. S. Fish |
| and Wildlife Service | |
| USGS | U. S. |
| Geological Survey | |
| WPIC | Wetlands |
| Permitting Information Center | |
| WRDA | Water |
| Resources Development Act | |

The action plans included in this document are the collective work of the Management Conference of the Barataria-Terrebonne National Estuary Program. Each plan reflects the input of the entire Management Conference, through numerous Conference Workshops, Committee and Alliance meetings and other discussions, as well as the public, through several public meetings held throughout the Barataria and Terrebonne basins. A complete listing of Management Conference, Committee and Alliance members is included in Part 4 of the CCMP, the *Appendix*.

Assisting the Management Conference in the preparation of these action plans were a number of consultants:

David Moore and Robert Rivers of the College of Urban and Public Affairs (CUPA) at the University of New Orleans were responsible for monitoring and documenting Alliance and Management Conference

meetings, as well as providing technical support throughout the plan development process. In addition, CUPA was responsible for compiling, editing and producing the *Technical Supplement*, as well as the other parts of the CCMP.

Carlos Zervigon and Julianna Padgett of Zervigon International were retained to provide professional facilitation services throughout the plan development process.

The COSTS AND ECONOMIC CONSIDERATIONS sections of each plan were prepared under the direction of Elise Bacon of Apogee Research, Inc.

The FUNDING STRATEGY sections in each plan were prepared under the direction of Marc Blaustein of Northridge Environmental Management Consultants. Contributing to this effort was an inventory of potential funding sources prepared by Lisa McDonald of Hazen and Sawyer, Environmental Engineers and Scientists.

The EVALUATION METHODS sections of each plan were prepared by Denise Reed and Nancy Rabalais of the Louisiana Universities Marine Consortium (LUMCON), Rodney Emmer of Rodney E. Emmer and Associates, Inc., John Trowbridge of Southeastern Louisiana University, and Lawrence McKenzie of the Applied Technology Research Corporation.

Printing services were provided by the Campus Copy Center at the University of New Orleans. Cover design, layout and production were provided by Brennan's House of Printing.

The *Technical Supplement* is arguably the most important element of the Comprehensive Conservation and Management Plan (CCMP) for the Barataria-Terrebonne National Estuary Program, as it consists of the detailed actions recommended by the participants in the BTNEP. It reflects the broad base of involvement and support that have characterized this effort over the years, the vast array of problems which face the Barataria-Terrebonne basins, and the comprehensive approach needed to address them.

The Barataria-Terrebonne National Estuary Program

In 1990, the U.S. Environmental Protection Agency (EPA) and the State of Louisiana formed a novel partnership. Their goal was not only to protect the estuary from further degradation, but to undertake programs that would begin to check man-made or natural damage that had already occurred to habitats throughout the estuary. The partnership is called the Barataria-Terrebonne National Estuary Program (BTNEP). BTNEP was created under the EPA's National Estuary Program, established in Section 320 of the Clean Water Act. It is administered and funded by the EPA and the State of Louisiana. Under this program, a set of plans and implementation schedules must be developed within five years after an estuary's nomination and acceptance into the program. Thus far, 28 estuaries of national significance have been selected to participate in the National Estuary Program and are in various stages of plan development or implementation.

The culminating achievement of BTNEP is the development of the CCMP, which combines the required plans and implementation schedules into a coordinated action to address the estuary's needs for the next 25 years. The CCMP specifically works to overcome the priority problems identified for the estuary by enlisting all of the affected stakeholders, establishing priorities, and coordinating efforts. In the Barataria-Terrebonne basins, the priority problems have been identified as: hydrologic modification, sediment reduction, habitat loss, eutrophication,

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pathogen contamination, toxic substances, and changes to living resources. The 51 action plans contained within this document work to directly address these problems, as well as the numerous institutional and societal factors which contribute to them.

The CCMP is an advisory document which is meant to serve as guidance for the preservation and restoration efforts throughout the Barataria-Terrebonne Estuary over the next 25 years. Acceptance of the CCMP and the Action Plans contained in it by agencies or other entities that constitute the BTNEP Management Conference does not commit any agency or entity to implement the CCMP or any of its action plans.

Action Plan Development

The CCMP was developed by the BTNEP Management Conference, a group of individuals appointed by the Governor of Louisiana to represent government agencies at the federal, state and local levels, environmental organizations, business and industry, landowners, academic experts, and the general public. This group has met numerous times over the past five years to identify priority problems, establish goals and priorities, and ultimately formulate the action plans which make up this document. Contributing to this process was the input received from the general public, through several public meetings which were held in communities throughout the estuary. Thus, the 51 plans included here are the product of an innovative attempt to establish consensus among all stakeholders of the estuary, and effectively meet the estuary's most critical management needs.

Organization

For each of the 51 plans that follow, a standard format was used, to ensure consistency in plan development as well as to create a 'comfort level' for the reader, allowing for comparison and evaluation of the plans and location of entries:

OBJECTIVES - Intended outcome of the plan.

DESCRIPTION - Concise statement of the action.

BACKGROUND/MAJOR ISSUES - Status, trends and probable causes of problems.

BENEFITS - Who or what will be the beneficiary of the action.

IMPLEMENTATION SCHEDULE - When and how will the action be accomplished.

LEAD AND SUPPORT IMPLEMENTORS - Agencies and/or institutions which will oversee the action.

COSTS AND ECONOMIC CONSIDERATIONS - The financial obligations of the action.

FUNDING STRATEGY - How the plan will be funded.

EVALUATION METHODS - How the success of the action will be assessed.

**Action Plan CP-1:
Common Ground Solutions
and Decision-Making**

CP-1 Common Ground Solutions and Decision-Making

OBJECTIVES

1. To adopt decision-making process that develops consensus and resolves conflicts.
2. To ensure implementation of the CCMP in a timely fashion.
3. To support widespread use of participatory decision-making in the estuary.

DESCRIPTION

This action proposes the development and voluntary adoption of "Common Ground Solution Guidelines" by members of the Barataria-Terrebonne Management Conference (BTMC). Currently, the proposed Common Ground Solution Guidelines consist of three steps:

1. Adoption of Common Ground Solution Guidelines:
 - a. Bring stakeholders to the table (those who have the power to make decisions, those who have the responsibility to implement the decisions, those who will be affected by the decisions, and those who are the information bearers).
 - b. Obtain objective data from trusted sources.
 - c. Ensure a fair decision-making process.
 - d. Use a neutral facilitator.
 - e. Support continuous use of broad-based decision-making.
2. Expansion and adoption of additional guidelines which meet the needs of member groups. A committee will be appointed to:
 - a. Identify potential conflict areas and outline proactive intervention into conflicts.
 - b. Review and learn from our own conflict resolution processes in order to contribute to the growing body of knowledge of these efforts.
 - c. Work with the Program Office to stay abreast of "state of the art" decision-making/conflict resolution methods including local, state and national case studies, professional books, personnel and agencies that specialize in these areas.
3. Agreement of each organizational member to appoint a liaison for conflict resolution and to include funding in their budget in support of these efforts.

BACKGROUND/MAJOR ISSUES

The issues that face the estuary are complex. The state and nation are experiencing a rapid loss of wetlands and coastline, and as a result, people are faced with losing their homes, property, jobs, investments and way of life. To resolve these physical and socio-economic challenges within the short timeframe we have, we will need to create a high level of inter-agency collaboration, to increase private/public partnerships, a commitment to keep stakeholders involved, and to offer a win-win resolution of difficult issues.

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The BTMC, in order to implement the CCMP, is faced with two major dynamics. First, the members of the BTMC must be able to make recommendations and support decisions and act as single body on the key strategic directions outlined in the plan. This leadership body must provide careful attention to complex details, balance many different perspectives and build trust between all BTMC members on a long-term basis. This will be a great challenge for those who serve on the BTMC.

Secondly, the BTMC faces the challenge of helping to resolve long-standing conflicts in the estuary in order to implement proposed action plans in a timely fashion.. Throughout the BTES, negotiations are presently underway regarding issues such as public access to waterways, compensation for oyster leases, and landowners' property rights, which could potentially delay wetlands restoration projects. As BTNEP moves towards implementation, the BTMC should contribute to these negotiations in a complementary way. Though BTMC members have decided on a strategic direction in which to focus activities in the estuary and have made attempts to coordinate with other local, state and national plans, it is inevitable that individual agencies, organizations or people will voice opposing opinions. It is critical that the BTMC provide an alternative to costly and delaying court or legislative routes to resolving these conflicting opinions. We must commit to finding "common ground solutions" and address economic cost-benefit issues that affect the lives of estuary stakeholders in order to quickly act on our wetland loss and restoration.

It is the intent of this plan to have the BTMC integrate these guidelines and a consensus based methodology, as was used to create the CCMP, into all future meetings, decision-making and conflict resolution situations. These guidelines will enable the BTMC to move towards timely, cooperative solutions among users and stakeholders of the estuary who represent diverse public and private agendas. Additionally, in ongoing application, these guidelines will allow those involved in BTES efforts to:

1. Incorporate large numbers of diverse ideas.
2. Synthesize large amounts of science and social science information.
3. Be flexible and able to quickly respond to new information/events.
4. Create new structures and relationships that transcend old boundaries.
5. Produce innovative workable solutions to estuary-related challenges that reflect a comprehensive, systems-based understanding.
6. Be committed to implementation.

BENEFITS

The Common Ground Solution Guidelines provide a fair framework for future decision-making in the estuary. These guidelines create a foundation for routine decisions as well as complex conflicts which exist and will continue to arise in the estuary. The adoption of these general guidelines will ensure that all stakeholders are "at the table", will help avoid costly and delaying court cases or delaying other needed actions. The guidelines will help the timely implementation of coastal restoration projects in the estuary. Expansion of the guidelines will ensure that members of the BTMC have a common understanding of conflict resolution processes.

The guidelines are principles familiar to those who have experienced or studied negotiation, mediation or any type of conflict resolution. They are principles also used in the development of the CCMP. The adoption of the basic guidelines and expansion of guidelines as our knowledge grows will allow the contribution to important formal and informal research on conflict resolution.

Action Plan CP-1: Common Ground Solutions and Decision-Making

IMPLEMENTATION SCHEDULE

Short-term plans for this action (1996) focus on the adoption of the Common Ground Solution Guidelines by the BTMC:

S 1.00 Each organizational member will be asked to sign a Memorandum of Understanding (MOU) which points to agreement to accept and support these guidelines.

As the BTMC is continued, a committee will accept responsibility to expand these guidelines. This medium-term plan (1996 -1997) is:

M 1.00 Develop expanded guidelines, with plans to revise as needed. This includes gaining clarity on a number of key issues that affect organizational processes: recognizing potential conflict issues, supporting proactive intervention, and an general understanding of what conditions "formal" conflict resolution would be requested within the organization's structure. Many of these issues can only be handled on a voluntary, case-by case basis, so the expanded guidelines will be broadly stated.

M 2.00 Establish a contact point for conflict resolution within each organization. In some estuary programs, this individual or group of individuals are trained in these methodologies and become one of several facilitator/mediators in the estuary. Or the individuals could merely provide oversight to these processes, while outside professionals provide facilitation services.

M 3.00 Each member organization will be asked to recognize the benefits of "coming to the table" to resolve differences vs. court solutions and to contribute to the funding to support these efforts. By 1997, the above MOU can be amended to include a liaison person and a budget line item for each organization.

The long-term plan (1998-2020) includes continual refinement and adjustment of these guidelines to serve the needs of estuary.

LEAD AND SUPPORT IMPLEMENTORS

As the BTMC is continued, it will assume the responsibility to have its members review and adopt the guidelines, to establish a committee and oversee the expansion of these ideas into general guidelines. The diverse group of stakeholders, the organizational members, will serve as support implementors.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP1-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered "new" (a direct product of CCMP recommendations) and "existing" (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table CP1-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---|----------------|-------------------|---------|--------------------------|---------------------------------------|
| CP-1 | | | | | \$0 | \$16,632 |
| CP-1S1.00 | <i>MOU for guidelines</i> | no cost | no cost | | | \$0 |
| CP-1M1.00 | <i>expanded guidelines</i> | | | | | \$3,192 |
| CP-1M1.01 | <i>expanded guidelines</i> | USACOE | E | | | \$399 |
| CP-1M1.02 | <i>expanded guidelines</i> | LDNR | E | | | \$399 |
| CP-1M1.03 | <i>expanded guidelines</i> | LDEQ | E | | | \$399 |
| CP-1M1.04 | <i>expanded guidelines</i> | LGO | E | | | \$399 |
| CP-1M1.05 | <i>expanded guidelines</i> | USNPS | E | | | \$399 |
| CP-1M1.06 | <i>expanded guidelines</i> | USDA | E | | | \$399 |
| CP-1M1.07 | <i>expanded guidelines</i> | LDWF | E | | | \$399 |
| CP-1M1.08 | <i>expanded guidelines</i> | USEPA | E | | | \$399 |
| CP-1M2.00 | <i>contact for conflict resolution</i> | | | | | \$672 |
| CP-1M2.01 | <i>contact for conflict resolution</i> | USACOE | E | | | \$84 |
| CP-1M2.02 | <i>contact for conflict resolution</i> | LDNR | E | | | \$84 |
| CP-1M2.03 | <i>contact for conflict resolution</i> | LDEQ | E | | | \$84 |
| CP-1M2.04 | <i>contact for conflict resolution</i> | LGO | E | | | \$84 |
| CP-1M2.05 | <i>contact for conflict resolution</i> | USNPS | E | | | \$84 |
| CP-1M2.06 | <i>contact for conflict resolution</i> | USDA | E | | | \$84 |
| CP-1M2.07 | <i>contact for conflict resolution</i> | LDWF | E | | | \$84 |
| CP-1M2.08 | <i>contact for conflict resolution</i> | USEPA | E | | | \$84 |
| CP-1M3.00 | <i>funding contributions</i> | | | | | \$12,768 |
| CP-1M3.01 | <i>funding contributions</i> | USACOE | N | | | \$1,596 |
| CP-1M3.02 | <i>funding contributions</i> | LDNR | N | | | \$1,596 |
| CP-1M3.03 | <i>funding contributions</i> | LDEQ | N | | | \$1,596 |
| CP-1M3.04 | <i>funding contributions</i> | LGO | N | | | \$1,596 |
| CP-1M3.05 | <i>funding contributions</i> | USNPS | N | | | \$1,596 |
| CP-1M3.06 | <i>funding contributions</i> | USDA | N | | | \$1,596 |
| CP-1M3.07 | <i>funding contributions</i> | LDWF | N | | | \$1,596 |
| CP-1M3.08 | <i>funding contributions</i> | USEPA | N | | | \$1,596 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$94,800

Total Funding Existing (Years 1-5): \$50,000

**Action Plan CP-1:
Common Ground Solutions
and Decision-Making**

Total New Funding Necessary (Years 1-5): \$44,800

Table CP1-2. Summary of New Funding Sources

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--------|---|---|---|---|
| LDEQ | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| LDNR | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| LDWF | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| USACOE | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| USDA | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| USNPS | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |
| LDNR | | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations | \$1,600 License plates; Foundations |

Summary of new funding strategy: The task requiring new funding results from each department's contribution to conflict resolution. The exact amount funding needed is difficult to predict as the number of instances requiring conflict resolution is unknown. Three sources can be utilized to fund this action plan. First, foundation grants can be solicited. The grant application should explain that any award will be supporting an "innovative method of environmental issue conflict resolution ". The *Funding Source Inventory for the Implementation of the CCMP* provides a list of candidate foundations. Second, revenues from the environmental license plates can be used to cover any shortfall. Finally, since cost results from two weeks of staff time per agency it may be more efficient for individual agencies to supply staff time than to solicit funds.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be

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expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. The BTMC will adopt common ground solution guidelines.

Interrelationships Among Components

The BTMC will adopt common ground solution guidelines. The process begins by bringing stakeholders (decision makers, implementors, affected parties, and sources of information) to the table. A fair decision process relies on objective data from trusted sources and a meeting facilitated by a neutral party. The BTMC will appoint a committee to identify potential conflicts and outline proactive intervention to address these conflicts; review and learn from previous common ground decision-making practiced during the preparation of the CCMP; and build on the most current decision-making/conflict resolution methods. Finally, each organizational member will appoint a liaison for conflict resolution and support these efforts by assigning personnel and providing funding for those activities in which they participate.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To adopt decision-making process that develops consensus and resolves conflicts.
 - a. Each organization signs a MOA in 1996 which points to agreement to accept and support these guidelines.
 - b. Stakeholders (decision makers, implementations, affected parties, and sources of information) agree to participate in the process.
 - c. Stakeholders agree on trusted sources of objective data.
 - d. Stakeholders agree this is a fair decision-making process.
 - e. A neutral facilitator is selected and conducts meetings.
 - f. Stakeholders appoint a committee to identify potential conflict areas and outline proactive intervention options.
 - g. The committee identifies potential conflict areas and outlines proactive intervention options with the schedule proposed by the stakeholders.
 - h. Committee report accepted by stakeholders as useful.
 - I. Facilitator and facilitating team learn from meetings and continue to improve the process, making it more efficient and effective.
 - j. Each organizational member appoints a liaison to the process.
 - k. Organizations agree to some level of funding of the process.
 - l. The guidelines allow those involved in the BTES efforts to:
 - (1) Incorporate large numbers of diverse ideas.
 - (2) Synthesize large amounts of science and social science information.
 - (3) Be flexible and able to quickly respond to new information/events.
 - (4) Create new structures and relationships that transcend old boundaries.
 - (5) Produce innovative workable solutions to estuary-related challenges that reflect a comprehensive, systems-based understanding.
 - (6) Be committed to implementation.
2. To ensure implementation of the CCMP in a timely fashion.
 - a. Conflict resolution does expedite solving problems and helps avoid delays and possible legislative and/or legal actions.

Action Plan CP-1: Common Ground Solutions and Decision-Making

- b. The process helps resolve long-standing conflicts in the estuary, in order to implement proposed action plans in a timely fashion.
- c. Stakeholders stay involved in the process.
- d. Action plans are implemented as a direct result of conflict resolution process.
3. To support widespread use of participatory decision-making in the estuary.
 - a. The BTMC endorses the concept of conflict resolution when dealing with issues facing the BTES.
 - b. Each organizational member signs a MOA which points to agreement to accept and support these guidelines.
 - c. A committee established by the BTMC develops expanded guidelines in 1996-1997.
 - d. Each organization establishes a contact point for conflict resolution.
 - e. Each organization provides funds to support these efforts.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing decision makers, implementors, affected parties, and sources of information; observing activities of the committee appointed by the BTMC to identify potential conflicts and outline proactive intervention to address these conflicts; examining quantifiable data, such as number of MOU signed during a time period; attendance at meetings; reviewing the activities of the neutral facilitator; and observing the response of the BTMC to the committee's report.

Sampling design and statistical methods

The monitor will meet with or telephone selected individuals to discuss the use of common ground solutions by the BTMC. Reviewing activities, examining data, and observing meetings will continue for that period designated by the BTMC. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, and interviews and/or meetings with BTMC members, and meetings with the facilitator). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 184 person hours for the year. The estimated cost for the first year is \$11,000 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor activities of the Common Ground Solutions and Decision-Making Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing action plan activities, accomplishments, problems, issues of concern, and recommended solutions. The report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party will be available at the BTMC meeting for discussion of his/her report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its purpose of providing a documentation of activities in an objective and systematic manner that provides the BTMC

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with information and recommendations it can use to improve the use of common ground solutions and decision-making. The basic outline of a Quality Assurance Plan follows. Some sections have been expanded to illustrate possible approaches.

Objective of monitoring

1. To describe the development of common ground solutions.
2. To document how the process works.
3. To identify problems and issues of concern and the application of common ground solutions to these.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A Third Party (either an individual or committee) with no vested interest, but who is knowledgeable about the basin and organizing and facilitating meetings and administering programs.
2. Describe existing practices and identify issues of concern and problems.
3. Interviews (onsite, telephone, mail surveys) with stakeholders and the general public.
4. Determine if stakeholders:
 - a. are at the table;
 - b. obtain and use objective data from trusted sources;
 - c. ensure a fair decision-making process;
 - d. use a neutral facilitator;
 - e. support continuous use of broad-based decision-making.
5. Review committee activities as it identifies potential conflict areas and outlines proactive intervention into conflicts.
6. The Program Office and facilitators use current methods and ideas appropriate for the BTES when conducting conflict resolution.
7. Participating organizations furnish personnel who can make decisions.
8. Participating organizations provide funding in support of the efforts.

Data evaluation

The BTMC shall work with its selected monitor to develop a procedure for assessing data that will provide the BTMC with the information it needs. The monitor should identify proposed analytical techniques for the BTMC.

Review of monitoring documents

The BTMC shall receive the draft monitoring document at least 15 days before the regularly scheduled BTMC meeting. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems recorded during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

CP-2 Wetlands Permitting Information Centers

OBJECTIVES

1. To assist the general public, small businesses and others in applying for wetlands permits.
2. To determine the need for Wetland Permitting Information Centers throughout the BTES.

DESCRIPTION

This action will establish two Wetland Permitting Information Centers. These centers will be pilot projects and will be evaluated to determine whether a sufficient need exists for similar centers to be established throughout the BTES.

One of the proposed centers will be located in the Lafourche-Terrebonne Parish area and will be initially staffed by the Coastal Management Division of the Louisiana Department of Natural Resources (LDNR) with participation by local government representatives. Staff persons will be trained in the most current requirements for wetland permits and will be knowledgeable of the appropriate agency personnel to contact who will provide the proper assistance to the applicants.

Specifically, the centers will provide the following services:

1. An inventory will be maintained of all permits required to obtain authorization to perform development activities in wetlands areas. Instructions on how to apply for the permits will also be made available.
2. All necessary permitting forms will be provided. Where possible, the forms will be provided in similar formats.
3. A user-friendly computer system (possibly with a touch screen) will be available to augment staff assistance or to be used in their absence.
4. Additional material such as pamphlets, hand outs and sample completed forms and plans will be available to further aid the applicants.
5. Staff will be available to assist citizen's in answering questions and filling out forms.

Public announcements of the existence, location, and hours of the centers will be placed in trade publications, newspapers, chambers of commerce and other economic development newsletters, banker's publications and local government offices. Initially, parish government staff will receive training at each of the permitting agencies. In addition, they will receive on-the-job training in order to gain a general knowledge of the process and to establish a working relationship with each agency's contact person.

BACKGROUND/MAJOR ISSUES

Persons needing to obtain permits in the estuary, usually only a few times within a life time, are often confused by the process. The number of federal, state and local agencies that are likely to require some kind of permit or sign-off can be overwhelming. In addition, as regulations change over time, so do permitting requirements. As a result, there is often a negative perception of the role of government in the permitting process. This detracts from the legitimate need for a permitting process and may even encourage attempts to circumvent the process. Perceptions that the permitting process is difficult to negotiate can also have an adverse impact on the BTES's social and

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economic development. This is particularly the case in situations where development interests are competing with similar interests elsewhere; if permitting becomes overly burdensome, development may move elsewhere.

BENEFITS

Creating an easier and more understandable permitting process will provide benefits on a number of levels. Bringing the permitting process closer to the estuary's users will lessen public frustrations and serve to weaken negative perceptions of the government. In addition, by making information more accessible, users will begin to have a greater understanding of the need for the permitting process, and will be less likely to circumvent the process. Finally, by locating all of the permitting information in one place, and providing knowledgeable support staff, the permitting process will likely be shorter and less burdensome on the estuary's users.

The long term benefits of this program will be primarily in the arena of common ground solutions and public support for an ecologically responsible approach to economic and social development the BTES. It will be one of a number of actions designed to foster partnerships between government and the private sector.

IMPLEMENTATION SCHEDULE

The Coastal Management Division of the Louisiana Department of Natural Resources (CMD/LDNR) has already submitted a proposal to the Environmental Protection Agency for the Lafourche/Terrebonne center, including the development of a computerized interface system. This project will help CMD achieve its mandate to work toward interagency cooperation in the wetlands permitting process. Jefferson Parish is willing to participate in this process by opening a Wetland Permitting Information Center but cannot make any commitments at this time until funding can be made available. If funding is made available, the Jefferson Parish center will closely relate its implementation schedule with that of the Lafourche/Terrebonne Center. Memoranda of understanding or equivalent agreements will be create among the various government agencies in order to outline responsibilities for procedures, information dissemination, training, points of contact, and means of communication (possibly a "1-800 number").

Short-term plans (0-1 years) are as follows:

- S 1.00 Secure location for CMD project (CMD/LDNR & Parish; winter 1995).
- S 2.00 Initiate inventory of require permits (CMD/LDNR & Agencies; winter 1995).
- S 3.00 Initiate staff training (CMD/LDNR & Agencies; spring 1996).
- S 4.00 Create permitting check-off list (CMD/LDNR& Agencies; winter 1996).
- S 5.00 Begin computer interface development (Contractor for CMD; winter 1996).
- S 6.00 Set up for delineations (CMD/LDNR; winter 1996).
- S 7.00 Begin CMD center operations (CMD/LDNR & Parish; summer 1996).
- S 8.00 Set up information exchange mechanisms (CMD/LDNR; fall 1996).
- S 9.00 Implement procedures for changes in the system as determined by experience and user feedback.

Medium-term plans (1-5 years) include:

- M 1.00 Continual evaluations of the program.
- M 2.00 Expansion of the program to other parishes. Among the issues to be addressed are staffing, funding and interagency cooperation.

Action Plan CP-2: Wetlands Permitting Information Centers

Long-term plans (5-10 years) will depend greatly on the first five years, but should include an exploration of enabling legislation which would allow for greater interagency cooperation and commonality as well as customer-sensitive processes.

LEAD AND SUPPORT IMPLEMENTORS

The Coastal Management Division of the Louisiana Department of Natural Resources (CMD/LDNR) will be the lead implementor in close consultation with officials from Jefferson, Lafourche and Terrebonne parishes. Parish officials will provide the sites and local personnel. The Louisiana Department of Environmental Quality (LDEQ) and the New Orleans District office of the U. S. Army Corps of Engineers (USACOE) will assist in the training and assist in providing information about their respective permitting requirements.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP2-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table CP2-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-----------|----------------------------------|------|----------------|---------|-----------------------|---------------------------------|
| CP-2 | | | | | \$83,500 | \$5,250 |
| CP-2S1.00 | <i>CMD project location</i> | LDNR | N | | \$25,000 | \$0 |
| CP-2S2.00 | <i>inventory of permits</i> | LDNR | N | | \$10,000 | \$0 |
| CP-2S3.00 | <i>staff training</i> | LDNR | N | | \$2,500 | \$0 |
| CP-2S4.00 | <i>permitting check-off list</i> | LDNR | N | | \$2,000 | \$0 |
| CP-2S5.00 | <i>computer interface</i> | LDNR | N | | \$21,000 | \$0 |
| CP-2S6.00 | <i>set up for delineations</i> | LDNR | N | | \$15,000 | \$0 |
| CP-2S7.00 | <i>CMD center operations</i> | LDNR | N: no estimate | | | |
| CP-2S8.00 | <i>information exchange</i> | LDNR | N | | \$8,000 | \$0 |
| CP-2S9.00 | <i>integrate user feedback</i> | LDNR | N: no estimate | | | |
| CP-2M1.00 | <i>continued program eval.</i> | LDNR | N | | | \$5,250 |
| CP-2M2.00 | <i>program to other parishes</i> | LDNR | N: no estimate | | | |

FUNDING STRATEGY

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Total Funding Necessary (Years 1-5): \$104,500
 Total Funding Existing (Years 1-5): \$0
 Total New Funding Necessary (Years 1-5): \$104,500

Table CP2-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------|---|--|--|--|---------------|
| LDNR | \$83,500 Section 104(b)(3) Grant | \$7,000 Section 104(b)(3) Grant | \$7,000 Section 104(b)(3) Grant | \$7,000 Section 104(b)(3) Grant | |

Summary of new funding strategy: Funding for a similar project was provided by the *Section 104(b)(3) Clean Water State Wetland Program Grants* contract (#66-461). The LDNR is taking the lead on this action and funding should be sought from the same program. Both the Year 1 cost of \$83,500 and the Years 2-4 annual cost of \$7,000 result from tasks similar to those funded under the grant program. Therefore, it is anticipated that full funding can be secured from a Section 104(b)(3) grant.

If it appears that the grant will not provide all of the necessary funding, corporate sponsorship and foundation donations can be utilized to make up any shortfall. This action is a likely candidate for corporate or foundation funding because the Centers provide a prominent, long-term opportunity for corporations or foundations to advertise their support.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The following monitoring strategies do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Establishes two WPICs.
 - a. One Center will be located in either Lafourche or Terrebonne Parish.
 - b. The second will be on the west bank of Jefferson Parish.

Interrelationships Among Components

The Lafourche-Terrebonne Center will initially be staffed by the Coastal Management Division, LDNR. Jefferson Parish will provide personnel for the West Bank Center. Permitting agencies, such as the USACOE, LDEQ, and the

LDNR will train Center personnel. MOU or equivalent agreements among the participating agencies will outline responsibilities. The EPA will provide funds for the Centers.

Action Plan CP-2: Wetlands Permitting Information Centers

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

An independent Third Party selected by the BTMC will prepare a report describing the implementation of the two Centers.

1. To assist the general public, small businesses and others in applying for wetlands permits.
 - a. The Centers assist the general public, small business, and other apply for wetlands permits.
 - b. The travel time and distance (miles) for individuals seeking assistance is minimized. In other words, the Centers are centrally located for the individuals requiring assistance.
 - c. The Center compiles statistical information, such as, telephone inquiries received during each month; the type of information requested: brochures? forms? fact sheets? other?
 - d. The general public, small business, and others feel they received useful and informative assistance when applying for a wetland permit.
 - e. Review by the Coastal Management Division, LDNR or the USACOE recognizes a difference in the quality between the permit applications received from those helped by the Centers and similar permit applications not using the Centers.
 - f. Locations for the Centers were secured by the time expressed in the CCMP.
 - g. An inventory of required permits was initiated as scheduled in the CCMP.
 - h. Coastal Management Division, LDNR and others initiated staff training in the spring 1996.
 - I. Coastal Management Division, LDNR and others create a permitting check-off list by the winter 1996.
 - j. A Coastal Management Division, LDNR contractor begins a computer interface development by the winter 1996.
 - k. The Centers begin operation in the summer 1996.
 - l. Information exchange mechanisms are in place by the fall 1996.
 - m. The system is continuously evaluated and adjustments are made as experience dictates.
2. To determine the need for WPICs throughout the BTES.
 - a. The Centers were busy during the monthly reporting period.
 - b. People will travel a certain distance for assistance.
 - c. Other parishes or municipalities request a WPIC.
 - d. The cost for assistance per application received is acceptable.
 - e. The permit applications that were prepared with the assistance of the Centers are noticeably better than other similar permit applications.
 - f. Users found the Centers helpful and would recommend to their friends and associates.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing WPIC staff, individuals using the services of the Center, and permit specialists with the New Orleans District, USACOE and the Coastal Management Division, LDNR; observing activities at each Center; examining quantifiable data, such as number requests for assistance during a time period; and comparisons of intentions to actual performance.

Sampling design and statistical methods

The monitor will meet with the WPIC staff approximately two months after each Center opens. At a minimum of once a quarter, the monitor will visit each Center and meet with New Orleans District, USACOE and Coastal

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Management Division, LDNR staff to discuss the quality of permit applications received from individuals helped by the Centers. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, quarterly visits to each WPIC, meetings with personnel from the Coastal Management Division, LDNR and the New Orleans District, USACOE, and interviews with permit applicants). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 232 person hours for the year. The estimated cost for the first year is \$13,500 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor activities of the Wetlands Permitting Information Centers Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing staff activities, accomplishments, problems, issues of concern, and recommended solutions concerning the operations and administration of the WPICs. Selected data for the reports will be developed from statistics collected at each Center, interviews with permit applicants that request assistance, and meetings with a Center's staff. The report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party will be available at the BTMC meeting for discussion of his/her monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve the performance of the WPICs. The following outlines a Quality Assurance Plan.

Objective of monitoring

1. To record the activities of the WPIC.
2. To document how the WPIC achieves its objectives.
3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A Third Party with no vested interest, but who is knowledgeable about the basin and permitting process and procedures, and working with the public.
2. Interviews (onsite, telephone, mail survey) with permit applicants, federal and state permit analysts, and Center staffs.
3. Periodically visit each Center seeking assistance. Determine how knowledgeable, courteous, and helpful the WPIC staff are.
4. Examine statistics, for example number of inquiries; materials distributed.
5. Basic data:
 - a. The WPIC has an inventory of all permits required to obtain authorization to perform development activities in wetlands.
 - b. The WPIC staff clearly and concisely explains how to apply for the permits.
 - c. The WPIC staff uses nontechnical language.
 - d. He/she is courteous, informative, and prompt in replying to inquiries.

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- e. All permitting forms are provided.
- f. Information is readily available.
- g. Additional materials, such as pamphlets, brochures, fact sheets, etc. and sample completed forms and plans are available.
- h. Public announcements of the existence, location, and hours of the Centers appear in trade publications, newspapers, chamber of commerce and other economic development newsletters, bankers publications, and local governmental offices.

Data evaluation

The Coastal Management Division, LDNR, the USACOE, and the LDEQ shall work with the Centers to develop a procedure for reviewing data that will provide the BTMC with the information it needs to determine the impacts of the Centers.

Review of monitoring documents

The permitting agencies shall receive the monitoring document quarterly. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

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CP-3 Sustainable Development Training for Public Officials

OBJECTIVES

1. To educate local officials and planners about the importance of long-term, comprehensive planning for sustainable economic development.
2. To offer information/guidelines to help ensure that plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy, one that does not diminish the natural resource base of the Barataria-Terrebonne estuaries.
3. To offer planning methods, fill identified information gaps, and address inconsistencies currently found in planning legislation.

DESCRIPTION

This action will produce a manual entitled, "Sustainable Development in the BTES" for distribution to all planning officials within the estuary. The manual will be a planning primer detailing the *whats, hows, and whys* of comprehensive planning. The manual will define the process of developing an environmentally sensitive and economically sustainable comprehensive plan and offers possible incentive and inducement strategies, methods of assessment and enforcement, and suggestions to reduce internal and external plan inconsistencies. Pitfalls and roadblocks to successful plan development and implementation will be outlined.

In addition, scheduled, periodic workshops will be conducted to facilitate the use of the manual and focus attention on the need for comprehensive planning to achieve environmental sustainability. These workshops will be offered to local officials and planners throughout the BTES and will serve the additional purpose of introducing BTNEP projects.

BACKGROUND/MAJOR ISSUES

While the State of Louisiana legislates that municipalities and parishes develop comprehensive plans, the constitution does not provide sufficient detail in many areas for local planners to perform their job in a consistent fashion. This lack of detail has led, in certain instances, to incompatible land uses and land uses which are destructive to the environment.

Contributing to this threat is the fact that the term "comprehensive plan" is not defined in Louisiana's legislation. This allows municipal and parish planners to determine which components of a plan they will address and which they will not. At the parish level a survey has shown that plan content, age, and sophistication can vary widely. A review of the plans at the municipal level also reveals inconsistencies in approach, with some plans having been developed over twenty years ago. A closer look at existing plans further illustrates the different levels of complexity of plan development as well, further complicating the potential problems in the BTES.

Another problem associated with planning legislation is a lack of enforcement. As indicated above, while the state mandates that a plan be developed, no mechanism exists to ensure that the plan is actually adopted and

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implemented. As a consequence, numerous municipalities have developed plans but have not formally adopted them while others have plans but have not appointed anyone to ensure compliance with its requirements.

If a municipality or parish develops a plan, there are no methods to encourage planning entities to assess the impact of their plans on adjoining communities. Nor is there any incentive for the entities to collaborate on plan development to ensure that infrastructure plans are consistent between parish or municipal boundaries. The lack of punitive measures for not planning also promotes an environment in which long-term planning is not adequately addressed, except in the BTES's largest urban centers.

Concurrency requirements are also lacking in state legislation. This allows major developments to be approved and built without full consideration of the impact on existing infrastructure. Such requirements have been successfully implemented elsewhere. In Florida, for example, new development cannot diminish service to the existing community.

All of these factors, in conjunction with a strongly accepted philosophy of minimal government intervention in private property issues, have produced widely accepted, although often misunderstood, planning practices which fail to consider the long-term consequences of development activities.

Recent research suggests that a clean environment produces economic growth, while a polluted environment retards it. This would indicate that comprehensive, basin-wide planning would, in the long run, be beneficial to the preservation of the estuary as well as to the economic well-being of estuary residents.

BENEFITS

It is imperative that individuals with responsibility for programs which impact the estuary receive priority attention to ensure that they understand the goals of BTNEP. One such goal is to discontinue or appropriately modify practices that negatively impact the estuarine ecosystem. The action project is designed to encourage the transition of planning officials' perspectives from a short-term benefits to a long-term results orientation.

While conducting their jobs, planners meet with local citizens, public officials, and developers, often making decisions without adequate knowledge of the concept of environmental and economic sustainability. This action will bring all planners in the estuary together so that they can be simultaneously introduced to BTNEP and the associated planning practices that would have an immediate impact on improving the environment. Over time, concepts embraced by the planners would be communicated to those they come in contact with while conducting daily business, initiating and institutionalizing a dissemination process that would facilitate estuary preservation and restoration initiatives.

The manual will necessarily be devoted to the BTES but will affect the entire State of Louisiana. The intent of the manual and follow-up workshops will be the introduction of sustainable development methodologies. The program will thus initially impact only those planning officials who are targeted by the program. As officials recognize the potential economic returns associated with proper planning, they will in turn begin to consider environmental impacts of basin development. Discussion of these concepts at public meetings, as well as by public service announcements, will further disseminate data contained in the manual.

IMPLEMENTATION SCHEDULE

No manual of the type recommended has been developed to date nor has any type of systematic training ever been provided to planning officials on comprehensive planning or environmental sustainability.

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The short-term plan (0-1 yrs.) calls for the Barataria-Terrebonne Management Conference (BTMC) to:

- S 1.00 Develop the manual concept.
- S 2.00 Develop a scope of work.
- S 3.00 Award a contract for production of the manual.

The medium-term plan (2-5 yrs.) calls for the contractor to:

- M 1.00 Research, write and publish the manual.
- M 2.00 Begin distribution.
- M 3.00 Conduct workshops, with follow-up workshops at two-year intervals.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC will serve as the lead implementor. It will develop a scope of work for the project and will award a contract to a qualified applicant to hold workshops and publish the training document. The foundation will be responsible for coordinating a range of educational activities intended to ensure community support and in soliciting legislative allies. This project merely expands the type of educational work that will be required to ensure that those individuals who are directly responsible for development activities in the estuary are intimately familiar with the estuary program, convinced of the need to do comprehensive planning and recognize the urgency of adopting sustainable development practices to reduce further degradation of estuary resources. The Regional Planning Commissions and the Louisiana Chapter of the American Planning Association will be contacted as potential support implementors, lending experience in writing the manual, conducting the workshops, maintaining contact with parish planners, acting as a resource for questions, implementation, and assessment. Both have regular contact with planners throughout the estuary and can serve as a ready conduit for ideas and feedback about the manual and the workshops.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---------------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| CP-3 | | | | | \$5,456 | \$12,000 |
| CP-3S1.00 | <i>develop manual concept</i> | | | | \$1,764 | \$0 |
| CP-3S1.01 | <i>planning, research</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S1.02 | <i>meetings and discussion</i> | BTMC | E | | \$168 | \$0 |
| CP-3S2.00 | <i>develop scope of work</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S3.00 | <i>award contract</i> | | | | \$2,096 | \$0 |
| CP-3S3.01 | <i>prep, review, award</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S3.02 | <i>publication costs</i> | BTMC | N | | \$500 | \$0 |
| CP-3M1.00 | <i>research, write, publish</i> | BTMC | N | | | \$7,313 |
| CP-3M2.00 | <i>distribution</i> | BTMC | N | | | \$188 |

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| | | | | | | |
|-----------|------------------|------|---|--|--|---------|
| CP-3M3.00 | <i>workshops</i> | BTMC | N | | | \$4,500 |
|-----------|------------------|------|---|--|--|---------|

Table CP3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$53,300
 Total Funding Existing (Years 1-5): \$4,800
 Total New Funding Necessary (Years 1-5): \$48,500

Table CP3-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|---|--|--------|--|
| BTMC | \$500 Program office budget; license plate revenue | \$36,000 Program office budget; license plate revenue | \$6,000 Program office budget; license plate revenue | | \$6,000 Program office budget; license plate revenue |

Summary of new funding strategy: Funding for this action will come from excess capacity in the BTPO budget and from license plate revenues.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The following monitoring strategies do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Preparation of a manual for planning officials and workshops on the need for comprehensive planning to achieve environmental sustainability.

Interrelationships Among Components

The BTMC will contract with qualified individuals for the manual and workshops. The funding source remains to

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be identified.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To educate local officials, planners, and program managers about the importance of long-term, comprehensive planning for sustainable economic development.
 - a. The manual presents the importance of long-term, comprehensive planning for sustainable economic development.
 - b. The manual is concise and written in nontechnical language.
 - c. Workshops are organized, scheduled, and held.
 - d. The workshops have:
 - (1) an agenda;
 - (2) a convenient meeting site;
 - (3) sufficient parking;
 - (4) adequate facilities (room size, tables, chairs, heating/AC);
 - (5) presentations in nontechnical terms;
 - (6) supplemental material for distribution before meetings;
 - (7) recognized speakers with relevant material.
 - e. Workshops begin and end on time.
 - f. Workshop evaluation sheets are used.
 - g. Local officials, planners, and program managers attend the workshops and actively participate.
 - h. After six and twelve months, a follow-up interview/survey determines if ideas presented at the workshops were used to any degree.
2. To offer information/guidelines which will help ensure that plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy which does not diminish the natural resource base of the BTES.
 - a. The material offered provides information and guidelines which will help ensure plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy.
 - b. The provided information or guidelines address the issue of a diminishing natural resource base of the BTES.
 - c. The lessons from the workshops appear in decisions by officials.
 - d. Materials are in language appropriate for the audience.
 - e. The suggested materials are easily incorporated into the parish or municipal system.
 - f. Local decision makers helped develop the messages.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing local officials, planners, and program managers; observing the organization, conduct, and presentations of workshops; reviewing the manual for public officials and material used in support of the workshops; examining quantifiable data, such as the number of workshops and the attendance; and documenting responses of local officials, planners, and program managers to the information and ideas presented at the workshops and in printed materials.

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Sampling design and statistical methods

The monitor will meet with the contractor once per quarter to discuss the workshops and the manual. At a minimum, four workshops will be attended to observe the procedure and the application of the manual. In addition, the monitor will interview local officials, planners, and program managers to determine if the concepts presented in the workshops and manual have altered the conduct of business or affected decisions. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, quarterly meetings with the workshop contractor, attendance at four workshops to observe procedures and application of the manual, and interviews with local officials, planners, and program managers). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 280 person hours for the year. The estimated cost for the first year is \$16,100 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor the preparation of the manual and workshops for planning officials as envisioned in the Sustainable Development Training for Public Officials Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing the principal investigator's activities, accomplishments, problems, issues of concern, and recommended solutions concerning the manual and workshops. The quarterly report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party should be available at the BTMC meeting for discussion of his/her monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve the training of public officials. The basic outline of a Quality Assurance Plan follows.

Objective of monitoring

1. To observe the preparation of a manual for parish and local decision makers.
2. To document if workshops provide information on sustainable development and how local decision makers use the information.
3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A Third Party with no vested interest, but who is knowledgeable about the environmental resources of the BTES and the planning process.
2. Interviews (onsite, telephone, mail survey) with local decision makers.
3. Basic data
 - a. The manual has an inventory of sustainable environmental resources in the BTES.
 - b. Local decision makers can easily use the manual.
 - c. The document uses nontechnical language.
 - d. The workshops are timely, organized, and informative.
 - e. All workshop materials are provided.

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- f. Supplemental information is readily available.
 - g. Public announcements of the existence, location, and hours of the workshops appear in trade publications, newspapers, chamber of commerce and other economic development newsletters, bankers publications, and local governmental offices.
4. Subsequent review of statistics shows that the manual is used by parish and local staffs and decision makers.

Data evaluation

The BTMC shall work with the contractor to develop a procedure for reviewing data that provides the BTMC with the information it needs to determine the impacts of the manual and workshops.

Review of monitoring documents

The BTMC shall receive the draft monitoring document quarterly. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take appropriate actions.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared by the contractor for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

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CP-3 Sustainable Development Training for Public Officials

OBJECTIVES

1. To educate local officials and planners about the importance of long-term, comprehensive planning for sustainable economic development.
2. To offer information/guidelines to help ensure that plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy, one that does not diminish the natural resource base of the Barataria-Terrebonne estuaries.
3. To offer planning methods, fill identified information gaps, and address inconsistencies currently found in planning legislation.

DESCRIPTION

This action will produce a manual entitled, "Sustainable Development in the BTES" for distribution to all planning officials within the estuary. The manual will be a planning primer detailing the *whats, hows, and whys* of comprehensive planning. The manual will define the process of developing an environmentally sensitive and economically sustainable comprehensive plan and offers possible incentive and inducement strategies, methods of assessment and enforcement, and suggestions to reduce internal and external plan inconsistencies. Pitfalls and roadblocks to successful plan development and implementation will be outlined.

In addition, scheduled, periodic workshops will be conducted to facilitate the use of the manual and focus attention on the need for comprehensive planning to achieve environmental sustainability. These workshops will be offered to local officials and planners throughout the BTES and will serve the additional purpose of introducing BTNEP projects.

BACKGROUND/MAJOR ISSUES

While the State of Louisiana legislates that municipalities and parishes develop comprehensive plans, the constitution does not provide sufficient detail in many areas for local planners to perform their job in a consistent fashion. This lack of detail has led, in certain instances, to incompatible land uses and land uses which are destructive to the environment.

Contributing to this threat is the fact that the term "comprehensive plan" is not defined in Louisiana's legislation. This allows municipal and parish planners to determine which components of a plan they will address and which they will not. At the parish level a survey has shown that plan content, age, and sophistication can vary widely. A review of the plans at the municipal level also reveals inconsistencies in approach, with some plans having been developed over twenty years ago. A closer look at existing plans further illustrates the different levels of complexity of plan development as well, further complicating the potential problems in the BTES.

Another problem associated with planning legislation is a lack of enforcement. As indicated above, while the state mandates that a plan be developed, no mechanism exists to ensure that the plan is actually adopted and

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implemented. As a consequence, numerous municipalities have developed plans but have not formally adopted them while others have plans but have not appointed anyone to ensure compliance with its requirements.

If a municipality or parish develops a plan, there are no methods to encourage planning entities to assess the impact of their plans on adjoining communities. Nor is there any incentive for the entities to collaborate on plan development to ensure that infrastructure plans are consistent between parish or municipal boundaries. The lack of punitive measures for not planning also promotes an environment in which long-term planning is not adequately addressed, except in the BTES's largest urban centers.

Concurrency requirements are also lacking in state legislation. This allows major developments to be approved and built without full consideration of the impact on existing infrastructure. Such requirements have been successfully implemented elsewhere. In Florida, for example, new development cannot diminish service to the existing community.

All of these factors, in conjunction with a strongly accepted philosophy of minimal government intervention in private property issues, have produced widely accepted, although often misunderstood, planning practices which fail to consider the long-term consequences of development activities.

Recent research suggests that a clean environment produces economic growth, while a polluted environment retards it. This would indicate that comprehensive, basin-wide planning would, in the long run, be beneficial to the preservation of the estuary as well as to the economic well-being of estuary residents.

BENEFITS

It is imperative that individuals with responsibility for programs which impact the estuary receive priority attention to ensure that they understand the goals of BTNEP. One such goal is to discontinue or appropriately modify practices that negatively impact the estuarine ecosystem. The action project is designed to encourage the transition of planning officials' perspectives from a short-term benefits to a long-term results orientation.

While conducting their jobs, planners meet with local citizens, public officials, and developers, often making decisions without adequate knowledge of the concept of environmental and economic sustainability. This action will bring all planners in the estuary together so that they can be simultaneously introduced to BTNEP and the associated planning practices that would have an immediate impact on improving the environment. Over time, concepts embraced by the planners would be communicated to those they come in contact with while conducting daily business, initiating and institutionalizing a dissemination process that would facilitate estuary preservation and restoration initiatives.

The manual will necessarily be devoted to the BTES but will affect the entire State of Louisiana. The intent of the manual and follow-up workshops will be the introduction of sustainable development methodologies. The program will thus initially impact only those planning officials who are targeted by the program. As officials recognize the potential economic returns associated with proper planning, they will in turn begin to consider environmental impacts of basin development. Discussion of these concepts at public meetings, as well as by public service announcements, will further disseminate data contained in the manual.

IMPLEMENTATION SCHEDULE

No manual of the type recommended has been developed to date nor has any type of systematic training ever been provided to planning officials on comprehensive planning or environmental sustainability.

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The short-term plan (0-1 yrs.) calls for the Barataria-Terrebonne Management Conference (BTMC) to:

- S 1.00 Develop the manual concept.
- S 2.00 Develop a scope of work.
- S 3.00 Award a contract for production of the manual.

The medium-term plan (2-5 yrs.) calls for the contractor to:

- M 1.00 Research, write and publish the manual.
- M 2.00 Begin distribution.
- M 3.00 Conduct workshops, with follow-up workshops at two-year intervals.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC will serve as the lead implementor. It will develop a scope of work for the project and will award a contract to a qualified applicant to hold workshops and publish the training document. The foundation will be responsible for coordinating a range of educational activities intended to ensure community support and in soliciting legislative allies. This project merely expands the type of educational work that will be required to ensure that those individuals who are directly responsible for development activities in the estuary are intimately familiar with the estuary program, convinced of the need to do comprehensive planning and recognize the urgency of adopting sustainable development practices to reduce further degradation of estuary resources. The Regional Planning Commissions and the Louisiana Chapter of the American Planning Association will be contacted as potential support implementors, lending experience in writing the manual, conducting the workshops, maintaining contact with parish planners, acting as a resource for questions, implementation, and assessment. Both have regular contact with planners throughout the estuary and can serve as a ready conduit for ideas and feedback about the manual and the workshops.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---------------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| CP-3 | | | | | \$5,456 | \$12,000 |
| CP-3S1.00 | <i>develop manual concept</i> | | | | \$1,764 | \$0 |
| CP-3S1.01 | <i>planning, research</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S1.02 | <i>meetings and discussion</i> | BTMC | E | | \$168 | \$0 |
| CP-3S2.00 | <i>develop scope of work</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S3.00 | <i>award contract</i> | | | | \$2,096 | \$0 |
| CP-3S3.01 | <i>prep, review, award</i> | BTPO | E | | \$1,596 | \$0 |
| CP-3S3.02 | <i>publication costs</i> | BTMC | N | | \$500 | \$0 |
| CP-3M1.00 | <i>research, write, publish</i> | BTMC | N | | | \$7,313 |
| CP-3M2.00 | <i>distribution</i> | BTMC | N | | | \$188 |

Action Plan CP-3: Sustainable Development Training for Public Officials

| | | | | | | |
|-----------|------------------|------|---|--|--|---------|
| CP-3M3.00 | <i>workshops</i> | BTMC | N | | | \$4,500 |
|-----------|------------------|------|---|--|--|---------|

Table CP3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$53,300
 Total Funding Existing (Years 1-5): \$4,800
 Total New Funding Necessary (Years 1-5): \$48,500

Table CP3-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|---|--|--------|--|
| BTMC | \$500 Program office budget; license plate revenue | \$36,000 Program office budget; license plate revenue | \$6,000 Program office budget; license plate revenue | | \$6,000 Program office budget; license plate revenue |

Summary of new funding strategy: Funding for this action will come from excess capacity in the BTPO budget and from license plate revenues.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The following monitoring strategies do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Preparation of a manual for planning officials and workshops on the need for comprehensive planning to achieve environmental sustainability.

Interrelationships Among Components

The BTMC will contract with qualified individuals for the manual and workshops. The funding source remains to

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be identified.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To educate local officials, planners, and program managers about the importance of long-term, comprehensive planning for sustainable economic development.
 - a. The manual presents the importance of long-term, comprehensive planning for sustainable economic development.
 - b. The manual is concise and written in nontechnical language.
 - c. Workshops are organized, scheduled, and held.
 - d. The workshops have:
 - (1) an agenda;
 - (2) a convenient meeting site;
 - (3) sufficient parking;
 - (4) adequate facilities (room size, tables, chairs, heating/AC);
 - (5) presentations in nontechnical terms;
 - (6) supplemental material for distribution before meetings;
 - (7) recognized speakers with relevant material.
 - e. Workshops begin and end on time.
 - f. Workshop evaluation sheets are used.
 - g. Local officials, planners, and program managers attend the workshops and actively participate.
 - h. After six and twelve months, a follow-up interview/survey determines if ideas presented at the workshops were used to any degree.
2. To offer information/guidelines which will help ensure that plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy which does not diminish the natural resource base of the BTES.
 - a. The material offered provides information and guidelines which will help ensure plans developed by municipalities and parishes are based upon sound planning practices that promote a sustainable economy.
 - b. The provided information or guidelines address the issue of a diminishing natural resource base of the BTES.
 - c. The lessons from the workshops appear in decisions by officials.
 - d. Materials are in language appropriate for the audience.
 - e. The suggested materials are easily incorporated into the parish or municipal system.
 - f. Local decision makers helped develop the messages.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing local officials, planners, and program managers; observing the organization, conduct, and presentations of workshops; reviewing the manual for public officials and material used in support of the workshops; examining quantifiable data, such as the number of workshops and the attendance; and documenting responses of local officials, planners, and program managers to the information and ideas presented at the workshops and in printed materials.

Action Plan CP-3: Sustainable Development Training for Public Officials

Sampling design and statistical methods

The monitor will meet with the contractor once per quarter to discuss the workshops and the manual. At a minimum, four workshops will be attended to observe the procedure and the application of the manual. In addition, the monitor will interview local officials, planners, and program managers to determine if the concepts presented in the workshops and manual have altered the conduct of business or affected decisions. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, quarterly meetings with the workshop contractor, attendance at four workshops to observe procedures and application of the manual, and interviews with local officials, planners, and program managers). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 280 person hours for the year. The estimated cost for the first year is \$16,100 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor the preparation of the manual and workshops for planning officials as envisioned in the Sustainable Development Training for Public Officials Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing the principal investigator's activities, accomplishments, problems, issues of concern, and recommended solutions concerning the manual and workshops. The quarterly report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party should be available at the BTMC meeting for discussion of his/her monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve the training of public officials. The basic outline of a Quality Assurance Plan follows.

Objective of monitoring

1. To observe the preparation of a manual for parish and local decision makers.
2. To document if workshops provide information on sustainable development and how local decision makers use the information.
3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A Third Party with no vested interest, but who is knowledgeable about the environmental resources of the BTES and the planning process.
2. Interviews (onsite, telephone, mail survey) with local decision makers.
3. Basic data
 - a. The manual has an inventory of sustainable environmental resources in the BTES.
 - b. Local decision makers can easily use the manual.
 - c. The document uses nontechnical language.
 - d. The workshops are timely, organized, and informative.
 - e. All workshop materials are provided.

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- f. Supplemental information is readily available.
 - g. Public announcements of the existence, location, and hours of the workshops appear in trade publications, newspapers, chamber of commerce and other economic development newsletters, bankers publications, and local governmental offices.
4. Subsequent review of statistics shows that the manual is used by parish and local staffs and decision makers.

Data evaluation

The BTMC shall work with the contractor to develop a procedure for reviewing data that provides the BTMC with the information it needs to determine the impacts of the manual and workshops.

Review of monitoring documents

The BTMC shall receive the draft monitoring document quarterly. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take appropriate actions.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared by the contractor for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

Action Plan CP-4: Public Involvement in the Development of State Rules, Regulations and Guidelines

CP-4 Public Involvement in the Development of State Rules, Regulations and Guidelines

OBJECTIVES

1. To ensure that all stakeholders are involved in the state legislative and regulatory process.
2. To facilitate the development of regulatory and incentive policies which will encourage the balanced use of BTES resources.

DESCRIPTION

This action will create and implement a Public Involvement Plan to develop a set of uniform procedures or "recommended practices" that all agencies can use to involve the public in the development of State rules, regulations and guidelines. This action will complement and reinforce the role of the Barataria-Terrebonne Management Conference (BTMC) by establishing a process which significantly expands public dialogue and involvement in the creation and enforcement of the various rules, regulations and guidelines which impact the estuary.

This plan will inventory the existing formal and informal mechanisms to involve the public in the regulatory process, and examine their effectiveness. It will also assess the current level of public involvement, and determine the extent to which the public is informed of its rights and responsibilities in these areas. In addition, this plan will identify those groups that are currently monitoring regulatory issues, and evaluate how the BTMC can coordinate with those groups. The plan will specify innovative ways in which both public and private stakeholders can work together to develop appropriate, integrated and enforceable regulations. Finally, the plan will identify those regulations and procedures that need to be updated, streamlined or eliminated, focusing as well on the potential for certain regulations to be replaced by incentives.

Once completed, this plan will establish a "recommended practice" for agencies to follow in order to ensure that many different groups, including regulators, environmentalists, business and industry representatives, and the general public, will work together in developing parameters and guidelines for regulations which will impact the BTES.

BACKGROUND/MAJOR ISSUES

The current system by which the State establishes and enforces environmental rules, regulations and guidelines is both complicated and multi-leveled. The system consists of two major processes: the legislative process, in which statutory changes are made in the law; and, the regulatory process, in which agencies are mandated to write regulations to implement the statutes. In theory, the public - particularly those stakeholders most directly impacted - should be involved at both levels to ensure that the statutes and regulations are written in such a way that enables their effective enforcement. This is not always the case.

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Currently, public participation in the regulatory process comes at three levels. The first level is the promulgation level, the second is implementation level, and the third is the enforcement level. Despite the apparent opportunities for public participation, in reality the present system often has the effect of discouraging meaningful public involvement and of facilitating adversarial rather than constructive participation.

Public participation in this process is largely governed by the *State of Louisiana Administrative Procedures Act* and the *Federal Administrative Procedures Act*, though a number of other statutory and constitutional provisions may also come into play, such as the National Environmental Policy Act and Article 9 of the Louisiana Constitution. Generally, these laws require that government regulations and actions under those regulations be based on some kind of record that demonstrates that the agency considered enough factors to support a finding that it did not act arbitrarily and capriciously. To ensure an opportunity for the public to express its opinions the two Administrative Procedures Acts ordinarily require that notice of draft regulations or proposed actions under those regulations, such as the consideration of permits, be published and that the public be given an opportunity to comment. Unfortunately, the manner in which these things are publicized--in the Federal or State Registers, the legal notice sections of newspapers, and via special mailing lists--and the amount of information and time provided to the public are not realistic ways of reaching the public and encouraging their constructive participation. One of the basic tenets of the BTNEP is that if those individuals and groups affected by the laws and regulations could have a voice in the creation and change in those laws and regulations, not just in the review process, there would be a greater appreciation of the benefits of regulations and a higher incidence of voluntary compliance.

Over the last several decades, the state government has promulgated a regulatory system based largely on mandatory duties. There is increasing concern that regulations are out of touch with the needs and circumstances of those being regulated and are inadequate, whether as conceived or applied, to protect or achieve the public interest that justified the regulation in the first place. Not only are regulatory battles fought between government and private stakeholders, but between various private stakeholder interests as well, such as conflicts between recreational and commercial interests. Thought must be given to a system that makes better use of market forces and that reflects present needs and circumstances, and is predicated on the effective involvement of all stakeholders in the development of the regulations.

BENEFITS

Increasing the involvement of the general public in the regulatory process will encourage the adoption of regulations that are based on dialogue and, to the extent possible, agreement amongst diverse parties. It is hoped that this public empowerment will reduce levels of frustration among the regulated community and the general public, will foster a greater understanding and acceptance of regulations, and will increase the incidence of voluntary compliance. In addition, it may result in new ideas for protecting the resources of the estuary. Finally, the in-depth study of current regulatory practices will identify problems such as agency duplication, facilitating an effort to streamline and improve the regulatory process at every level.

IMPLEMENTATION SCHEDULE

Short-term plans call for:

- S 1.00 The production of the Public Involvement Plan. Specific plans are:
 - S 1.01 Designate a subcommittee to produce the plan (BTMC; Summer 1996).

Action Plan CP-4: Public Involvement in the Development of State Rules, Regulations and Guidelines

- S 1.02 Produce a preliminary report, including a study of existing public involvement mechanisms, an identification of groups involved in the process, an analysis of the prior effects of key regulations, and initial plan recommendations (Subcommittee; Winter 1996).
- S 1.03 Hold special meetings to develop innovative mechanisms for public involvement (BTMC; Spring 1997).
- S 1.04 Evaluate mechanisms and produce final plan report (Subcommittee; Summer 1997).
- S 1.05 Adopt the recommended practices to the extent practicable (BTMC; end of Summer 1997).

Mid-term plans are aimed at the adoption of new public involvement mechanisms. Specific plans are:

- M 1.00 Distribute the Public Involvement Plan and receive comments (BTMC; Fall 1997).
- M 2.00 Begin working with stakeholder groups and government agencies to encourage the adoption of the recommended mechanisms (Subcommittee; Fall 1997).
- M 3.00 Work with the State Legislature to create formal recommendations for legislation, if necessary, reflecting the recommendations of the Public Involvement Plan (BTMC; ongoing).

Long-term plans should include:

- L 1.00 Continuing review and revision of public involvement mechanisms, aiming to further integrate them into the management of the BTES.
- L 2.00 Further education of agencies and stakeholders of the need for increased involvement and the available mechanisms
- L 3.00 Publication of annual reports which update the progress of this action.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC will serve as the lead implementor, as it will have a diverse representation from across the estuary, and can most effectively establish a subcommittee on this issue. The BTMC will also be able to bring in expertise and stakeholders as needed to guide and support this action.

Additionally, all relevant agencies - particularly those directly responsible for creating and enforcing regulations - and interest groups - particularly those representing the regulated community - will be involved in a supporting role.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP4-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table CP4-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--|---|-------------------|---------|--------------------------|---------------------------------------|
| CP-4 | | | | | \$11,130 | \$15,847 |
| CP-4S1.00 | <i>public involvement plan</i> | | | | \$11,130 | \$0 |
| CP-4S1.01 | <i>designate a subcommittee</i> | BTMC | no cost | | | \$0 |
| CP-4S1.02 | <i>preliminary report: meeting and discussion</i> | BTMC-Public Involvement Subcommittee | E | | \$168 | \$0 |
| CP-4S1.03 | <i>preliminary report: review and information collection</i> | BTPO | E | | \$4,830 | \$0 |
| CP-4S1.04 | <i>preliminary report: analysis</i> | BTPO | E | | \$4,830 | \$0 |
| CP-4S1.05 | <i>innovative mechanisms</i> | BTMC-Public Involvement Subcommittee | E | | \$336 | \$0 |
| CP-4S1.06 | <i>final plan report: meeting and discussion</i> | BTMC-Public Involvement Subcommittee | E | | \$168 | \$0 |
| CP-4S1.07 | <i>final plan report: write, review, and edit</i> | BTPO | E | | \$798 | \$0 |
| CP-4S1.08 | <i>adopt practices</i> | BTMC | E: no estimate | | | |
| CP-4M1.00 | <i>distribute plan</i> | | | | | \$97 |
| CP-4M1.01 | <i>distribution</i> | BTPO | E | | | \$25 |
| CP-4M1.02 | <i>copying and publication</i> | BTPO | E | | | \$72 |
| CP-4M2.00 | <i>encourage adoption of recs.</i> | BTMC-Public Involvement Subcommittee | E | | | \$10,500 |
| CP-4M3.00 | <i>formal recs. to legislature</i> | BTMC-Public Involvement Subcommittee | E | | | \$5,250 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$74,500
 Total Funding Existing (Years 1-5): \$74,500
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

Action Plan CP-4: Public Involvement in the Development of State Rules, Regulations and Guidelines

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The following monitoring strategies do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Set uniform procedures or "recommended practices" that state agencies can use for involving the public in the development of State rules, regulations, and guidelines.

Interrelationships Among Components

A subcommittee of the BTMC will develop the plan.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To ensure that all stakeholders are involved in the state legislative and regulatory process. Successful public participation programs are characterized by a number of common elements (Cogan et al. 1986):
 - a. Meet legal requirements
 - (1) The public participation program meets minimal legal requirements.
 - (2) The public participation program exceeds minimal requirements.
 - (3) Flexibility is incorporated into the minimal requirements.
 - (4) The agencies build on this flexibility.
 - b. Clearly articulate goals and objectives
 - (1) The goals and objectives are clearly articulated.
 - (2) The agencies can identify the deficiencies.
 - (3) Project goals and objectives do not conflict with agency goals and objectives.
 - c. Political support
 - (1) Decision makers support public participation through actions rather than words.
 - (2) Decision makers review and use public comments.
 - d. Receive adequate funding, staff, and time
 - (1) There is adequate staff.
 - (2) Funds are adequate to support the staff and its activities.
 - (3) Funds are dedicated for the staff.
 - (4) The staff is trained for public participation.
 - (5) Time is provided for public participation.
 - e. Public comments are an integral part of the decision making structure
 - (1) Public comments are seriously considered by decision makers.
 - (2) The public sees how their efforts have made a difference.
 - (3) The comments are received in a timely manner so they could be incorporated into decision making.
 - f. Identify concerned or affected publics
 - (1) Public participation efforts are designed for the audience.
 - (2) Anyone can contact a leader.
 - (3) The message is constructed with the audience in mind.

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- (4) The correct media is contacted for informing the public about the meeting.
- g. Delineate clear roles and responsibilities for participants
 - (1) Participants are clearly identified.
 - (2) Participants have clear roles and responsibilities.
- h. A preliminary subcommittee report as outlined in the action plan is produced by the winter 1996.
- I. In the spring 1997 the BTMC holds special meetings to develop innovative mechanisms for public involvement.
- j. Work with stakeholders and legislators to prepare recommendations for legislation.
- k. The subcommittee continuously reviews public involvement and suggests refinements to the process as necessary.
- l. The BTMC educates agencies and stakeholders on the need to involve the public.
- m. The BTMC publishes an annual report on the progress of this action plan.
- 2. To facilitate the development of regulatory and incentive policies which will encourage the balanced use of the BTES's resources.
 - a. The strategy for public participation facilitates the development of regulatory and incentive policies.
 - b. Participants want to develop regulatory policies.
 - c. Participants want to develop incentive policies.
 - d. Public participation encourages balanced use of the BTES's resources.
 - e. The BTMC defines "balanced use" to the satisfaction of its members.
 - f. The public agrees on the definition of "balanced use".

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing members of the subcommittee who will develop the Public Involvement Plan; observing activities of the subcommittee as they develop the Public Involvement Plan; examining quantifiable data, such as number of meetings and attendance of subcommittee members; reviewing the support provided by participants; observing the response of the BTMC to the subcommittee's plan; and documenting the work of the BTMC, for example in defining "balanced use".

Sampling design and statistical methods

The monitor will interview by telephone or in person selected individuals each quarter to determine the activities of the subcommittee. In addition, the monitor will attend a minimum of four subcommittee meetings. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, interview subcommittee members, attendance at four subcommittee meetings, and review of materials). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 240 person hours for the year. The estimated cost for the first year is \$13,900 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

Action Plan CP-4: Public Involvement in the Development of State Rules, Regulations and Guidelines

An independent Third Party will monitor activities of the Public Involvement in the Development of State Rules, Regulations and Guidelines Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing action plan activities, accomplishments, problems, issues of concern, and recommended solutions. The quarterly report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party should be available at the BTMC meeting for discussion of his/her monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by a subcommittee of the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve public involvement in the development of state rules, regulations, and guidelines. The basic outline of a Quality Assurance Plan follows. Some sections have been expanded to illustrate possible approaches.

Objective of monitoring

1. To observe that steps have been taken to ensure greater stakeholder involvement in the state legislative and regulatory process.
2. To document if revised regulatory and incentive policies encourage the balanced use of the BTES's resources.
3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A subcommittee of the BTMC.
2. Interviews (onsite, telephone, mail survey) with state agency representatives who have knowledge about the state rules, regulations, and guidelines on public involvement.
3. Interviews (onsite, telephone, mail survey) with federal agency representatives who have knowledge about the state rules, regulations, and guidelines on public involvement.
4. Basic data:
 - a. The new guidance includes an inventory and synthesis of state rules, regulations, and guidelines for public involvement?
5. State decision makers make use of the new guidance.

Data evaluation

The subcommittee of the BTMC shall develop a procedure for reviewing data that will provide the BTMC with the information it needs to determine the impacts of the new guidelines.

Review of monitoring documents

The BTMC shall receive a quarterly monitoring document at least 15 days before the BTMC meeting. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

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A quarterly monitoring report will be prepared by the independent Third Party for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

Action Plan CP-5:
Agency Performance Review of the Wetlands
Permitting Process

CP-5 Agency Performance Review of the Wetlands
Permitting Process

OBJECTIVES

1. To improve methods in which agencies administer existing wetlands regulations.
2. To determine if multi-agency cooperative efforts can simplify user permit application procedures.

DESCRIPTION

This pilot project will establish a periodic evaluation process that assesses effectiveness of the manner in which current wetland permitting regulations are implemented and administered by public agencies. The project will not determine the adequacy of a regulation's ability to protect a natural resource, but will focus on how existing regulations are implemented, the inter-relationships between regulatory bodies, data requirements and how the process can be streamlined. In addition, the evaluation process will also be used to determine whether more productive roles could be played by the various commenting agencies involved in the regulatory process. Parties that would be included in the evaluation process would be all federal or state resource agencies that have responsibility in the wetland permitting process, the regulated community, local government representatives, the environmental community and the general public.

The evaluation process will be specifically tailored for each of the represented groups of evaluators by the implementors of this plan: implementors are strongly encouraged to utilize the services of an independent contractor to develop objective and unbiased results. Possible evaluation methods would include written questionnaires, inventories, surveys and personal interviews and should be conducted at regular intervals. Upon completion of the evaluations, the regulating agencies would be responsible for implementing any agreed upon changes.

The initial regulatory process to be evaluated is the Section 404(b)(1) wetland permitting process of the Clean Water Act administered by the U. S. Army Corps of Engineers (USACOE). For the purposes of this plan, the Coastal Use Permit process administered by the Louisiana Department of Natural Resources (LDNR) and the Water Certification process administered by the Louisiana Department of Environmental Quality (LDEQ) have been included as part of the regulatory process to be evaluated.

BACKGROUND/MAJOR ISSUES

Environmental regulations are created to preserve, and in a few cases, enhance natural resources that are important to the general public. When these regulations are appropriately administered, the natural resource by design is subjected to fewer assaults. The effective application of regulations thus protects resources from potential abuse ensuring that renewable resources are not depleted or damaged beyond a level from which they can recover. It is the general consensus of the public that government agencies do not implement environmental regulations appropriately. Cases have been made by the regulated community that obtaining necessary permits is both time-consuming and involves an inordinate amount of paperwork. Cited also are similar requirements of different agencies which do not appear to communicate with each other or coordinate data requirements. At the same time,

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there is the perception that environmental conditions are continuing to worsen in spite of the presence of an array of regulations to prevent further environmental degradation.

Agencies such as USACOE and LDNR have over time developed in-house procedures to meet legislative mandates on the environment. Procedures were a product of the existing organizational structures, physical location of offices and financial constraints. In most cases, legislation that affected several agencies did not automatically set in motion a process by which the agencies would cooperatively create procedures to develop the optimal application system. This evaluation of regulatory process and procedures should be recognized as only the first step towards accomplishing the objective of achieving highly effective implementation of existing wetland regulations. It is important that existing regulations be implemented with emphasis on the specific environmental conditions of this estuary and on the environmental priorities of the local and State communities. Effective implementation of environmental regulations affects virtually everyone in every community.

BENEFITS

By identifying specific activities within the regulatory process which could be changed, agencies will be able to more effectively apply regulations and lessen the frustration of the public in dealing with the regulatory process. Additionally, the evaluations could help balance and tailor Federal mandates with local conditions. These evaluations will also assist agencies with the difficult task of determining the most productive utilization of the limited staffs they have to accomplish their legislated mission. In the long-term, affected parties will gain more assurance that they will be involved in an ongoing evaluation process of the regulations that affect them. This will further reduce frustration levels and promote positive working relationships. These more productive relationships should encourage an increased support of the level of environmental protection and enhancement set forth in the BTNEP Shared Vision. Periodic evaluations will ensure that, as environmental conditions change over time, regulations will be implemented in such a way as to effectively address the highest priority issues of the communities at that time.

IMPLEMENTATION SCHEDULE

Initial steps have already been taken by the Regulatory Functions Branch at the New Orleans District office of the U.S. Army Corps of Engineers (USACOE), which has been working with USACOE Headquarters in Washington to begin development of a customer satisfaction questionnaire. The New Orleans District has already committed to distribute the questionnaire and has begun to suggest ideas for the most effective way to get the questionnaires to the target audience and to ensure a high percentage of questionnaire completion and return.

The Short-Term Plan (0-1 years) calls for all implementors to:

- S 1.00 Work toward formalizing a commitment to participate.
- S 2.00 Meet to determine evaluation procedures.
- S 3.00 Develop and distribute questionnaires.
- S 4.00 Review returned questionnaires.
- S 5.00 Recommend changes to the process and agree on changes to be made.
- S 6.00 Implement changes.
- S 7.00 Communicate survey results and process changes to the public.

**Action Plan CP-5:
Agency Performance Review of the Wetlands
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The Medium-Term Plans (2-5 years) are:

- M 1.00 Determine if other evaluators need to be brought into the process. If others are identified, the procedures outlined above as short-term plans should be applied (BTMC).
- M 2.00 Develop and implement a plan for monitoring the short-term effectiveness of the process (All Implementors).

Long-Term Plans (5-10 years) include continuing monitoring the effectiveness of the changes that were implemented, and make determinations as to whether they should be continued, and exploring the possibility of expanding this evaluation process to other regulatory programs or permitting processes.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementors for this action will be the U.S. Army Corps of Engineers, New Orleans District, Regulatory Functions Branch; the Louisiana Department of Natural Resources, Coastal Management Division; and the Louisiana Department of Environmental Quality. As the agencies respectively responsible for the administration of the 404(b)(1) wetland permitting process, the Coastal Use Permit program and the Water Certification process, it is appropriate that they be lead implementors. Support implementors will include the U.S. Environmental Protection Agency, Region VI; the U.S. Fish and Wildlife Service, Lafayette Field Office; the U.S. National Marine Fisheries Service, Baton Rouge Office; the U.S. Natural Resources Conservation Service, Louisiana Office; the Louisiana Department of Wildlife and Fisheries, Ecological Services Division; the Coalition to Restore Coastal Louisiana; the Louisiana Wildlife Federation; the Louisiana Landowners Association; the Louisiana Mid-Continent Oil and Gas Association; the Louisiana Independent Oil and Gas Association; local parish representatives; and, the BTMC. All of these entities can provide critical input to the evaluation process due to their role in the permitting process or because of the constituency they represent.

COSTS AND ECONOMIC CONSIDERATIONS

Table CP5-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table CP5-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| CP-5 | | | | | \$16,120 | \$2,793 |
| CP-5S1.00 | <i>survey commitment</i> | | | | \$2,688 | \$0 |
| CP-5S1.01 | <i>survey commitment</i> | USACOE | E | | \$336 | \$0 |
| CP-5S1.02 | <i>survey commitment</i> | LDNR | E | | \$336 | \$0 |
| CP-5S1.03 | <i>survey commitment</i> | LDEQ | E | | \$336 | \$0 |

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| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-----------|--------------------------------------|--------------------------|-------------------|-----------|--------------------------|---------------------------------------|
| CP-5S1.04 | <i>survey commitment</i> | LGOV | E | | \$336 | \$0 |
| CP-5S1.05 | <i>survey commitment</i> | USNPS | E | | \$336 | \$0 |
| CP-5S1.06 | <i>survey commitment</i> | USDA | E | | \$336 | \$0 |
| CP-5S1.07 | <i>survey commitment</i> | LDWF | E | | \$336 | \$0 |
| CP-5S1.08 | <i>survey commitment</i> | USEPA | E | | \$336 | \$0 |
| CP-5S2.00 | <i>determine eval. procedures</i> | | | CP-5S1.00 | | \$0 |
| CP-5S3.00 | <i>develop/distribute surveys</i> | | E | | \$3,696 | \$0 |
| CP-5S3.01 | <i>formalization and evaluation</i> | USACOE | E | | \$1,596 | \$0 |
| CP-5S3.02 | <i>copying and support</i> | USACOE | E | | \$500 | \$0 |
| CP-5S3.03 | <i>distribution</i> | USACOE | E | | \$1,600 | \$0 |
| CP-5S4.00 | <i>review returns</i> | USACOE | E | | \$4,200 | \$0 |
| CP-5S5.00 | <i>recommend process changes</i> | | | | \$4,536 | \$0 |
| CP-5S5.01 | <i>meeting and discussion</i> | BTMC | E | | \$504 | \$0 |
| CP-5S5.02 | <i>review and discussion</i> | USACOE | E | | \$504 | \$0 |
| CP-5S5.03 | <i>review and discussion</i> | LDNR | E | | \$504 | \$0 |
| CP-5S5.04 | <i>review and discussion</i> | LDEQ | E | | \$504 | \$0 |
| CP-5S5.05 | <i>review and discussion</i> | LGOV | E | | \$504 | \$0 |
| CP-5S5.06 | <i>review and discussion</i> | USNPS | E | | \$504 | \$0 |
| CP-5S5.07 | <i>review and discussion</i> | USDA | E | | \$504 | \$0 |
| CP-5S5.08 | <i>review and discussion</i> | LDWF | E | | \$504 | \$0 |
| CP-5S5.09 | <i>review and discussion</i> | USEPA | E | | \$504 | \$0 |
| CP-5S6.00 | <i>implement rec. changes</i> | | no estimate | | | |
| CP-5S7.00 | <i>results to public</i> | LDNR/ LDEQ/ USACOE | E | | \$1,000 | \$0 |
| CP-5M1.00 | <i>determine if other evaluators</i> | | no estimate | | | |
| CP-5M2.00 | <i>effectiveness monitoring</i> | | | | | \$2,793 |
| CP-5M2.01 | <i>effectiveness monitoring</i> | LDNR | E | | | \$399 |
| CP-5M2.02 | <i>effectiveness monitoring</i> | LDEQ | E | | | \$399 |
| CP-5M2.03 | <i>effectiveness monitoring</i> | LGOV | E | | | \$399 |
| CP-5M2.04 | <i>effectiveness monitoring</i> | USNPS | E | | | \$399 |
| CP-5M2.05 | <i>effectiveness monitoring</i> | USDA | E | | | \$399 |
| CP-5M2.06 | <i>effectiveness monitoring</i> | LDWF | E | | | \$399 |
| CP-5M2.07 | <i>effectiveness monitoring</i> | USEPA | E | | | \$399 |

Action Plan CP-5:
Agency Performance Review of the Wetlands
Permitting Process

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$26,800
Total Funding Existing (Years 1-5): \$26,800
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The following monitoring strategies do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Establish a process that periodically documents the effectiveness of the implementation and administration of current wetland permitting regulations.
 - a. Initial efforts will focus on the process for the USACOE Section 404(b)(1) wetland permits, the LDNR Coastal Use Permit, and the LDEQ Water Quality Certification.

Interrelationships Among Components

All federal and state agencies that have responsibility in wetland permitting, the regulated community, local government representatives, the environmental community, and the general public will be involved in the development of the evaluation process. These participants will have the opportunity to recommend actions that result in a more effective and efficient system of processing wetland permits. At this time, the federal and state agencies and the BTMC will assign staff to this project. The BTMC and agencies will determine if a contractor will be utilized and how the contract will be funded.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To improve methods in which agencies administer existing wetlands regulations.
 - a. Invited parties agree to participate in this effort.
 - b. The parties return the questionnaire in a timely fashion.
 - c. The responses indicate a positive attitude to the effort.
 - d. The parties agree to develop changes where the team feels such actions are needed.
 - e. Evaluators are brought into the process as needed.
 - f. The parties give serious consideration to public concerns during the evaluation process.
 - g. The parties agree to implement the recommendations within the latitude for interpretation under existing legislation.
2. To determine if multi-agency cooperative efforts can simplify user permit application procedures.

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- a. The parties agree on a monitoring process which determines the changes do simplify user permit application procedures.
- b. The BTMC and the involved parties will determine if other regulatory programs or permitting processes should be evaluated.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing participants from the Coastal Management Division, LDNR, New Orleans District, USACOE, and LDEQ; observing activities of the agencies when they meet to discuss the effectiveness of the implementation and administration of current wetland permitting regulations; and examining agreements developed by the participants.

Sampling design and statistical methods

Each quarter, the monitor will interview by telephone or at their office representatives of the New Orleans District, USACOE, Coastal Management Division, LDNR, and the LDEQ. At a minimum, the monitor will attend four subcommittee meetings estimated to occur quarterly. Current published literature will be systematically reviewed for ideas on implementation and administration of wetland permitting regulations. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, and interviews and meetings with staff of the Coastal Management Division, LDNR, LDEQ, and New Orleans District, USACOE, attendance at quarterly subcommittee meetings, and review of materials). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 272 person hours for the year. The estimated cost for the first year is \$15,600 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

The USACOE in coordination with the LDNR and the LDEQ will distribute, collect, and compile the data derived from a questionnaire about the permitting processes (Section 404(b)(1), Coastal Use Permits, and Water Quality Certification). An independent Third Party will monitor activities of the Agency Performance Review of the Wetlands Permitting Process Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing action plan activities, accomplishments, problems, issues of concern, and recommended solutions. The quarterly report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party should be available at the BTMC meeting for discussion of his/her monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with information and

recommendations agencies can use to improve their permit processing procedures. The basic outline of a Quality

Action Plan CP-5: Agency Performance Review of the Wetlands Permitting Process

Assurance Plan follows.

Objective of monitoring

1. To observe if the multi-agency cooperative procedure for evaluating the wetlands permitting process works.
2. To document if existing administration of wetland regulations can be improved.
3. To identify problems and issues of concern with the multi-agency cooperative procedure.
4. To recommend solutions to problems and issues of concern.

Data collection

1. Creation of a multi-agency team that includes representatives from the general public and special interests.
2. A questionnaire administered by the USACOE.
3. Regular meetings of the participants.
4. Basic data:
 - a. The proposed procedure allows for programmatic changes in a timely manner.
 - b. Agency staff seriously work to involve the regulated community and prepare a document that uses non-technical language.

Data evaluation

The USACOE, LDNR, and LDEQ will develop a procedure for reviewing data that provide stakeholders with the information needed to determine the impacts of the wetlands permitting process.

Review of monitoring documents

The BTMC shall receive the monitoring document quarterly. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared by an independent Third Party for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

ECONOMIC GROWTH ACTION PLANS

The intent of this group of actions is to help insure that increased economic opportunities are available to current and future generations and that those activities be promoted in such a way as to sustain the natural resources that others in our communities depend upon for their livelihoods. The Action Plans that follow should be viewed as only a beginning with respect to sustained long-term economic sustainability.

The **Economic Development** action plans were developed with the realization that the estuary's economic future is directly tied to its environmental well-being, and that the protection of the estuary's natural resources will ultimately be economically beneficial. Thus, the main focus of this Program Area is the development and promotion of businesses that utilize and encourage environmentally sustainable practices. In addition, the Economic Growth Alliance of the BTMC emphasized the importance of encouraging industries, such as nature-based tourism, that are tied to the estuary's natural and cultural resources. In developing the Action Plans in this area, the Alliance assembled a special Task Force to study the issues related to nature-based tourism within the estuary. In addition, Alliance members met with other economic development organizations in the BTES, including the South Louisiana Economic Council, to discuss ways in which the CCMP can incorporate the economic needs of the estuary.

The **Technology Transfer** action plans are designed to encourage the transfer of ecologically-sensitive technological advances to the BTES through the development and use of new equipment and practices. This effort will expose estuarine users to new technology and practices which are not only more environmentally benign, but often more cost-effective as well.

The **Cooperative Incentives** action plans focus on the need to provide greater incentives for the utilization of ecologically benign business practices. This area has been developed with the understanding that while regulations are intended to achieve certain environmental goals, they often do so in an adversarial fashion. These actions will promote the use of existing financial incentive programs as well as the development of new ones. In addition, they will educate estuary users about the overall intent of wetland regulations, with the assumption that an increased knowledge about the underlying purpose of regulatory activities will reduce permitting disputes.

In order to assist in the implementation of the Economic Growth action plans, it is anticipated that the Barataria-Terrebonne Management Conference will create a subcommittee on economic growth, to explore alternative strategies for pursuing the implementation of the Economic Growth action plans, as well as other actions which will promote environmentally compatible economic development in the estuary. One additional focus of this subcommittee will be to study the possibility of establishing a separate Economic Development Council, which would work in concert with the BTMC to promote environmentally sustainable development in the BTES. The idea for such a council was hatched by the BTMC during its earliest meetings. Such a council would operate with a mission to sustain and improve the long-term economic well-being of estuary residents and users by planning, developing and promoting environmentally responsible economic activity and to develop, share and promote innovative technologies that are environmentally responsible. Among the activities envisioned for this council are: reducing conflicts between economic and environmental interests, assisting in the transition and adaptation of economic changes, promoting and attracting new businesses, helping to ease the permitting burden, sustaining unique basin cultures, and maintaining and improving adequate infrastructure.

In addition to these actions, other ways to help accomplish this long-term goal for economic development may be to encourage development activities directed toward the most appropriate areas, which in most cases could be areas

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which are already within hurricane protection levees. Another long-term objective might be to encourage the redevelopment of previously used commercial sites rather than the conversion of natural habitats to development activities. A new program administered through EPA entitled the “Brownfields Economic Redevelopment Initiative” could assist where redevelopment is complicated by real or perceived environmental contamination. The BTMC economic growth subcommittee will explore these alternatives as the CCMP moves into the implementation stage.

EG-1 Funding Sources for New Businesses

OBJECTIVES

1. To create a financing infrastructure for environmentally sound economic activity.
2. To encourage entrepreneurship within the estuary.
3. To have the financial community become part of the BTNEP process.

DESCRIPTION

This action will combine the identification of sources of funds for businesses that are based on the sustainability of the natural resources or that are environmentally responsible with the means of identifying those individuals or organizations that are embarking in that direction.

It will entail the creation of data bases of available funding or loan programs from The U. S. Small Business Administration (such as the Pollution Control Loan Program, the Small Business Innovation Research Program, International Trade Loan Programs and the Export Revolving Line of Credit Program), the Louisiana Economic Development Corporation (such as Small Business Innovative Research Matching Grants), regional lending corporations, commercial banks, venture capitalists, the Economic Development Administration and other lenders and grantors. It will also entail developing a data base of potential participants in these programs. The publication of informational materials as to how to access the programs with continued updates, and the availability of assistance in the creation of business plans and financial packages. It will also attempt to create a group of BTES advocates within the financial community. Efforts can also be made to identify large corporate groups such as public utility companies that would be open to make grants and participate in loan guarantees.

Once established it will serve the Barataria-Terrebonne Management Conference (BTMC) as an encouragement to prospective ecologically responsible businesses to locate or expand within the communities of the estuary. It will also give strength to the Technology Exposition (see Action Plan *EG-4*).

BACKGROUND/MAJOR ISSUES

In the recent past dependence on the oil and gas and petrochemical industries to provide economic growth in the estuary led to little activity outside of those industries. There was a great deal of entrepreneurship as a result of those industries but it has not yet been adequately transferred to the new business environment in the area and its need for diversification. Little has been done in the context of this plan to identify existing programs that could tie into this effort. As a long range plan to increase economic activity, hopefully leading to new jobs, this plan could eventually influence many residents of the estuary as well as business leaders. By encouraging responsible economic activity this plan can radically decrease negative impacts on the seven priority problems.

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BENEFITS

This along with the other economic growth activities included in this management plan in addition to expanding opportunities for sustainable economic development can also expand the network of people and organizations committed to the long term future of a healthy estuary.

IMPLEMENTATION SCHEDULE

Short Term: The initial steps in this plan will entail the gathering of all of the necessary information and the creation of the means for identifying and accessing potential beneficiaries and will include:

- S 1.00 Either obtain a seed grant or get a sponsoring organization to do the initial research.
- S 2.00 Tie into the Technology Exposition.
- S 3.00 Identify available training programs in financing business activities.
- S 4.00 Work in concert with the Management Conference and the Technology Exposition in identifying potential and existing businesses.
- S 5.00 Publish a handbook with sufficient copies to make it readily available through banks and other appropriate institutions.

Medium Term:

- M 1.00 Devise strategies to make the availability of this information and the availability of assistance in obtaining funds common knowledge throughout the estuary.

The long-term plan is to improve and expand the services available.

LEAD AND SUPPORT IMPLEMENTORS

The Program Office staff should be the lead implementor. Others could include: universities, the Louisiana Department of Economic Development, Chambers of Commerce, Metrovision, Bayou Vision, parish, municipality and regional economic development entities, lending institutions.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG1-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

**Action Plan EG-1:
Funding Sources
for New Businesses**

Table EG1-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--------------------------------------|---------------------|---------------------------|----------------|----------------------------------|--|
| EG-1 | | | | | \$33,740 | \$987 |
| EG-1S1.00 | <i>obtain a seed grant</i> | | | | \$3,234 | \$0 |
| EG-1S1.01 | <i>obtain a seed grant</i> | BTPO | E | | \$2,436 | \$0 |
| EG-1S1.02 | <i>obtain a seed grant</i> | LDED | E | | \$798 | \$0 |
| EG1S2.00 | <i>tie into expo</i> | | | | \$840 | \$0 |
| EG1S2.01 | <i>tie into expo</i> | BTPO | E | | \$504 | \$0 |
| EG1S2.02 | <i>tie into expo</i> | BTPO | E | | \$336 | \$0 |
| EG-1S3.00 | <i>identify training programs</i> | | | | \$1,680 | \$0 |
| EG-1S3.01 | <i>identify training programs</i> | BTMC | E | | \$1,596 | \$0 |
| EG-1S3.02 | <i>identify training programs</i> | BTMC | E | | \$84 | \$0 |
| EG-1S4.00 | <i>identify potential businesses</i> | LDED | E | | \$13,986 | \$0 |
| EG-1S5.00 | <i>publish handbook</i> | BTMC | N | | \$14,000 | \$0 |
| EG-1M1.00 | <i>find areas of synergy</i> | no cost | no cost | | | \$0 |
| EG-1M2.00 | <i>devise strategies</i> | | | | | \$987 |
| EG-1M2.01 | <i>devise strategies</i> | BTMC-Subcommittee | N | | | \$84 |
| EG-1M2.02 | <i>devise strategies</i> | LDED | N | | | \$84 |
| EG-1M2.03 | <i>devise strategies</i> | Metrovision | N | | | \$84 |
| EG-1M2.04 | <i>devise strategies</i> | Bayou Vision | N | | | \$84 |
| EG-1M2.05 | <i>devise strategies</i> | Academic Insts. | N | | | \$84 |
| EG-1M2.06 | <i>devise strategies</i> | Local Govts. | N | | | \$84 |
| EG-1M2.07 | <i>devise strategies</i> | Lending Inst. | N | | | \$84 |
| EG-1M2.08 | <i>implementation of strategies</i> | BTMC - Subcommittee | N | | | \$399 |

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FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$37,700
 Total Funding Existing (Years 1-5): \$22,100
 Total New Funding Necessary (Years 1-5): \$15,600

Table EG1-1. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|---|--|--------|--------|--------|
| BTMC | \$14,000 BTPO budget surplus; license plate revenues | \$1,600 BTPO budget surplus; license plate revenues | | | |

Summary of new funding strategy: Costs incurred by the Management Conference for handbook development and information dissemination will come from BTPO budget surplus and license plate revenues. The plan assumes that other organizations will supply the two days of staff time each necessary to implement this action.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-related projects.

Components of Plan

1. Identification of current or potential individuals and organizations looking to develop or expand businesses that are based on the sustainability of natural resources or that are environmentally responsible.
2. Identification of funding sources and other resources available to support these businesses.
3. Development of mechanisms for maintaining and disseminating the information collected to the people and organizations identified - including the creation of needed databases and publication of informational materials on how to access programs and assistance available.
4. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural

Action Plan EG-1: Funding Sources for New Businesses

resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Funding for initial research is obtained.
2. Available funding sources are identified and documented.
3. Available training programs for financing business activities are identified.
4. Potential and existing businesses are identified.
5. Databases and methods for information access and distribution are developed.
6. The Technology Exposition is utilized to distribute information obtained and/or to identify interested parties and program participants.
7. Handbook is published and distributed through banks and other appropriate institutions.
8. Areas of synergy with the Management Conference and other entities in the Basins are identified.
9. Strategies are developed to make the availability of this information and the availability of assistance in obtaining funds common knowledge throughout the Estuary.
10. The number of inquiries received during each month, the type of businesses requesting information, the type of information requested and whether or not the requested information was available is documented.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria, project activities will be documented and monitored by an independent Third Party.

Data collection methods

The Program Office will collect and compile summary statistics on:

1. The number of funding sources and resources identified.
2. The number of potential participants identified.
3. The number and type of inquiries made.
4. The number of handbooks and/or other resources distributed.
5. The number of financial institutions participating in the effort.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation. The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Cost estimates

Based on the specified scope of services an estimated 82 person-hours will be required at an estimated total annual cost of \$4,100 which includes salary, fringe benefits, overhead and associated expenses. To reduce the overall cost, efforts to document and monitor plan implementation can be combined with monitoring the implementation of other Action Plans.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Program information is reaching appropriate parties.

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2. Program participant satisfaction - in terms of usefulness of the information and resources available, ease of access in obtaining information and effectiveness in assisting in the establishment or expansion of business efforts.
3. Members of the financial community (institutions and individuals) are participating in the BTNEP process.
4. There is growth in total funding received within the region for new business starts and expansions.
5. Businesses within the area are receiving an average, or better than average, share of available funding; where average share is calculated on a comparison of dollars per capita.
6. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
7. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. The number and types of businesses requesting information, the type of information requested and whether or not the requested information was available.
2. Number of financial institutions and/or individuals participating in BTNEP activities.
3. Participant satisfaction with associated CCMP support activities as well as with the accessibility of funding and support from private financial institutions.
4. Total funding levels for programs identified, total received by Louisiana businesses, total received by businesses within the region.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - The number and types of businesses requesting information, the type of information requested and whether or not the requested information was available will be collected and compiled by the Program Office.

Participation of Financial Community - Survey of financial institutions (both participating and non-participating).

Participant Satisfaction - Survey of program participants.

Funding Levels - Current funding levels (total program, in Louisiana, in the Estuary) for programs identified should be collected and maintained in the database as part of continuing efforts to document fund availability. Actual value data on total funding received from private funding sources is most likely not publicly available; however, information on the accessibility of these funds can be obtained from local businesses through the Participant Satisfaction survey. In addition to these quantitative measures, an indication of the direct impact of project activities in assisting in the acquisition of both private and public funding can also be obtained from the Participant Satisfaction survey.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources

Action Plan EG-1: Funding Sources for New Businesses

including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.

2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Participant Satisfaction - Survey or surveys of participants will be utilized to ascertain satisfaction and usefulness of program resources provided as well as with the accessibility of funding and support from private financial institutions. The frequency and sampling of participants contacted will depend on the level of participation, the number of participants and available funding (Medenhall 1971).

Funding Levels - As a comparative basis for measuring the overall success of regional businesses in obtaining funding, three measures can be examined. The first measure is the total level of funding received by businesses within the region - is it increasing, holding steady or decreasing? Secondly, is total funding as a percent of total funds available increasing, holding steady or decreasing? Finally, to measure whether the region is receiving an average or better than average share of available funding, funding levels for total funds available, funds received by Louisiana businesses and funds received by businesses within the region on a per capita basis need to be compared and evaluated over time on an annual and aggregate basis.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMF. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review

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and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for a estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Participant Satisfaction - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimated is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Funding Levels - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 30 person-hours will be required for an estimated total annual cost of \$1,500 which includes salary, fringe benefits, overhead and associated expenses.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for a estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

EG-2 Nature-Based Tourism and Recreation

OBJECTIVES

1. To encourage natural resource-based tourism activities that enhance and do not diminish the resources of the estuary.

DESCRIPTION

The product of this action plan will be the development of a 'Tourism Plan' for the BTES. This action plan was built by a special task force representing Management Conference members, Tourist Commissions, the Louisiana Department of Culture Recreation and Tourism, the LSU Agricultural Center, the LSU Sea Grant, the National Park Service, and private citizens. Some of the key considerations to be infused in the plan are:

1. *Inclusive Planning.* All planning will be inclusive in terms of the people involved and the range of activities included in the plan. An effective tourism plan will require commitment from the residents and businesses of the estuary. Residents, as stakeholders in this plan, must be involved in expanding and implementing the plan. For planning to be effective, additional meetings will be held that include local recreation and tourism-related businesses (marinas, guides, tour operators, restaurants, etc.), public and nonprofit agencies (police juries, local staff of national and state parks, tourist commissions, conservation groups, etc.), and the public at-large. Points to consider in expanding the plan include: educating local residents on the economic and environmental value of the natural resources in the estuary; preserving the cultural landscape of the area; linking nature to the history and culture of local communities; educating tour guides, motel owners, etc. with easy-to-understand scientific data specific to their needs; forming an estuary-wide tourism council; arranging regular meetings across the industry and geography of the area; having a clear vision of the plan's goals; and keeping the public involved.
2. *Promote the Estuary to the Industry and Public.* Nature-based tourism aspects of the estuary should be promoted within the industry and to the public. The first step in developing sustained growth in nature-based tourism is to convince local residents and the local tourism industry that the estuary is an important source of economic opportunity. Public relations programs educating the public of the dollar value of tourism in the estuary and the degree that tourism is nature-related are important in generating support for continued tourism development and a public commitment to maintain and enhance the natural resource base. A coordinated marketing plan for the estuary would define and promote cooperative relationships among the parish tourist commissions, the state, and commercial tourist attractions.
3. *Designated Points of Interest.* Points of tourism interest and interaction with the natural environment should be clearly identified. Historical, cultural, and natural points of interest to tourists should be clearly marked with appropriate signage and information. Access points to natural attractions should be improved or developed. Scenic trails, including scenic highways (accessed by boat, canoe, car, bicycle, or walking) should be considered for development, especially Louisiana highways 56, 45 and 308.
4. *Keep It Clean and Beautiful.* Promote education, enforcement, and clean-up programs to address litter and conservation of resources. A universal complaint about rural Louisiana is the amount of litter and debris on highways and waterways. A very early step in the plan should be an estuary-wide program of litter clean-up and education. Several parish programs already exist and can serve as the basis of a program that would show

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visible results in a short period of time. A major benefit of these types of programs is increased pride in the community. As public involvement in litter programs increases, enforcement of existing litter and conservation laws becomes more likely.

5. *Seek Opportunities.* Encourage development of new tourism ventures and external funding of programs and projects contributing to education and sustained use of natural resources. Entrepreneurship in developing commercial nature-based tourism ventures should be enhanced. Existing business incubator programs at regional universities may be of assistance. Public agencies should actively pursue external funding sources, ranging from federal grants to private endowments.
6. *Build the Physical Infrastructure.* Plan for the expected increase in demand for government and retail services. Anticipate physical infrastructure needs typically provided by state and local government - highways, public restrooms, sanitation services, parks, and rest areas. Also consider the demand for retail services such restaurants, gas stations, bed & breakfasts, and motels. Finally The Great Texas Coastal Birding Trail project, should be considered as a possible model. The infrastructure of that trail can suggest possibilities for Louisiana, including the possibility of continuing the trail across the Louisiana coast.

BACKGROUND/MAJOR ISSUES

Much of the current tourism industry in the Barataria-Terrebonne Estuary can be described as nature-based. Tourism in the estuary thrives from linkages to both the culture and the natural resource base. The culture and history of the estuary have been heavily influenced by the natural resources of the area. These influences are directly seen in tourism promotion of the area that emphasizes the Cajun culture and its relationship to land and water resources.

Traditionally, tourism in the estuary has been influenced by recreational fishing and hunting use of the natural resource. In recent years, decline in fish and wildlife populations have resulted in management strategies that have limited these consumptive recreational uses of the resource. More recently, there has been an increase in nonconsumptive tourism activities - birding, canoeing, hiking, biking, swamp and marsh tours, and sightseeing - that allow the individual to interact with the natural environment. From experiences in other areas there is an ever-growing market in this arena that could result in much greater economic impact than is often assumed.

Whether the tourism activity is consumptive or nonconsumptive, it has become increasingly obvious that the tourism industry in the estuary depends on the natural resource base for its continued economic livelihood. The industry, therefore, has a vested interest in sustaining the natural resource base.

Nature-based tourism is not highly visible in local communities of the estuary, in part because the current commercial impact of the activity is more often through indirect activities (service stations, motels, restaurants) rather than direct activities (swamp tours, guiding services). The volume and value of tourism is often not recognized by the general public. In addition, the influence of the natural resource base on cultural activities is often taken for granted. Stakeholders interested in nature-based tourism need to clearly establish the importance of sustaining and maintaining the integrity of the natural resource base of the estuary with local residents and the tourism industry. The tourism industry needs to establish that it too has a claim in the use of the natural resource base, along with other competing interests for the resource.

Failure to establish the importance of the natural resource base to tourism development of the estuary will potentially limit future economic growth of the industry if the resource is not sustained. It could result in lost opportunities to diversify and strengthen the local economy, enhance community pride and the quality of life of estuary residents,

Action Plan EG-2: Nature-Based Tourism and Recreation

and create new business opportunities and employment. A developing nature-based tourism industry may attract additional federal/state dollars for resource enhancement and improvement in the quality of fish and wildlife habitat.

This action plan can potentially influence a large number of estuary residents if the relationship between the history and culture of the area (Acadian, Creole, Native American, etc.) and the natural resource base can be brought to the forefront. The plan should include all parishes included in the estuary and may expand beyond that number if logical historical and resource ties exist. Persons outside the estuary will benefit through access to the sustained natural resource, by traditional recreational activities (fishing and hunting) and alternative activities that allow people to interact with the natural resources of the estuary.

The potential of nature-based tourism and recreation in the estuary is influenced by each of the seven priority problems identified by the BTNEP. Changes in natural water flows and sediment reduction impacts the overall health of the estuary and the sustainability of the natural resource base that tourism depends on for economic growth. Habitat loss/modification and changes in living resources impacts the commercial value of wildlife, waterfowl and fish species of the estuary. Commercial hunting and fishing (mostly trapping and alligator hunting) are an important part of the culture of the estuary which contribute to the tourism appeal of the area. In addition, public access to the natural habitat is a growing source of tourism appeal from nonconsumptive uses of the resource. In summary, the tourism industry in the estuary is dependent on a healthy, sustainable, natural resource base.

Nature based tourism is linked strongly to other action plans, most notably *SR-14, Estuarine Curriculum Development* and *EM-5, Preservation and Restoration of Barrier Islands*. Partnerships can be created between schools, park and recreation departments, and private tour or fishing guides. Restoration of barrier islands is central for sustaining birding sites, as is the maintenance of wooded spoil banks and levees.

BENEFITS

A successful tourism plan will contribute to the sustained and improved long term economic well-being of estuary residents and promote environmentally responsible economic activity. Educating people about the value of cultural and natural resources will help to sustain and enhance these resources.

IMPLEMENTATION SCHEDULE

There are a number of businesses and activities that have already begun this process: Louisiana Scenic Byways Program, Louisiana Recreational Fishing Board, Intermodal Surface Transportation Efficiency Act, DOTD bike trail grants, Wallop-Breaux funds for piers\boat ramps, National & State Parks, private sanctuaries, swamp tours, Charter boats, bed & breakfasts, Dept of Wildlife & Fisheries fishing guides, etc. The BTNEP program has contracted for the creation of a visitors guide to the estuary. The Louisiana Coastal Wetlands Workshops at LUMCON and Lafitte have been well received. There are a number of active tourists commissions in the estuary that have expressed an interest in cooperating with this plan.

The objectives of the short-term plans (0-1 years) are to further develop the practical considerations of this arena. The plans will include:

- S 1.00 Conduct two more planning meetings to further develop this plan (Program Office staff & facilitator; Fall 1995).
- S 2.00 Obtain material from Texas re: The Great Texas Coastal Birding Trail (Louisiana Office of Tourism; Fall 1995).
- S 3.00 Identify potential entrepreneurs (Tourism Task Force; Winter 1996).

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S 4.00 Blend into BTNEP Technology Exposition (Program Office staff; Spring 1996).

Medium-term and long-term plans include:

- M 1.00 Development of working alliances.
- M 2.00 Identification of funding sources.
- M 3.00 Finalization of the birding blueprint.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementor would begin as the Program Office staff through the development of a estuary Tourism Task Force that would be blended into the Barataria-Terrebonne Management Conference (BTMC). From conversations with the Tourism directors of Terrebonne and Lafourche parishes offices of tourism feel that the tourism industry has not been included adequately in economic development activities so that the relationship of tourism to the economic development community should be strengthened.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG2-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---|--------------------------------------|---------------------------|----------------|----------------------------------|--|
| EG-2 | | | | | \$1,974 | \$13,493 |
| EG-2S1.00 | <i>planning meetings</i> | BTMC | E | | \$168 | \$0 |
| EG-2S2.00 | <i>obtain materials</i> | no cost | no cost | | \$0 | \$0 |
| EG-2S3.00 | <i>identify potential entrepreneurs</i> | LDCRT | E | | \$966 | \$0 |
| EG-2S4.00 | <i>tie into expo</i> | | | | \$840 | \$0 |
| EG-2S4.01 | <i>tie into expo</i> | BTPO | E | | \$504 | \$0 |
| EG-2S4.02 | <i>tie into expo</i> | BTPO | E | | \$336 | \$0 |
| EG-2M1.00 | <i>develop working alliances</i> | LDCRT | E | | | \$3,486 |
| EG-2M2.00 | <i>identify funding sources</i> | LDCRT | E | | | \$3,486 |
| EG-2M3.00 | <i>finalize the blueprint</i> | | | | | \$6,521 |
| EG-2M3.01 | <i>meeting, planning, analysis</i> | BTMC | E | | | \$5,250 |
| EG-2M3.02 | <i>meeting, planning, analysis</i> | agencies | E | | | \$872 |
| EG-2M3.03 | <i>official review and approval</i> | local planning agency | E | | | \$399 |

Table EG2-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors

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does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$56,000
Total Funding Existing (Years 1-5): \$56,000
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The development of a 'Tourism Plan' for BTES is the major task of this Action Plan. Other ancillary components of the plan include:

1. Identification of potential entrepreneurs interested in developing the tourism industry.
2. Development of working alliances.
3. Identification of funding sources for plan implementation.
4. Finalization of the birding blueprint.
5. Strengthen the relationship of tourism to the economic development community through the inclusion of the tourism industry in the planning process.
6. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives. Nature-based tourism is strongly linked to other Action Plans, most notably SR-14, Estuarine Curriculum Development and EM-5, Preservation and Restoration of Barrier Islands.

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Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. The BTES 'Tourism Plan' is developed.
2. The plan encompasses the considerations for plan development specified in the Action Plan.
3. The materials on the Great Texas Coastal Birding Trail are obtained.
4. The birding blueprint is finalized.
5. Potential entrepreneurs are identified.
6. Project activities are blended into the BTNEP Technology Exposition.
7. Working alliances are developed.
8. Funding sources are identified.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The project success of the current Action Plan as specified in the CCMP will be measured in terms of the completion of a 'Tourism Plan' that is consistent with the considerations for plan development specified in the plan. Successful plan development will address the following:

1. Inclusive planning in terms of the people involved and the range of activities included.
2. Clear establishment of the importance of sustaining and maintaining the integrity of the natural resource base of the estuary.
3. Education of the public on the dollar value of the tourism industry.
4. Appropriate signage and information for designated points of interest.
5. Improvements or development of access points to natural attractions.
6. Promotion of education, enforcement and clean-up programs to address litter and conservation of resources.
7. Encourage development of new tourism ventures and external funding of programs.
8. Anticipate physical infrastructure needs.
9. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. 'Tourism Plan' completion

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2. Tourism Plan Evaluation - Once the 'Tourism Plan' is developed, monitoring strategies will need to be developed for its implementation. In expectation of this need the following measures are presented to monitor tourism promotion:
 - a. Number of tourism-related jobs.
 - b. Dollar amount of tourist expenditures.
 - c. Number of tourists from targeted areas who visited the region.
 - d. Number of participants in state-sponsored promotional events and travel opportunities.
 - e. Number and percent of households that visited the region after utilizing program-sponsored travel information services.
 - f. Ratings of the quality of state travel information services by households that utilized program services (Winnie 1977).

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Plan Development - The 'Tourism Plan' will be reviewed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate the plan for consistency with project objectives and criteria and provide monitoring reports to the BTMC detailing the plan's success in meeting these criteria and any problems identified. This could be accomplished in conjunction with monitoring plan implementation as specified in a prior section of this monitoring strategy.

Tourism Plan Evaluation - To be expanded after the 'Tourism Plan' is completed. The collection of data for tourist related activities will require a combination of primary and secondary data sources including user surveys, state and local program statistics and industry specific economic growth indicators as outlined below in Overall Economic Growth.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

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Sampling design and statistical methods

Tourism Plan Development - There are no relevant sampling design or statistical methods associated with this task.

Tourism Plan Evaluation - To be determined after the 'Tourism Plan' is completed.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as "new wave" economic developments which include the types of programs presented in the CCMP. Examples of "new wave" economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These "new wave" programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Plan Development - Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Tourism Plan Evaluation - To be determined after the 'Tourism Plan' is completed.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.

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Nature-Based
Tourism and Recreation**

4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

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EG-3 Nutria Market Development

OBJECTIVES

1. To reduce the adverse impacts on vegetated wetlands caused by overpopulation of nutria (*Myocaster coypus*) and encourage the development of a private cooperative venture responsible for buying, holding, and selling nutria products.

DESCRIPTION

This plan will serve to increase awareness about the problems of nutria herbivory and the overpopulation of nutria. In doing so, this plan will also bring attention to the efforts of the Louisiana Department of Wildlife and Fisheries (LDWF) and the Louisiana Fur and Alligator Advisory Council to establish a private cooperative venture. Both groups are working to establish a mechanism to finance this cooperative year round. In addition, this plan serves to encourage the implementation of a demonstration project through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA).

This action plan also involves educating the public concerning the need to harvest this renewable natural resource and the reasons for doing so. This has already been initiated by the Louisiana Fur and Alligator Advisory Council. The public must be made aware of the adverse impacts associated with nutria herbivory and that without some control on the population, problems will likely worsen. In addition, the Barataria-Terrebonne Management Conference (BTMC) will supplement the efforts of the Louisiana Fur and Alligator Advisory Council by promoting the sale of Louisiana bayou nutria.

BACKGROUND/MAJOR ISSUES

Overpopulation of nutria in coastal environments is resulting in overgrazing of wetland vegetation and resultant degradation and loss of marsh. The first quantitative aerial surveys of vegetative damage caused by nutria herbivory in the fresh to brackish marshes of the Barataria and Terrebonne basins were conducted by Linscombe and Kinler. They delineated approximately 15,476 acres (24 sq.mi) of vegetative damage caused by nutria. Since about 25% of the marshes were viewed, total damage is probably much greater (probably closer to 60,000 acres in these two basins alone). Nutria herbivory in forested wetlands and saline marshes were not evaluated. Analysis of the data collected during the latter flight indicated that of the initial damaged sites, only 38% showed some recovery, 56% stayed the same and 6% of the damaged sites were worse. The degree of damage and observed poor recovery is alarming to resource managers and scientists. The extent to which marsh can recover following eatouts can only be determined through future surveys of damaged areas. The problems associated with nutria herbivory can have serious deleterious effects on ongoing and proposed coastal restoration projects. Millions of dollars are now being spent annually to restore our coastal wetlands. Nutria herbivory in these areas must be controlled to maximize the benefit of these restoration projects.

Nutria herbivory has also been identified as a severe problem in areas other than coastal marshes including cypress tupelo swamps, agricultural lands, and residential areas. Many reforestation efforts involving the planting of cypress seedlings have failed due in large part to nutria herbivory. In the 1980's a study was undertaken by William Conner and others to assess the effects of hydrology on forest communities. One aspect of their study required the planting of 100 cypress seedlings under established cypress stands in three different locations. Within three months, 100%

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mortality of the planted cypress seedlings occurred and was determined to be caused by nutria. In addition they observed nearly 100% mortality of naturally regenerated cypress seedlings that were included as part of the overall study. Nutria also damage large cypress trees by girdling them. This is thought to occur during winter months when other food sources may be scarce. While girdling trees may not cause death directly, it is believed that it may hasten the death of trees suffering from other stresses such as saltwater intrusion and inundation (Nutria and Muskrat Management Symposium Proceedings, 1992).

Williams, Inc. initiated efforts to stabilize spoil banks by planting hardwood seedlings at a number of sites on its property. One aspect of the project involved planting 2,000 seedlings of various species in five areas in the Atchafalaya Basin. By the second year, seedlings at three sites were totally destroyed by nutria, some damage was observed on the fourth site, and extensive efforts were undertaken to protect seedlings at the fifth site by installing predator guards. However, the use of predator guards is expensive in terms of cost, logistics, and installation.

No effort has ever been made to quantify the damage caused by nutria within swamp habitats on a broad geographic scale and then to express those impacts in terms of economic and ecological implications.

It is estimated that in 1991, nutria caused approximately two million dollars in damage to the sugarcane industry much of it directly related to herbivory. Of greater consequences to rice farmers are the problems associated with nutria burrowing holes in levees. This has also caused problems with crawfish farmers. Burrowing undermines the levees which in turn causes them to collapse. These levees must be maintained by the farmer and therefore represent an added expense of doing business (Nutria and Muskrat Management Symposium Proceedings, 1992).

Recently, officials in Jefferson Parish have been trying to address the problems caused by nutria that have moved into urban areas. The issue here is not only focussed on herbivory but also the problems associated with these animals burrowing into the levees of existing canals. These canals serve as conduits that move stormwater from residential areas. Burrowing into canal banks and heavy grazing on bank vegetation seriously undermines bank stability. This ultimately could lead to the destruction of the canal bank itself which then would cause serious drainage problems for local neighborhoods.

Louisiana's Nutria Control Cost-Share Program

Louisiana's natural resource agencies, landowners, and the Louisiana Legislature saw the need to address the nutria herbivory problem and in 1990 developed what is called the Nutria Control Cost-Share Program. This program was authorized by the Louisiana Legislature through the passage of the Nutria Control Cost-Share Act of 1990. The program requires a cooperative effort between landowners and the LDWF and can best be described as an incentives program.

Since the initiation of the Nutria Control Cost-Share Program, only one landowner has attempted to enter into an agreement with the State, however, no monies were ever expended as part of this program. Landowners and Louisiana's Natural Resource Agencies found that the program was too management intensive. In addition until recently, an effort was never made to comprehensively assess nutria herbivory damage over a large geographic scale. The Nutria Control Cost-Share Program has not been considered successful for these as well as other reasons.

Private Fur Corporation

Interest in developing a private fur corporation has been gaining momentum in Louisiana. Both the LDWF and the Louisiana Fur and Alligator Advisory Council have been encouraging its development. A corporation is needed to provide a continuous supply of nutria pelts in large numbers year round. Requests for large numbers of nutria pelts have already been made but no mechanism is in place to provide them. The corporation as envisioned would buy

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nutria pelts from local trappers, buyers and dealers and hold them until shipping orders were received from international buyers.

Exporters representing China have recently indicated an interest in large quantities of nutria meat for human consumption. Regulations have been finalized with the Food and Drug Administration (FDA), the Louisiana Department of Health and Hospitals (LDHH) and the LDWF concerning the processing of nutria meat for human consumption. LDHH will approve processing facilities and LDAH will provide inspections at five (5) processing plants during the 1995-1996 season. This pilot program will determine market development and regulation changes in future years.

While efforts are underway to establish a private fur corporation, the BTMC should supplement the efforts of LDWF and the Louisiana Fur and Alligator Advisory Council in enticing the development of a private tanning industry. Efforts have been made in the past to establish a tanning industry here in Louisiana, but have failed, due in large part because of the lack of investors.

CWPPRA Demonstration Project

A demonstration project was recently developed by the Louisiana Department of Natural Resources (LDNR) for review and consideration by the CWPPRA Task Force for its potential inclusion into the fifth priority list. The project, however, was not brought forward by LDNR. The BTMC requests that the CWPPRA Task Force consider this issue and seriously consider the implementation of a demonstration project to control nutria herbivory. As mentioned earlier, millions of dollars are being spent to restore our coastal wetlands. Nutria herbivory should be controlled in order to maximize the benefit of these restoration efforts.

One potential idea might be the purchasing of nutria tails as an incentive to increase numbers of nutria harvested. In this way, one is assured that money expended in reality represents the harvesting of nutria. This project should be considered coastwide.

This project could be monitored across the coast by conducting annual aerial surveys. Information collected as a result of these surveys could be used to evaluate the success of the program.

BENEFITS

It has been estimated that if the coastwide nutria harvest could be maintained at a level of approximately 500,000 pelts per year, wetland damage would be minimized or eliminated. This figure is based on historical records indicating that when the nutria harvest exceeded half a million pelts per year, overgrazing did not appear to be a serious problem. The potential benefits of such actions, if successful, could be reduced land loss, increased marsh productivity, reduced damage to cypress and hardwood seedlings, and reduced damage to coastal infrastructure and agricultural crops. Increasing marsh productivity will help to offset subsidence and improve habitat conditions for fish and wildlife. Other benefits include an educated public that understands the potential consequences associated with nutria herbivory and the need to control populations of these animals.

IMPLEMENTATION SCHEDULE

Nutria herbivory is not just a perceived problem but a real problem for the reasons outlined above. However, the multitude of factors that cause marsh degradation make it difficult to discern the direct and indirect impacts of herbivory. Until recently, data was lacking on the specific locations of damage and its relative significance across the deltaic plain. Information on those areas that are naturally recovering from nutria herbivory and those that are not are also important, and as of now are still unavailable. The BTNEP provided financial support to the LDWF to

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conduct the first substantial aerial survey of vegetative damage caused by nutria herbivory. This has provided baseline information from which to measure herbivory in future years. The LDWF secured funding for the purpose of renting a helicopter to continue the nutria herbivory survey for western Terrebonne Parish in March of 1995 and in the Breton Sound basin in March and December of 1995. Additional surveys in the Barataria and Terrebonne basins will be funded through the BTNEP for December of 1995. These efforts should provide biologists with the necessary information needed to answer questions of whether impacted areas recover or are lost.

Short-term plans (0-1 years) are as follows:

- S 1.00 Aerial survey of the BTES (LDWF/BTMC).
- S 2.00 BTMC supports the efforts of LDWF and the Louisiana Fur and Alligator Advisory Council in the development of a private fur corporation.
- S 3.00 BTMC support and join the effort to develop a private fur corporation and encourage other Economic Councils to explore its development.
- S 4.00 Increase public awareness of the problems associated with nutria herbivory (LDWF/LDNR/BTMC).
- S 5.00 Inform Louisiana legislators and solicit support (LDWF/LDNR/BTMC).
- S 6.00 Supplement the education efforts of the Louisiana Fur and Alligator Advisory Council (BTMC).

Medium-term plans (2-5 years) include the following:

- M 1.00 Continue aerial surveys of the deltaic plain every other year (LDWF).
- M 2.00 Initiate aerial surveys of CWPPRA demonstration project sites every year (CWPPRA/LDWF).
- M 3.00 Encourage the development of a tanning industry in coastal Louisiana (LDWF/ Louisiana Fur and Alligator Advisory Council/BTMC).
- M 4.00 Supplement the education efforts of the Louisiana Fur and Alligator Advisory Council (BTMC).
- M 5.00 Supplement the efforts of the Louisiana Fur and Alligator Advisory Council in promoting Louisiana bayou nutria (BTMC).

Long-term plans (5-10 years) includes the continuation of aerial surveys (LDWF).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan will be the LDWF and the Louisiana Fur and Alligator Advisory Council. Support implementors include CWPPRA and the BTMC.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EG3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--|------|------------------|------------------|--------------------------|---------------------------------------|
| EG-3 | | | | | \$45,818 | \$148,707 |
| EG-3S1.00 | <i>aerial surveys of BTES</i> | | | | \$42,626 | \$0 |
| EG-3S1.01 | <i>observation</i> | LDWF | N | | \$126 | \$0 |
| EG-3S1.02 | <i>aerial survey</i> | LDWF | N | | \$42,500 | \$0 |
| EG-3S2.00 | <i>private cooperative venture</i> | | no cost | | | \$0 |
| EG-3S3.00 | <i>private fur corporation</i> | LDED | E | | \$1,596 | \$0 |
| EG-3S4.00 | <i>increase public awareness</i> | LDWF | E | | \$1,596 | \$0 |
| EG-3S5.00 | <i>inform legislators</i> | LDWF | no cost | | \$0 | \$0 |
| EG-3S6.00 | <i>supplement education</i> | LDWF | E | EG-3S4.00 | | \$0 |
| EG-3M1.00 | <i>continue aerial surveys</i> | | | | | \$21,313 |
| EG-3M1.01 | <i>observation</i> | LDWF | N | | | \$63 |
| EG-3M1.02 | <i>continue aerial surveys</i> | LDWF | N | | | \$21,250 |
| EG-3M2.00 | <i>develop and survey CWPPRA sites</i> | | | | | \$125,000 |
| EG-3M2.01 | <i>managing and monitoring</i> | LDWF | N | | | \$37,500 |
| EG-3M2.02 | <i>nutria harvesting budget</i> | LDWF | N | | | \$50,000 |
| EG-3M2.03 | <i>start-up and staffing</i> | LDWF | N | | | \$37,500 |
| EG-3M3.00 | <i>develop tanning industry</i> | LDWF | no cost | | | \$0 |
| EG-3M4.00 | <i>supplement educational efforts</i> | LDWF | E | | | \$1,596 |
| EG-3M5.00 | <i>promote nutria</i> | LDED | E | | | \$798 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$640,600
 Total Funding Existing (Years 1-5): \$12,800
 Total New Funding Necessary (Years 1-5): \$627,800

**Action Plan EG-3:
Nutria
Market Development**

Table EG3-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|---|---------------------|---|--------|---|
| LDWF | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds | \$500,000 CWPPRA | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds | | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds |

Summary of new funding strategy: In Year 2, the \$500,000 required to start up and manage this project and provide for a nutria harvest budget will be funded through CWPPRA. The remaining costs in Years 1, 3, and 5 are for aerial surveys of the project areas. The Department of Interior/FWS Wildlife Restoration Fund as well as funds from the DOI/FWS North American Waterfowl Management Plan program should be utilized to fund the surveys. Projects must address mammal and/or bird habitat restoration to be eligible for grants from the Wildlife Restoration Fund. Projects addressing the restoration of coastal wetlands waterfowl habitat can apply for North American Waterfowl Management funds. Additional funding should be sought from the not-for-profit foundations listed in the *Funding Source Inventory for the Implementation of the CCMP*, with any shortfall being made up with license plate revenues.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government currently and much of the private sector have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Increased awareness of the problems associated with the overpopulation of nutria and nutria herbivory through the education of the public concerning the need to harvest this renewable natural resource.
2. Encourage the implementation of a demonstration project through CWPPRA.
3. Supplement the efforts of the LFAAC by promoting the sale of Louisiana Bayou Nutria, the establishment of a tanning industry and the export of nutria for consumption.
4. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as

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the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Aerial survey of the BTES is conducted.
2. BTMC supports and joins in efforts to develop a private fur corporation and encourages other Economic Councils to explore developments in this industry.
3. Efforts to increase awareness of the problems associated with nutria herbivory are undertaken.
4. BTMC informs legislators and solicits support.
5. Education efforts of the LFAAC are supplemented by the BTMC.
6. Continued aerial surveys of the deltaic plain are conducted every other year.
7. Aerial surveys of CWPPRA demonstration project sites are initiated every other year beginning within 2 to 5 years.
8. Efforts to encourage the development of a tanning industry in coastal Louisiana are begun within 2 to 5 years.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 82 person-hours will be required at an estimated total annual cost of \$4,100 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Public awareness of problems associated with nutria overpopulation is increased.
2. The number of commercially harvested nutria increases.
3. A private cooperative venture responsible for the buying, holding, and selling of nutria products is established.
4. There is "growth" in nutria related business activities, i.e. increases in products developed and produced, in market areas, in sales and earnings, and in jobs.
5. A private fur corporation is established and is viable.
6. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
7. New jobs are created, earnings and income increase.

Action Plan EG-3: Nutria Market Development

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Public awareness of problems associated with nutria overpopulation.
2. Number of commercially harvested nutria.
3. Products developed and produced (pounds of meat, pelts, etc.).
4. Market price for nutria products.
5. Number and size of market areas.
6. Industry sales and earnings from nutria related businesses.
7. Number of industry jobs.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Public Awareness - A survey of the general public.

Nutria Harvest - LDWF.

Nutria Industry Data - Much of the general economic data will come from the sources specified under Overall Economic Growth. The LDWF maintains data on the number and unit price of pelts and the pounds and unit price of meat. Other specific data on products, developments and markets will require a survey of industry participants.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Public Awareness - A survey of the general public will be utilized to ascertain public awareness of the nutria problem. The recommended survey method of reaching a demographic representation of the general public is by telephone. The frequency and sampling of participants contacted will depend on the geographic area of coverage, the number of participants and available funding. This effort could be combined with monitoring public awareness of other program efforts.

Nutria Industry - Industry growth indicators as specified in the above criteria should be monitored over time and in

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comparison to indicators for average industry growth within the region and within the state.

General Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Public Awareness Survey - The total cost of this effort will depend on the survey sample size, the level of confidence and the margin of error. Expected sample sizes for a confidence level of 95% with a margin of error plus or minus 3% are 800 for a statewide survey and 400 for a regional or sub-regional one. At a unit cost estimate of \$15.00 per completed survey the total cost would be between \$6,000 and \$12,000 dollars. This includes components for survey development, implementation and analysis.

Nutria Industry Growth - Based on the scope of services required by an independent contractor for compilation and analysis of existing data and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. The cost of survey development, implementation and analysis for the survey of industry participants to obtain specific data on products, developments and markets will depend of the number of industry participants surveyed at an estimated unit cost of \$30.00 per survey participant.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for a estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

Action Plan EG-3:
Nutria
Market Development

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
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EG-3 Nutria Market Development

OBJECTIVES

1. To reduce the adverse impacts on vegetated wetlands caused by overpopulation of nutria (*Myocaster coypus*) and encourage the development of a private cooperative venture responsible for buying, holding, and selling nutria products.

DESCRIPTION

This plan will serve to increase awareness about the problems of nutria herbivory and the overpopulation of nutria. In doing so, this plan will also bring attention to the efforts of the Louisiana Department of Wildlife and Fisheries (LDWF) and the Louisiana Fur and Alligator Advisory Council to establish a private cooperative venture. Both groups are working to establish a mechanism to finance this cooperative year round. In addition, this plan serves to encourage the implementation of a demonstration project through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA).

This action plan also involves educating the public concerning the need to harvest this renewable natural resource and the reasons for doing so. This has already been initiated by the Louisiana Fur and Alligator Advisory Council. The public must be made aware of the adverse impacts associated with nutria herbivory and that without some control on the population, problems will likely worsen. In addition, the Barataria-Terrebonne Management Conference (BTMC) will supplement the efforts of the Louisiana Fur and Alligator Advisory Council by promoting the sale of Louisiana bayou nutria.

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Overpopulation of nutria in coastal environments is resulting in overgrazing of wetland vegetation and resultant degradation and loss of marsh. The first quantitative aerial surveys of vegetative damage caused by nutria herbivory in the fresh to brackish marshes of the Barataria and Terrebonne basins were conducted by Linscombe and Kinler. They delineated approximately 15,476 acres (24 sq.mi) of vegetative damage caused by nutria. Since about 25% of the marshes were viewed, total damage is probably much greater (probably closer to 60,000 acres in these two basins alone). Nutria herbivory in forested wetlands and saline marshes were not evaluated. Analysis of the data collected during the latter flight indicated that of the initial damaged sites, only 38% showed some recovery, 56% stayed the same and 6% of the damaged sites were worse. The degree of damage and observed poor recovery is alarming to resource managers and scientists. The extent to which marsh can recover following eatouts can only be determined through future surveys of damaged areas. The problems associated with nutria herbivory can have serious deleterious effects on ongoing and proposed coastal restoration projects. Millions of dollars are now being spent annually to restore our coastal wetlands. Nutria herbivory in these areas must be controlled to maximize the benefit of these restoration projects.

Nutria herbivory has also been identified as a severe problem in areas other than coastal marshes including cypress tupelo swamps, agricultural lands, and residential areas. Many reforestation efforts involving the planting of cypress seedlings have failed due in large part to nutria herbivory. In the 1980's a study was undertaken by William Conner and others to assess the effects of hydrology on forest communities. One aspect of their study required the planting of 100 cypress seedlings under established cypress stands in three different locations. Within three months, 100%

Action Plan EG-3: Nutria Market Development

mortality of the planted cypress seedlings occurred and was determined to be caused by nutria. In addition they observed nearly 100% mortality of naturally regenerated cypress seedlings that were included as part of the overall study. Nutria also damage large cypress trees by girdling them. This is thought to occur during winter months when other food sources may be scarce. While girdling trees may not cause death directly, it is believed that it may hasten the death of trees suffering from other stresses such as saltwater intrusion and inundation (Nutria and Muskrat Management Symposium Proceedings, 1992).

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No effort has ever been made to quantify the damage caused by nutria within swamp habitats on a broad geographic scale and then to express those impacts in terms of economic and ecological implications.

It is estimated that in 1991, nutria caused approximately two million dollars in damage to the sugarcane industry much of it directly related to herbivory. Of greater consequences to rice farmers are the problems associated with nutria burrowing holes in levees. This has also caused problems with crawfish farmers. Burrowing undermines the levees which in turn causes them to collapse. These levees must be maintained by the farmer and therefore represent an added expense of doing business (Nutria and Muskrat Management Symposium Proceedings, 1992).

Recently, officials in Jefferson Parish have been trying to address the problems caused by nutria that have moved into urban areas. The issue here is not only focussed on herbivory but also the problems associated with these animals burrowing into the levees of existing canals. These canals serve as conduits that move stormwater from residential areas. Burrowing into canal banks and heavy grazing on bank vegetation seriously undermines bank stability. This ultimately could lead to the destruction of the canal bank itself which then would cause serious drainage problems for local neighborhoods.

Louisiana's Nutria Control Cost-Share Program

Louisiana's natural resource agencies, landowners, and the Louisiana Legislature saw the need to address the nutria herbivory problem and in 1990 developed what is called the Nutria Control Cost-Share Program. This program was authorized by the Louisiana Legislature through the passage of the Nutria Control Cost-Share Act of 1990. The program requires a cooperative effort between landowners and the LDWF and can best be described as an incentives program.

Since the initiation of the Nutria Control Cost-Share Program, only one landowner has attempted to enter into an agreement with the State, however, no monies were ever expended as part of this program. Landowners and Louisiana's Natural Resource Agencies found that the program was too management intensive. In addition until recently, an effort was never made to comprehensively assess nutria herbivory damage over a large geographic scale. The Nutria Control Cost-Share Program has not been considered successful for these as well as other reasons.

Private Fur Corporation

Interest in developing a private fur corporation has been gaining momentum in Louisiana. Both the LDWF and the Louisiana Fur and Alligator Advisory Council have been encouraging its development. A corporation is needed to provide a continuous supply of nutria pelts in large numbers year round. Requests for large numbers of nutria pelts have already been made but no mechanism is in place to provide them. The corporation as envisioned would buy

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nutria pelts from local trappers, buyers and dealers and hold them until shipping orders were received from international buyers.

Exporters representing China have recently indicated an interest in large quantities of nutria meat for human consumption. Regulations have been finalized with the Food and Drug Administration (FDA), the Louisiana Department of Health and Hospitals (LDHH) and the LDWF concerning the processing of nutria meat for human consumption. LDHH will approve processing facilities and LDAH will provide inspections at five (5) processing plants during the 1995-1996 season. This pilot program will determine market development and regulation changes in future years.

While efforts are underway to establish a private fur corporation, the BTMC should supplement the efforts of LDWF and the Louisiana Fur and Alligator Advisory Council in enticing the development of a private tanning industry. Efforts have been made in the past to establish a tanning industry here in Louisiana, but have failed, due in large part because of the lack of investors.

CWPPRA Demonstration Project

A demonstration project was recently developed by the Louisiana Department of Natural Resources (LDNR) for review and consideration by the CWPPRA Task Force for its potential inclusion into the fifth priority list. The project, however, was not brought forward by LDNR. The BTMC requests that the CWPPRA Task Force consider this issue and seriously consider the implementation of a demonstration project to control nutria herbivory. As mentioned earlier, millions of dollars are being spent to restore our coastal wetlands. Nutria herbivory should be controlled in order to maximize the benefit of these restoration efforts.

One potential idea might be the purchasing of nutria tails as an incentive to increase numbers of nutria harvested. In this way, one is assured that money expended in reality represents the harvesting of nutria. This project should be considered coastwide.

This project could be monitored across the coast by conducting annual aerial surveys. Information collected as a result of these surveys could be used to evaluate the success of the program.

BENEFITS

It has been estimated that if the coastwide nutria harvest could be maintained at a level of approximately 500,000 pelts per year, wetland damage would be minimized or eliminated. This figure is based on historical records indicating that when the nutria harvest exceeded half a million pelts per year, overgrazing did not appear to be a serious problem. The potential benefits of such actions, if successful, could be reduced land loss, increased marsh productivity, reduced damage to cypress and hardwood seedlings, and reduced damage to coastal infrastructure and agricultural crops. Increasing marsh productivity will help to offset subsidence and improve habitat conditions for fish and wildlife. Other benefits include an educated public that understands the potential consequences associated with nutria herbivory and the need to control populations of these animals.

IMPLEMENTATION SCHEDULE

Nutria herbivory is not just a perceived problem but a real problem for the reasons outlined above. However, the multitude of factors that cause marsh degradation make it difficult to discern the direct and indirect impacts of herbivory. Until recently, data was lacking on the specific locations of damage and its relative significance across the deltaic plain. Information on those areas that are naturally recovering from nutria herbivory and those that are not are also important, and as of now are still unavailable. The BTNEP provided financial support to the LDWF to

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conduct the first substantial aerial survey of vegetative damage caused by nutria herbivory. This has provided baseline information from which to measure herbivory in future years. The LDWF secured funding for the purpose of renting a helicopter to continue the nutria herbivory survey for western Terrebonne Parish in March of 1995 and in the Breton Sound basin in March and December of 1995. Additional surveys in the Barataria and Terrebonne basins will be funded through the BTNEP for December of 1995. These efforts should provide biologists with the necessary information needed to answer questions of whether impacted areas recover or are lost.

Short-term plans (0-1 years) are as follows:

- S 1.00 Aerial survey of the BTES (LDWF/BTMC).
- S 2.00 BTMC supports the efforts of LDWF and the Louisiana Fur and Alligator Advisory Council in the development of a private fur corporation.
- S 3.00 BTMC support and join the effort to develop a private fur corporation and encourage other Economic Councils to explore its development.
- S 4.00 Increase public awareness of the problems associated with nutria herbivory (LDWF/LDNR/BTMC).
- S 5.00 Inform Louisiana legislators and solicit support (LDWF/LDNR/BTMC).
- S 6.00 Supplement the education efforts of the Louisiana Fur and Alligator Advisory Council (BTMC).

Medium-term plans (2-5 years) include the following:

- M 1.00 Continue aerial surveys of the deltaic plain every other year (LDWF).
- M 2.00 Initiate aerial surveys of CWPPRA demonstration project sites every year (CWPPRA/LDWF).
- M 3.00 Encourage the development of a tanning industry in coastal Louisiana (LDWF/ Louisiana Fur and Alligator Advisory Council/BTMC).
- M 4.00 Supplement the education efforts of the Louisiana Fur and Alligator Advisory Council (BTMC).
- M 5.00 Supplement the efforts of the Louisiana Fur and Alligator Advisory Council in promoting Louisiana bayou nutria (BTMC).

Long-term plans (5-10 years) includes the continuation of aerial surveys (LDWF).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan will be the LDWF and the Louisiana Fur and Alligator Advisory Council. Support implementors include CWPPRA and the BTMC.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EG3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--|-------------|--------------------------|------------------|----------------------------------|--|
| EG-3 | | | | | \$45,818 | \$148,707 |
| EG-3S1.00 | <i>aerial surveys of BTES</i> | | | | \$42,626 | \$0 |
| EG-3S1.01 | <i>observation</i> | LDWF | N | | \$126 | \$0 |
| EG-3S1.02 | <i>aerial survey</i> | LDWF | N | | \$42,500 | \$0 |
| EG-3S2.00 | <i>private cooperative venture</i> | | no cost | | | \$0 |
| EG-3S3.00 | <i>private fur corporation</i> | LDED | E | | \$1,596 | \$0 |
| EG-3S4.00 | <i>increase public awareness</i> | LDWF | E | | \$1,596 | \$0 |
| EG-3S5.00 | <i>inform legislators</i> | LDWF | no cost | | \$0 | \$0 |
| EG-3S6.00 | <i>supplement education</i> | LDWF | E | EG-3S4.00 | | \$0 |
| EG-3M1.00 | <i>continue aerial surveys</i> | | | | | \$21,313 |
| EG-3M1.01 | <i>observation</i> | LDWF | N | | | \$63 |
| EG-3M1.02 | <i>continue aerial surveys</i> | LDWF | N | | | \$21,250 |
| EG-3M2.00 | <i>develop and survey CWPPRA sites</i> | | | | | \$125,000 |
| EG-3M2.01 | <i>managing and monitoring</i> | LDWF | N | | | \$37,500 |
| EG-3M2.02 | <i>nutria harvesting budget</i> | LDWF | N | | | \$50,000 |
| EG-3M2.03 | <i>start-up and staffing</i> | LDWF | N | | | \$37,500 |
| EG-3M3.00 | <i>develop tanning industry</i> | LDWF | no cost | | | \$0 |
| EG-3M4.00 | <i>supplement educational efforts</i> | LDWF | E | | | \$1,596 |
| EG-3M5.00 | <i>promote nutria</i> | LDED | E | | | \$798 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$640,600
 Total Funding Existing (Years 1-5): \$12,800
 Total New Funding Necessary (Years 1-5): \$627,800

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Nutria
Market Development**

Table EG3-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|---|---------------------|---|--------|---|
| LDWF | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds | \$500,000 CWPPRA | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds | | \$42,600 DOI-FWS Wildlife Restoration and NA Waterfowl Management Funds |

Summary of new funding strategy: In Year 2, the \$500,000 required to start up and manage this project and provide for a nutria harvest budget will be funded through CWPPRA. The remaining costs in Years 1, 3, and 5 are for aerial surveys of the project areas. The Department of Interior/FWS Wildlife Restoration Fund as well as funds from the DOI/FWS North American Waterfowl Management Plan program should be utilized to fund the surveys. Projects must address mammal and/or bird habitat restoration to be eligible for grants from the Wildlife Restoration Fund. Projects addressing the restoration of coastal wetlands waterfowl habitat can apply for North American Waterfowl Management funds. Additional funding should be sought from the not-for-profit foundations listed in the *Funding Source Inventory for the Implementation of the CCMP*, with any shortfall being made up with license plate revenues.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government currently and much of the private sector have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Increased awareness of the problems associated with the overpopulation of nutria and nutria herbivory through the education of the public concerning the need to harvest this renewable natural resource.
2. Encourage the implementation of a demonstration project through CWPPRA.
3. Supplement the efforts of the LFAAC by promoting the sale of Louisiana Bayou Nutria, the establishment of a tanning industry and the export of nutria for consumption.
4. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as

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the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Aerial survey of the BTES is conducted.
2. BTMC supports and joins in efforts to develop a private fur corporation and encourages other Economic Councils to explore developments in this industry.
3. Efforts to increase awareness of the problems associated with nutria herbivory are undertaken.
4. BTMC informs legislators and solicits support.
5. Education efforts of the LFAAC are supplemented by the BTMC.
6. Continued aerial surveys of the deltaic plain are conducted every other year.
7. Aerial surveys of CWPPRA demonstration project sites are initiated every other year beginning within 2 to 5 years.
8. Efforts to encourage the development of a tanning industry in coastal Louisiana are begun within 2 to 5 years.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 82 person-hours will be required at an estimated total annual cost of \$4,100 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Public awareness of problems associated with nutria overpopulation is increased.
2. The number of commercially harvested nutria increases.
3. A private cooperative venture responsible for the buying, holding, and selling of nutria products is established.
4. There is "growth" in nutria related business activities, i.e. increases in products developed and produced, in market areas, in sales and earnings, and in jobs.
5. A private fur corporation is established and is viable.
6. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
7. New jobs are created, earnings and income increase.

Action Plan EG-3: Nutria Market Development

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Public awareness of problems associated with nutria overpopulation.
2. Number of commercially harvested nutria.
3. Products developed and produced (pounds of meat, pelts, etc.).
4. Market price for nutria products.
5. Number and size of market areas.
6. Industry sales and earnings from nutria related businesses.
7. Number of industry jobs.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Public Awareness - A survey of the general public.

Nutria Harvest - LDWF.

Nutria Industry Data - Much of the general economic data will come from the sources specified under Overall Economic Growth. The LDWF maintains data on the number and unit price of pelts and the pounds and unit price of meat. Other specific data on products, developments and markets will require a survey of industry participants.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Public Awareness - A survey of the general public will be utilized to ascertain public awareness of the nutria problem. The recommended survey method of reaching a demographic representation of the general public is by telephone. The frequency and sampling of participants contacted will depend on the geographic area of coverage, the number of participants and available funding. This effort could be combined with monitoring public awareness of other program efforts.

Nutria Industry - Industry growth indicators as specified in the above criteria should be monitored over time and in

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comparison to indicators for average industry growth within the region and within the state.

General Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Public Awareness Survey - The total cost of this effort will depend on the survey sample size, the level of confidence and the margin of error. Expected sample sizes for a confidence level of 95% with a margin of error plus or minus 3% are 800 for a statewide survey and 400 for a regional or sub-regional one. At a unit cost estimate of \$15.00 per completed survey the total cost would be between \$6,000 and \$12,000 dollars. This includes components for survey development, implementation and analysis.

Nutria Industry Growth - Based on the scope of services required by an independent contractor for compilation and analysis of existing data and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. The cost of survey development, implementation and analysis for the survey of industry participants to obtain specific data on products, developments and markets will depend of the number of industry participants surveyed at an estimated unit cost of \$30.00 per survey participant.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for a estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

Action Plan EG-3:
Nutria
Market Development

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

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EG-4 Technology Exposition

OBJECTIVES

1. To provide an opportunity to show and market technologies based on wetlands preservation or restoration, wise stewardship of estuarine resources, or water quality improvement.
2. To encourage entrepreneurship within the estuary.

DESCRIPTION

This action will create an annual technology exposition designed to showcase estuarine based technologies or new technologies for ecologically compatible approaches to businesses and industries. It will strive to blend showcasing those technologies that are already established as marketable and those that are more recently developed and can use the exposition to begin to develop markets.

It will entail the creation of an ever expanding network of innovators, researchers, corporate research and development persons, inventors and entrepreneurs to identify potential displays or be the resource themselves for the events.

Once established it will serve the Barataria-Terrebonne Management Conference (BTMC) as a promotional vehicle to draw attention to pro-active, ecologically responsible development.

BACKGROUND/MAJOR ISSUES

While there has been considerable creative and innovative activity in relation to living and working in coastal Louisiana, there has also been a tendency to not benefit economically from the innovation. Especially in the last few years, attempts to seriously deal with the challenges of coastal erosion have been the impetus for developing many new techniques and equipment.

As a result of the initial formulation of this plan, the BTNEP staff has included a similar item in the 1996 work plan. Included in the request for proposals is the need to find sufficient sponsors for future expositions to assure that they can continue at no cost to government agencies.

As a long range plan to increase economic activity, hopefully leading to new jobs, this plan could eventually influence many residents of the estuary as well as business leaders. By encouraging responsible economic activity this plan can radically decrease negative impacts in the seven priority problem areas.

BENEFITS

This annual event in addition to drawing attention to the ingenuity of those in the estuary can also be an effective educational tool.

Action Plan EG-4:

Technology Exposition

IMPLEMENTATION SCHEDULE

Short Term: The short term plan will be to have interested members of the present management conference and others work closely with the contractors selected to develop the first exposition. Steps to the second exposition will include:

- S 1.00 Evaluate the first exposition.
- S 2.00 Expand the sponsor pool.
- S 3.00 Expand the network of potential participants.
- S 4.00 Assure optimum location.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for the first exposition will be the contractors selected as a result of the 1996 work plan Request for Proposals.

This action plan requires the BTMC become the lead implementor of this action in future years. This action will be part of the responsibility of the BTMC.

Support implementors could include: the Program Office staff, universities, the original contractors, various federal, state and local government agencies, Chambers of Commerce, parish, municipality and regional economic development entities.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG4-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|--------------------------------------|-------------|-------------------|------------------|--------------------------|---------------------------------------|
| EG-4 | | | | | \$23,528 | \$0 |
| EG-4S1.00 | <i>evaluate first expo</i> | BTMC | E | | \$7,000 | \$0 |
| EG-4S2.00 | <i>expand sponsor pool</i> | | | | \$9,514 | \$0 |
| EG-4S2.01 | <i>promote the expo</i> | BTMC | E | | \$2,500 | \$0 |
| EG-4S2.02 | <i>identify and contact sponsors</i> | BTMC | E | | \$7,014 | \$0 |
| EG-4S3.00 | <i>expand participant network</i> | BTMC | E | | \$7,014 | \$0 |
| EG-4S4.00 | <i>assure optimum location</i> | BTMC | E | EG-4S1.00 | \$0 | \$0 |

Table EG4-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$23,528
Total Funding Existing (Years 1-5): \$23,528
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The major task of this Action Plan is the creation of an annual technology exposition designed to showcase estuarine based technologies or new technologies for ecologically compatible approaches. Other ancillary components of the plan include:

1. The creation of an ever expanding network of innovators, researchers, corporate research and development persons, inventors and entrepreneurs.
2. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. A program for the first exposition is developed and implemented.
2. The first exposition is evaluated.
3. BTMC assumes role as lead implementor of this Action Plan for future years.
4. Sufficient sponsors and funding for future expositions are secured.
5. The network of potential participants is expanded.

Action Plan EG-4:

Technology Exposition

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified. Cost estimates for the next exposition (based on the first and adjusted for changes and/or expansion) will be prepared by the BTMC with support from the Program Office. These cost estimates will be compared to funding commitments from sponsoring agencies to determine if funding levels are adequate.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 72 person-hours will be required at an estimated total annual cost of \$3,600 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Level of participation in exposition activities.
2. Participant satisfaction.
3. The network of innovators, researchers, corporate research and development persons, inventors and entrepreneurs was expanded.
4. New and/or innovative technologies were identified.
5. Use of innovative technologies is expanded.
6. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
7. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Number and types of individuals, organizations and groups represented at the exposition.
2. Number and types of technologies and innovations presented.
3. Number of new and innovative technologies identified.
4. Use/implementation of technologies (i.e. number of sites).
5. Participant satisfaction and perceived value of the exposition.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.

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7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - Number and types of individuals, organizations and groups represented at the exposition, number and types of technologies and innovations presented, number of new and innovative technologies identified will be collected and compiled from exposition registration records.

Participant Satisfaction - Survey of program participants.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Participant Satisfaction - Survey or surveys of participants will be utilized to ascertain satisfaction, usefulness of exposition activities and implementation of technology or ideas learned from the exposition. The frequency and sampling of participants contacted will depend on the number of participants and available funding. Overall participant satisfaction can be obtained via self-administered questionnaires handed out and collected at the exposition. Levels of technology transfer can be measured through a follow-up survey of a sampling of participants and through the self-administered questionnaire at subsequent expositions.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs

Action Plan EG-4:

Technology Exposition

will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for an estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Participant Satisfaction - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$12.00 per self-administered questionnaire and \$30.00 per follow-up survey. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for a estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

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EG-5 Export of Resources, Products and Technology

OBJECTIVES

1. To encourage the exportation of products, resources and technologies within the context of resource sustainability.
2. To utilize the materials, techniques and approaches created in marketing for exports to expand markets within the United States.
3. To provide training in the export business for those involved in business, agriculture, marine life and other areas.

DESCRIPTION

This action will target those that produce goods and services in an environmentally responsible (contributing to environmental sustainability) fashion or harvest the resources of the estuary within renewable parameters. It will be designed to create an ongoing relationship with them and those that encourage and facilitate the exportation of resources, goods and services.

It will entail the establishment of ongoing relationships between estuary businesses and the world trade community. Later it will add the dimension of opening new markets within the United States and all of the skills needed to make that a reality.

Members of the Barataria-Terrebonne Management Conference (BTMC) can serve to identify those products and services that fit environmentally sustainable economic activity.

Once established this action will serve the BTMC as an encouragement to prospective ecologically responsible businesses expand within the communities of the estuary. It will also make it possible to create new jobs.

BACKGROUND/MAJOR ISSUES

The culture of the Barataria and Terrebonne basins has been highlighted through numerous movies, novels and other popular art forms. South Louisiana cuisine has also recently enjoyed a national and international reputation. While some advantage has been realized from this and the innovative technologies emerging from the wetlands erosion crisis, there is probably much more benefit that could be derived from this notoriety.

Little has been done in the context of this plan to identify existing programs that could tie into this effort. As a long range plan to increase economic activity, hopefully leading to new jobs, this plan could eventually influence many residents of the estuary as well as business leaders. By encouraging responsible economic activity, this plan can radically decrease negative impacts in the seven priority problem areas.

Action Plan EG-5: Export of Resources, Products and Technology

BENEFITS

This along with the other economic growth activities included in this management plan, in addition to expanding opportunities for sustainable economic development, can also expand the network of people and organizations committed to the long term future of a healthy estuary. By opening the door to international trade it can serve as one alternative to the once thriving oil, gas and petrochemical industries.

IMPLEMENTATION SCHEDULE

Short Term: The initial steps in this plan will entail the gathering of all of the necessary information and the creation of the means for identifying and accessing potential beneficiaries and will include:

- S 1.00 Either obtain a seed grant or a sponsoring organization to do the initial research.
- S 2.00 Tie into the Encuentro event in New Orleans.
- S 3.00 Identify groups such as the World Trade Center in New Orleans that are actively encouraging International trade.
- S 4.00 Work in concert with Management Conference members and the Technology Exposition in identifying potential and existing businesses.
- S 5.00 Identify resources available through the universities and other educational institutions.
- S 6.00 Find out what is already being pursued especially if it is successful.
- S 7.00 Conduct a series of think tank sessions with some of the groups identified above in order to further flesh out potential markets in relation to qualified resources, goods and services.

Medium and Long Term actions will entail expansion and sophistication of the program.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC will be the lead implementor.

Others could include: The Program Office, the World Trade Center, universities, the Department of Commerce, the State Department of Economic Development, Chambers of Commerce, parish, municipality and regional economic development entities, lending institutions, and the Small Business Administration through the International Trade Loan Program and Export Revolving Line of Credit Program.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG5-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EG5-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---|-------------|-------------------|---------|--------------------------|---------------------------------------|
| EG-5 | | | | | \$13,020 | \$0 |
| EG-5S1.00 | <i>obtain a seed grant</i> | | | | \$3,234 | \$0 |
| EG-5S1.01 | <i>researching and locating funding</i> | BTPO | E | | \$2,436 | \$0 |
| EG-5S1.02 | <i>discussion of funding vehicles</i> | LDED | E | | \$798 | \$0 |
| EG-5S2.00 | <i>tie into ecuentro</i> | | | | \$2,436 | \$0 |
| EG-5S2.01 | <i>coordinating</i> | LDED | E | | \$1,638 | \$0 |
| EG-5S2.02 | <i>marketing and promoting</i> | LDED | E | | \$798 | \$0 |
| EG-5S3.00 | <i>identify groups involved in trade</i> | LDED | E | | \$504 | \$0 |
| EG-5S4.00 | <i>work with the economic council</i> | LDED | E | | \$798 | \$0 |
| EG-5S5.00 | <i>identify resources</i> | LDED | E | | \$1,596 | \$0 |
| EG-5S6.00 | <i>find out what is being pursued</i> | LDED | E | | \$3,486 | \$0 |
| EG-5S7.00 | <i>conduct a series of think tank sessions</i> | | | | \$966 | \$0 |
| EG-5S7.01 | <i>coordinating meetings</i> | BTPO | E | | \$336 | \$0 |
| EG-5S7.02 | <i>support</i> | LDED | E | | \$630 | \$0 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$13,000

Total Funding Existing (Years 1-5): \$13,000

Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the public sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. The encouragement and facilitation of exportation of regional resources, goods and services.
2. The establishment of ongoing relationships between estuary businesses and the world trade community.
3. The identification of those products and services that fit environmentally sustainable economic activity.

Action Plan EG-5: Export of Resources, Products and Technology

4. To expand export efforts through the education and training of business, agricultural, marine life and other interests in the export and international trade.
5. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. A seed grant or sponsoring agency is obtained to do the initial research.
2. BTMC assumes role as lead implementor of this Action Plan.
3. BTMC participates in the Encuentro event in New Orleans.
4. Groups that are actively encouraging international trade are identified.
5. Potential and existing businesses are identified for program participation.
6. Current and previous efforts in developing export trade are identified, with specific attention given to successful efforts.
7. A series of think tank sessions with relevant groups identified are conducted to further identify potential markets.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Participant satisfaction.

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2. Export markets are expanded in terms of number of products, number of participating businesses and the dollar volume of activity.
3. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
4. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Number of program participants.
2. Participant satisfaction.
3. Number of export market areas.
4. Volume and value of export activities.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - The number and types of businesses participating in program export activities, the number requesting information, the type of information requested and whether or not the requested information was available will be collected and compiled by the Program Office.

Participant Satisfaction - Survey of program participants.

Export Activities - Annual data on volume and value of exports by two digit SIC code is available on the state level from the U.S. Department of Commerce, *Nation Trade Data* report. The USACOE, *Waterborne Commerce of the United States* also provides a source for volume and values of exports by commodity type from ports within the region. No available data sources were found to identify exports by originating parish. The lack of this data will severely limit the ability to monitor growth in regional export activities. Depending on the willingness of companies to participate in this effort, regional data on export activities can be obtained through case studies, participant surveys or a combination of both.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.

Action Plan EG-5: Export of Resources, Products and Technology

8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Participant Satisfaction - Analysis of data compiled from the survey of participants will be utilized to ascertain satisfaction and usefulness of program resources provided. The frequency and sampling of participants contacted will depend on the level of participation and the number of participants (Mendenhall 1971).

Export Activities - If available, regional export volumes, values, and market data obtained from case studies and surveys can be compiled and monitored over time as a measure of growth and expansion in regional export activities. These data should also be compared with statewide and nationwide export figures as a basis of relative growth.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for an estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Participant Satisfaction - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Export Activities - Based on the scope of services required by an independent contractor for compilation and analysis of existing data, the collection, compilation and analysis of primary data and report preparation an estimated 200 person-hours will be required for an estimated total annual cost of \$10,000 which includes salary, fringe benefits, overhead and associated expenses. Since the data requested will for the most part be considered proprietary, it is recommended that an assessment of the willingness of companies to provide this information is made utilizing the Participant Satisfaction survey before committing to this expenditure.

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Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

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EG-5 Export of Resources, Products and Technology

OBJECTIVES

1. To encourage the exportation of products, resources and technologies within the context of resource sustainability.
2. To utilize the materials, techniques and approaches created in marketing for exports to expand markets within the United States.
3. To provide training in the export business for those involved in business, agriculture, marine life and other areas.

DESCRIPTION

This action will target those that produce goods and services in an environmentally responsible (contributing to environmental sustainability) fashion or harvest the resources of the estuary within renewable parameters. It will be designed to create an ongoing relationship with them and those that encourage and facilitate the exportation of resources, goods and services.

It will entail the establishment of ongoing relationships between estuary businesses and the world trade community. Later it will add the dimension of opening new markets within the United States and all of the skills needed to make that a reality.

Members of the Barataria-Terrebonne Management Conference (BTMC) can serve to identify those products and services that fit environmentally sustainable economic activity.

Once established this action will serve the BTMC as an encouragement to prospective ecologically responsible businesses expand within the communities of the estuary. It will also make it possible to create new jobs.

BACKGROUND/MAJOR ISSUES

The culture of the Barataria and Terrebonne basins has been highlighted through numerous movies, novels and other popular art forms. South Louisiana cuisine has also recently enjoyed a national and international reputation. While some advantage has been realized from this and the innovative technologies emerging from the wetlands erosion crisis, there is probably much more benefit that could be derived from this notoriety.

Little has been done in the context of this plan to identify existing programs that could tie into this effort. As a long range plan to increase economic activity, hopefully leading to new jobs, this plan could eventually influence many residents of the estuary as well as business leaders. By encouraging responsible economic activity, this plan can radically decrease negative impacts in the seven priority problem areas.

Action Plan EG-5: Export of Resources, Products and Technology

BENEFITS

This along with the other economic growth activities included in this management plan, in addition to expanding opportunities for sustainable economic development, can also expand the network of people and organizations committed to the long term future of a healthy estuary. By opening the door to international trade it can serve as one alternative to the once thriving oil, gas and petrochemical industries.

IMPLEMENTATION SCHEDULE

Short Term: The initial steps in this plan will entail the gathering of all of the necessary information and the creation of the means for identifying and accessing potential beneficiaries and will include:

- S 1.00 Either obtain a seed grant or a sponsoring organization to do the initial research.
- S 2.00 Tie into the Encuentro event in New Orleans.
- S 3.00 Identify groups such as the World Trade Center in New Orleans that are actively encouraging International trade.
- S 4.00 Work in concert with Management Conference members and the Technology Exposition in identifying potential and existing businesses.
- S 5.00 Identify resources available through the universities and other educational institutions.
- S 6.00 Find out what is already being pursued especially if it is successful.
- S 7.00 Conduct a series of think tank sessions with some of the groups identified above in order to further flesh out potential markets in relation to qualified resources, goods and services.

Medium and Long Term actions will entail expansion and sophistication of the program.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC will be the lead implementor.

Others could include: The Program Office, the World Trade Center, universities, the Department of Commerce, the State Department of Economic Development, Chambers of Commerce, parish, municipality and regional economic development entities, lending institutions, and the Small Business Administration through the International Trade Loan Program and Export Revolving Line of Credit Program.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG5-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

Table EG5-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---|-------------|-------------------|---------|--------------------------|---------------------------------------|
| EG-5 | | | | | \$13,020 | \$0 |
| EG-5S1.00 | <i>obtain a seed grant</i> | | | | \$3,234 | \$0 |
| EG-5S1.01 | <i>researching and locating funding</i> | BTPO | E | | \$2,436 | \$0 |
| EG-5S1.02 | <i>discussion of funding vehicles</i> | LDED | E | | \$798 | \$0 |
| EG-5S2.00 | <i>tie into ecuentro</i> | | | | \$2,436 | \$0 |
| EG-5S2.01 | <i>coordinating</i> | LDED | E | | \$1,638 | \$0 |
| EG-5S2.02 | <i>marketing and promoting</i> | LDED | E | | \$798 | \$0 |
| EG-5S3.00 | <i>identify groups involved in trade</i> | LDED | E | | \$504 | \$0 |
| EG-5S4.00 | <i>work with the economic council</i> | LDED | E | | \$798 | \$0 |
| EG-5S5.00 | <i>identify resources</i> | LDED | E | | \$1,596 | \$0 |
| EG-5S6.00 | <i>find out what is being pursued</i> | LDED | E | | \$3,486 | \$0 |
| EG-5S7.00 | <i>conduct a series of think tank sessions</i> | | | | \$966 | \$0 |
| EG-5S7.01 | <i>coordinating meetings</i> | BTPO | E | | \$336 | \$0 |
| EG-5S7.02 | <i>support</i> | LDED | E | | \$630 | \$0 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$13,000

Total Funding Existing (Years 1-5): \$13,000

Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the public sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. The encouragement and facilitation of exportation of regional resources, goods and services.
2. The establishment of ongoing relationships between estuary businesses and the world trade community.
3. The identification of those products and services that fit environmentally sustainable economic activity.

Action Plan EG-5: Export of Resources, Products and Technology

4. To expand export efforts through the education and training of business, agricultural, marine life and other interests in the export and international trade.
5. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. A seed grant or sponsoring agency is obtained to do the initial research.
2. BTMC assumes role as lead implementor of this Action Plan.
3. BTMC participates in the Encuentro event in New Orleans.
4. Groups that are actively encouraging international trade are identified.
5. Potential and existing businesses are identified for program participation.
6. Current and previous efforts in developing export trade are identified, with specific attention given to successful efforts.
7. A series of think tank sessions with relevant groups identified are conducted to further identify potential markets.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Participant satisfaction.

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2. Export markets are expanded in terms of number of products, number of participating businesses and the dollar volume of activity.
3. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
4. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Number of program participants.
2. Participant satisfaction.
3. Number of export market areas.
4. Volume and value of export activities.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - The number and types of businesses participating in program export activities, the number requesting information, the type of information requested and whether or not the requested information was available will be collected and compiled by the Program Office.

Participant Satisfaction - Survey of program participants.

Export Activities - Annual data on volume and value of exports by two digit SIC code is available on the state level from the U.S. Department of Commerce, *Nation Trade Data* report. The USACOE, *Waterborne Commerce of the United States* also provides a source for volume and values of exports by commodity type from ports within the region. No available data sources were found to identify exports by originating parish. The lack of this data will severely limit the ability to monitor growth in regional export activities. Depending on the willingness of companies to participate in this effort, regional data on export activities can be obtained through case studies, participant surveys or a combination of both.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.

Action Plan EG-5: Export of Resources, Products and Technology

8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Participant Satisfaction - Analysis of data compiled from the survey of participants will be utilized to ascertain satisfaction and usefulness of program resources provided. The frequency and sampling of participants contacted will depend on the level of participation and the number of participants (Mendenhall 1971).

Export Activities - If available, regional export volumes, values, and market data obtained from case studies and surveys can be compiled and monitored over time as a measure of growth and expansion in regional export activities. These data should also be compared with statewide and nationwide export figures as a basis of relative growth.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for an estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Participant Satisfaction - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Export Activities - Based on the scope of services required by an independent contractor for compilation and analysis of existing data, the collection, compilation and analysis of primary data and report preparation an estimated 200 person-hours will be required for an estimated total annual cost of \$10,000 which includes salary, fringe benefits, overhead and associated expenses. Since the data requested will for the most part be considered proprietary, it is recommended that an assessment of the willingness of companies to provide this information is made utilizing the Participant Satisfaction survey before committing to this expenditure.

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Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

EG-6 New Technology Research and Development

OBJECTIVES

1. To provide an opportunity to develop new equipment and technologies in existing businesses, such as oil and gas and land management, that allow for more environmentally sensitive practices. To examine and encourage the adoption of existing technologies and practices, such as alternate farming/fertilizing/pest management methods, that are being used successfully locally and in other estuaries, and may have application possibilities in the BTES.
2. To have the BTES benefit from the marketing of the equipment and technologies that are developed.

DESCRIPTION

This action will create a combination of relationships between business, academic institutions, agricultural interests, and marine life harvesters. It will assess common business practices as they are presently performed, determine where they damage or place at risk the estuarine ecosystem and explore the creation of alternative equipment, approaches or practices that are less damaging or decrease the risk of damage.

Potential areas for research and development:

1. Extraction technologies for environmentally sensitive areas such as marshes and wetlands.
2. Coastal restoration technology.
3. Alternate farming practices.
4. Diversification of resource-based economy to include ecotourism-based economy.

It will also assess the options for transferring the technology developed in estuarine management and research. This could apply to many of the projects funded by the BTNEP effort as well as other projects. Potential arenas to explore are:

1. The research on barrier islands restoration in terms of methods and approaches.
2. Laboratory equipment created to test marine life as in the Biology Department at Nicholls State University.
3. Various systems devised to trap sediment.
4. New systems for emulating reefs, beaches, etc.
5. Innovative uses of dredged materials.
6. Safe, practical uses for municipal and livestock wastes.

It will entail the creation of an ever expanding network of innovators, researchers, corporate research and development teams, inventors and others that will enhance the possibility of new developments. It is hoped that greater clarity will be achieved on the factors that contribute to this kind of creative application or inventiveness.

Assistance should be sought from nearby university programs in entrepreneurship, such as those at Tulane University and the University of New Orleans.

Consideration needs to be given, also, to constructing more specific, but flexible regulatory language in such areas as resource conservation, integrated farm management (BMPs), and voluntary compliance options. Reform language should include rewards (i.e., tax breaks) for good business practices and technology development, encourage partnerships, and specifically outline requirements for environmental compatibility.

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Once established it will serve the Barataria-Terrebonne Management Conference (BTMC) as a promotion vehicle to draw attention to pro-active ecologically responsible business practices.

BACKGROUND/MAJOR ISSUES

In the development of the CCMP most participants in the Economic Growth Alliance of the BTMC considered this aspect of economic development to be outside of their realm of expertise. Due to this most of the development of this plan will best be done by a special panel or task force of volunteers with experience in innovative technology. It is expected that the make up of such a group would be better identified by members of the BTMC and participants in the Technology Exposition. For that reason it is recommended that further development begin after the completion of this CCMP.

As a long range plan to increase economic activity, leading to new jobs, this plan should eventually influence many residents of the estuary as well as business leaders.

By encouraging responsible economic activity this plan can radically decrease negative impacts on the seven priority problems.

This plan is strongly linked with Action Plans *EG-7, Cooperative Incentives*, and *EM-11, Reduction of Agricultural Pollution*. Each of these plans provides alternative means of managing the estuary's resources in ways that do not depend on regulatory processes. At numerous public meetings sponsored by BTNEP, these types of methods were identified by estuary residents and users as high priorities for the program.

BENEFITS

Suggestions in this section, along with the other economic growth activities included in this management plan, can expand both opportunities for sustainable economic development and the network of people and organizations committed to the long-term future of a healthy estuary. It should also serve as an encouragement for new, more responsible methods for successfully conducting business in the estuary. In addition, technologies and responsible business practices are desired and sought after in the broader arena of environmental/habitat protection lending the potential for marketability to any technology or methodology developed for the BTES.

Technology research and development is a natural in the BTES, as it is one of seven sites chosen by the U.S. Government Accounting Office as a pilot for ecosystem management studies. As a pilot site for this federal study, funds for technology research and development, as well as for encouraging/facilitating partnerships may be available.

The developments in technology, including the research, organization, and implementation, will diversify the economic/job base for the BTES. This will be a long lasting impact that will expand with time.

IMPLEMENTATION SCHEDULE

S 1.00 The first step in implementing this plan is to gather a special task force with expertise in similar activities to further develop this direction. Other short, medium, and long term plans should be determined by the aforementioned task force.

LEAD AND SUPPORT IMPLEMENTORS

The present Program Office should be the lead implementor. Others could include: Small Business Administration, U.S. Department of Education, EPA, universities, corporate research and development teams, local, parish, and/or regional chambers, agricultural organizations (Farm Bureau, Louisiana Association of Conservation Districts), service organizations (Rotary, Lions, Kiwanis), not-for-profit organizations (e.g., The Audubon Institute), and others as identified later by the task force.

Action Plan EG-6: New Technology Research and Development

Funding and memoranda of understanding and/or corporate agreements should be solicited by the lead implementor from USDOE, EPA, the Louisiana Economic Development Corporation, Freeport McMoRan, Entergy, LL&E, Texaco, and others.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG6-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table EG6-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-----------|---------------------------|------|-------------------|---------|--------------------------|---------------------------------------|
| EG-6 | | | | | \$168 | \$0 |
| EG-6S1.00 | <i>special task force</i> | LDED | E | | \$168 | \$0 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$200
 Total Funding Existing (Years 1-5): \$200
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. The assessment of common business practices within the region that presently damage or place at risk the estuarine ecosystem.
2. Establish a cooperative program between business and industry, academic institutions, agricultural interests and marine life harvesters to explore the creation of alternative equipment, approaches or practices that are less damaging or decrease the risk of damage.
3. To further capitalize on these efforts as well as the technology research and development efforts of other plans through the marketability of products, procedures and technologies developed.

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4. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. A special task force with expertise in similar activities is established.
2. The special task force completes the development of this Action Plan.
3. Common business practices within the region that presently damage or place at risk the estuarine ecosystem are identified.
4. Participation from relevant parties (as listed in components of the plan) is solicited.
5. Alternative equipment, approaches or practices are identified and/or developed.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified. Additional criteria for plan implementation will need to be specified after the Action Plan is fully developed.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 82 person-hours will be required at an estimated total annual cost of \$4,100 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The overall plan for monitoring success cannot be specified until this Action Plan is fully developed. Initial success will be based on the following criteria. Additional elements will need to be specified upon completion of the plan development.

1. Alternative equipment, approaches or practices identified are implemented within the region.
2. The market for products, procedures and technologies developed is expanded.
3. Diversification in types of businesses and industries within the region is increased.
4. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
5. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific - To be expanded upon plan completion.

Action Plan EG-6: New Technology Research and Development

1. The number of alternative equipment, approaches or practices implemented within the region.
2. The volume and value of products, procedures and technologies developed/marketed outside the region.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Plan Specific - A survey of project participants and related companies.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods (to be expanded upon plan completion)

Plan Specific - Analysis of data compiled from the survey of participants will be utilized to ascertain the volume of new technologies and practices implemented and to monitor the market expansion of regionally developed products. The frequency and sampling of participants contacted will depend on the level of participation and the number of participants.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs

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will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates (to be expanded upon plan completion)

Plan Specific - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

Cooperative Incentives

EG-7 Cooperative Incentives

OBJECTIVES

1. To identify or provide innovative financing or tax incentives to promote environmentally sound economic development.
2. To make available the information regarding existing tax incentives that are designed to preserve or restore vegetated wetlands, protect endangered species, or protect or improve water quality.

DESCRIPTION

Creating an environment that allows both humans and nature to live in a sustainable ecosystem requires people to work towards more efficient and less environmentally damaging methods and materials to create the necessary products demanded by consumers. Accomplishment of such a task can be achieved by either regulatory, quasi-regulatory (partial), or non-regulatory means. Regulatory methods require an intensive system of checks and balances which can increase governmental costs and bureaucracy. The regulatory approach results in:

1. Increased taxes to pay for enforcement.
2. More expensive consumer goods due to higher production costs for compliance.

The quasi-regulatory method requires a less intensive system of checks and balances with potentially a lower overall cost for similar environmental benefits as compared to the regulatory approach. An example of quasi-regulatory would be selling polluter rights. Under the quasi-regulatory approach a certain limit is set for specific types of pollutants in a geographic area. The approach does not rely on each polluter being below a certain limit which requires more intensive monitoring. The approach allows a business that utilizes less efficient equipment, that may be polluting more than their share, to purchase rights from a firm with more efficient equipment. This method does not put undue pressure on a greater polluter to invest money in new equipment that they may not be able to afford. Also, the more efficient firm is rewarded for making use of better methods or equipment. This method is more appropriately used where point source pollution is causing a problem. It may become applicable to non-point source pollution as monitoring and testing equipment and methods are improved.

The non-regulatory approach requires a less intensive monitoring system than the regulatory and quasi-regulatory approaches and is done on a voluntary basis. An example of non-regulatory would be the use of payments for utilizing a certain method that is more environmentally favorable. Under the non-regulatory approach financial incentives could be used to entice businesses to use certain methods and equipment that are less damaging to the environment. Non-regulatory approaches are presently more applicable to non-point source pollution problems. This is presently done in the agricultural community to promote cropping and tillage methods that reduce soil erosion and improve water quality of runoff from farms. Cost-share monies and technical assistance are provided to agricultural producers to implement conservation practices that target the reduction of soil erosion and improve water quality of waters leaving the farm. This is provided by the U.S. Department of Agriculture through the Consolidate Farm Services Agency (CFSA), formerly Agricultural Stabilization and Conservation Service (ASCS), and Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS). Another method is to convert marginal cropland back to wetland habitat. The NRCS administers the Wetlands Reserve Program (WRP) which takes agricultural land out of crop production and plants the land into native vegetation. The

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program allows the landowner to still use the land for forestry production and hunting. These areas provide flood water storage and treatment and habitat for wildlife species.

This Cooperative Incentives action will consist of three phases. The first phase will identify, document and set up the informational structures on existing public and private incentives. It will entail accessing information from all local, state and federal agencies and private entities that have enough vested interest in a healthy estuary to offer incentives to business, industry, marine or agricultural interests. Once the incentive programs are identified and documented into easy to use resource books, strategies will be devised to distribute the resource books and conduct seminars or other events introducing people to the concept of incentives and assisting them in deciding how they may concretely take advantage of them.

The second phase will entail working with stakeholders, agency representatives, environmental advocates, users and others to discern where new incentive programs would be most beneficial. Next, time would be spent deciding on the particular form of incentives that the group would recommend.

The third and final phase would entail identifying possible legislation for the public sector and proposals to private sector entities. Then, work would be done with the private sector decision making bodies involved in dialogue with appropriate public sector administrative or legislative persons to modify as needed and finally implement the legislation or decision making which would put into practice the proposed incentive programs. If the level of government needed to implement the incentives is Federal, pilot testing legislation may be suggested to avoid partisan political concerns. This program could have a direct impact on affecting the priority problem areas in the estuary. It would serve the goals of appropriate economic development effective, fair regulations and cooperative incentives.

BACKGROUND/MAJOR ISSUES

The call for cooperative incentives within the management conference members came from frustration with the regulating and permitting processes of many entities. Incentives were referred to as “a carrot approach as opposed to the big stick approach of regulations.” Among those involved in the enforcement of regulations there was an overwhelming sense of being under staffed and under funded. Incentives for some were seen as a way to encourage voluntary compliance. This plan could eventually influence many users and residents of the estuary directly through the availability of the incentives and indirectly through the long term improvement to the ecosystem if they are effectively utilized.

This plan is strongly linked with Action Plans *EG-6, New Technology Research and Development*, and *EM-11, Reduction of Agricultural Pollution*. Each of these plans provides alternative means of managing the estuary’s resources in ways that do not depend on regulatory processes. At numerous public meetings sponsored by BTNEP, these types of methods were identified by estuary residents and users as high priorities for the program.

BENEFITS

This plan should benefit the estuary by encouraging new and more responsible methods of conducting business that traverses the estuary, utilizes its land and water, or harvests its bountiful natural resources. In the longer term it should reverse many of the adverse trends in the estuary and provide for sustainable development of the area. Also, the use of incentives through quasi-regulatory and non-regulatory programs may create more cost-efficient approaches to estuary management.

Action Plan EG-7:

Cooperative Incentives

IMPLEMENTATION SCHEDULE

Short Term (year 1 to 2): The short term plan will consist of setting in motion the research of existing incentives applicable to the goals of the Barataria-Terrebonne National Estuary Program while simultaneously setting in motion the structures to disseminate the information and train people in its application. Including:

- S 1.00 Identify a source of funds for contracting for the research to be completed.
- S 2.00 Prepare a Request for Proposal for the research.
- S 3.00 Select the contractor.
- S 4.00 Meet with government agencies, private organizations, and business interests for information collection.

Medium Term (years 3 to 4): This time will be used to continue the development of phase I and implement phase II. Including:

- M 1.00 Document of all available incentive programs and discussion of possible programs to be created.
- M 2.00 Become a clearing house of information about other groups' incentive programs.
- M 3.00 Develop a plan for increasing the use of non-regulatory and quasi-regulatory approaches.
- M 4.00 Work to find potential funding sources for incentive programs created through the work of the Barataria-Terrebonne Management Conference (BTMC) and partners.

Long Term (years 5 to 25): During this time frame plans will implement phase three while continually reevaluating the effectiveness of existing incentives and the need for new ones. This includes reevaluating of the phase 1 work on a three to five year basis to collect new information; rewriting the incentives handbook and hold public meetings to educate the public; and, completing a plan for choosing a regulatory, quasi-regulatory, and voluntary pollution controls for the legislature to enact.

LEAD AND SUPPORT IMPLEMENTORS

The Program Office staff should be the leader in implementation. Others could include: Louisiana Department of Environmental Quality, U.S. Department of Agriculture, Louisiana Department of Agriculture and Forestry, U.S. Department of Interior, other government entities, most user groups, the Coalition to Restore Coastal Louisiana, the Sierra Club, major land owners, major oil companies, and major agricultural groups.

COSTS AND ECONOMIC CONSIDERATION

Table EG7-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered "new" (a direct product of CCMP recommendations) and "existing" (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EG7-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---|-------------|-------------------|---------|--------------------------|---------------------------------------|
| EG-7 | | | | | \$10,118 | \$14,542 |
| EG-7S1.00 | <i>identify sources of funds</i> | | | | \$3,192 | \$0 |
| EG-7S1.01 | <i>secure funding</i> | USDA | E | | \$798 | \$0 |
| EG-7S1.02 | <i>secure funding</i> | LDEQ | E | | \$798 | \$0 |
| EG-7S1.03 | <i>secure funding</i> | LDNR | E | | \$798 | \$0 |
| EG-7S1.04 | <i>secure funding</i> | USACOE | E | | \$798 | \$0 |
| EG-7S2.00 | <i>prepare a request for proposal</i> | BTMC | E | | \$1,596 | \$0 |
| EG-7S3.00 | <i>select the contractor</i> | | E | | \$2,096 | \$0 |
| EG-7S3.01 | <i>prepare contract announcement</i> | BTPO | E | | \$798 | \$0 |
| EG-7S3.02 | <i>review and reward</i> | BTPO | E | | \$798 | \$0 |
| EG-7S3.03 | <i>publication support</i> | BTPO | E | | \$500 | \$0 |
| EG-7S4.00 | <i>meet with government agencies</i> | BTPO | N | | \$3,234 | \$0 |
| EG-7M1.00 | <i>document available incentive programs</i> | | | | | \$524 |
| EG-7M1.01 | <i>literature review, editing</i> | LDED | N | | | \$399 |
| EG-7M1.02 | <i>production of report</i> | LDED | N | | | \$125 |
| EG-7M2.00 | <i>become a clearing house of information</i> | LDED | E | | | \$1,313 |
| EG-7M3.00 | <i>develop a management plan</i> | | | | | \$2,205 |
| EG-7M3.01 | <i>develop a management plan</i> | USEPA | E | | | \$504 |
| EG-7M3.02 | <i>develop a management plan</i> | LDEQ | E | | | \$504 |
| EG-7M3.03 | <i>distributing information</i> | USEPA | E | | | \$599 |
| EG-7M3.04 | <i>distributing information</i> | LDEQ | E | | | \$599 |
| EG-7M4.00 | <i>find potential funding sources</i> | BTMC | E | | | \$10,500 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$68,300
 Total Funding Existing (Years 1-5): \$63,000
 Total New Funding Necessary (Years 1-5): \$5,300

Action Plan EG-7:

Cooperative Incentives

Table EG7-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|---|----------------------------------|--------|--------|--------|
| BTPO | \$3,200 BTPO budget surplus; license plate revenue | | | | |
| LDED | | \$2,100 License plate revenue | | | |

Summary of new funding strategy: Cost for BTPO staff to attend meetings to gather information can be funded by program budget surplus or license plate revenue. Funding for the LDED to review, edit, and produce a report can be supported by environmental license plate revenue.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. To compile and publicize a listing of currently available environmentally-based incentive programs.
2. The development of quasi-regulatory and non-regulatory methods promoting environmentally responsible business practices by rewarding good practices as opposed to exercising control through punitive measures.
3. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives.

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Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Funds contracting the initial research effort are secured.
2. A request for proposal for the research is prepared.
3. A contractor is selected.
4. Relevant information is collected from government agencies, private organizations and business interests.
5. All available incentive programs are documented, including a discussion of possible programs to be created.
6. A clearinghouse of information about other incentive programs is established.
7. A plan for the establishment of a quasi-regulatory agency is developed.
8. Potential funding sources for incentive programs created are identified.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

Cost estimates

Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Innovative financing or tax incentive programs available are identified.
2. Information collected is distributed to relevant parties.
3. There is an increase in participation in programs identified.
4. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
5. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. Number of programs identified.
2. Number and types of businesses information is distributed.
3. Assessment of the usefulness of information provided.
4. Number of companies participating in incentive programs.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).

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Cooperative Incentives

4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.

6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - The number and types of programs identified and the number and types of business information distributed will be collected and compiled by the Program Office.

Assessment of Usefulness - Survey of program participants.

Incentive Program Participation - The number and types of businesses participating and the level of participation can be obtained from the appropriate sponsoring agency.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Assessment of Usefulness - Survey or surveys of participants will be utilized to ascertain satisfaction and usefulness of program resources provided as well as the accessibility of funding and support from private financial institutions. The frequency and sampling of participants contacted will depend on the level of participation, the number of participants and available funding (Medenhall 1971).

Incentive Program Participation - Strategies for monitoring the effectiveness of specific tax and fiscal incentive programs will need to be developed in conjunction with program development (Rubin 1985).

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups

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as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for an estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Assessment of Usefulness - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Incentive Program Participation - Collection and documentation of program participation will be dependent on the number and types of programs evaluated.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

EG-8 Education about Regulatory Intent

OBJECTIVES

1. To increase the general understanding of and compliance with the wetlands permitting process.

DESCRIPTION

This action will develop and implement an educational program to explain the purpose of the wetlands permitting process to targeted industry and business audiences such as Chambers of Commerce, Kiwanis Clubs, Rotaries, professional and trade associations, and others.

BACKGROUND/MAJOR ISSUES

The Section 404 permitting regulations of wetland development were developed as part of the federal Clean Water Act to help keep our nation's water clean. Because wetlands play an important role in water quality, the permitting process was initiated to minimize the potential negative impacts of wetland development.

Unfortunately, many citizens now believe that the purpose of the 404 permitting process is to stop economic development of wetlands. However, there are many cases in which the permitting process resulted in a win-win situation for the developer and the public. That is, the proposed project was modified so it was less damaging to the environment. This resulted in a profitable venture for the developer while at the same time achieving the intent of the law which is to protect wetlands and water quality.

This federal regulatory process is administered by the U.S. Army Corps of Engineers (USACOE). The Louisiana Department of Natural Resources (LDNR) Coastal Management Program also lends protection to the wetlands and other habitats and could be included in this educational effort.

BENEFITS

Through this action, industry and business leaders would become more knowledgeable about the intent of the wetlands permitting process. It is possible that this increased knowledge will reduce permitting disputes and allow the process to move more smoothly.

IMPLEMENTATION SCHEDULE

In 1995, a series of town meetings were held in southern Louisiana to discuss the 404 process and related wetlands protection programs. This included the Environmental Protection Agency (EPA), the Governor's Office of Coastal Activities (LGOCA), USACOE and LDNR. Also, frequent meetings are held throughout the estuary region to advise individuals and groups on how to complete a 404 permit and to explain the actual application process.

Short-term plans (1995-1997) are as follows:

- S 1.00 Develop educational presentation materials.
- S 2.00 Recruit and train speakers.

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S 3.00 Develop schedule of engagements.

S 4.00 Begin speaking engagements.

Medium- and long-term plans include the following:

M 1.00 Involve other protection programs.

M 2.00 Continue speaking engagements.

M 3.00 Update materials.

M 4.00 Provide continual orientation for speakers.

M 5.00 Target community individuals to become specialists and work with the economic community directly.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementor of this action will be the Barataria-Terrebonne Management Conference (BTMC). The USACOE, LDEQ and LDNR will provide support.

COSTS AND ECONOMIC CONSIDERATIONS

Table EG8-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|------------------------------------|----------------|---------------------------|----------------|----------------------------------|--|
| EG-8 | | | | | \$8,206 | \$5,190 |
| EG-8S1.00 | <i>develop education materials</i> | | | | \$8,000 | \$0 |
| EG-8S1.01 | <i>develop education materials</i> | LDNR | N | | \$4,000 | \$0 |
| EG-8S1.02 | <i>develop education materials</i> | BTPO | N | | \$4,000 | \$0 |
| EG-8S2.00 | <i>recruit and train speakers</i> | no cost | no cost | | \$0 | \$0 |
| EG-8S3.00 | <i>engagement schedule</i> | BTPO | E | | \$126 | \$0 |
| EG-8S4.00 | <i>begin speaking engagements</i> | | | | \$80 | \$0 |
| EG-8S4.01 | <i>begin speaking engagements</i> | LDNR | E | | \$40 | \$0 |
| EG-8S4.02 | <i>begin speaking engagements</i> | BTPO | E | | \$40 | \$0 |
| EG-8M1.00 | <i>involve other programs</i> | BTPO | E | | | \$966 |
| EG-8M2.00 | <i>continue engagements</i> | | | | | \$80 |
| EG-8M2.01 | <i>continue engagements</i> | LDNR | E | | | \$40 |
| EG-8M2.02 | <i>continue engagements</i> | BTPO | E | | | \$40 |
| EG-8M3.00 | <i>update materials</i> | | | | | \$1,336 |
| EG-8M3.01 | <i>editing</i> | BTPO | N | | | \$336 |
| EG-8M3.02 | <i>production and distribution</i> | BTPO | N | | | \$1,000 |
| EG-8M4.00 | <i>continued orientation</i> | no cost | no cost | | | \$0 |
| EG-8M5.01 | <i>meeting</i> | BTMC | E | | | \$84 |
| EG-8M5.02 | <i>contacting specialists</i> | BTPO | E | | | \$504 |

**Action Plan EG-8:
Education
About Regulatory Intent**

| | | | | | | |
|-----------|---------|----------|---|--|--|-------|
| EG-8M5.03 | meeting | agencies | E | | | \$168 |
|-----------|---------|----------|---|--|--|-------|

Table EG8-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$28,600
 Total Funding Existing (Years 1-5): \$16,400
 Total New Funding Necessary (Years 1-5): \$12,200

Table EG8-1. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|---|---|---|---|
| BTPO | \$4,000 EPA Environmental Education Grant | \$1,300 EPA Environmental Education Grant; license plate revenue | \$1,300 EPA Environmental Education Grant; license plate revenue | \$1,300 EPA Environmental Education Grant; license plate revenue | \$1,300 EPA Environmental Education Grant; license plate revenue |
| LDNR | \$4,000 EPA Environmental Education Grant | | | | |

Summary of new funding strategy: EPA's Environmental Education Grant program provides grants for projects specifically addressing environmental education. The \$8,000 cost in Year 1 is incurred for producing and distributing educational brochures about non-point source pollution. Because the grant application is for less than \$25,000 it should be made to the EPA Regional office. If grant funding cannot be secured in Year 1, Program Office budget surplus or license plate revenue can be used to fund this task. The \$1,300 cost in Years 2-5 can be funded through an education grant or license plate revenue.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have

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severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by

permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. This action will develop and implement an educational program to explain the purpose of the wetlands permitting process to targeted industry and business audiences.
2. In addition this plan is intended to serve as one component of a long-range plan to increase economic activity, lead to the creation of new jobs and increase economic opportunities available to current and future generations through the development of ecologically responsible activities.

Interrelationships Among Components

By design the eight economic growth plans are expected to overlap and build on the efforts of each other as well as the efforts of other Action Plan areas. Each plan shares the overall goal for economic growth through increased economic opportunities to ensure the long-term economic sustainability of the region while protecting its natural resources. Because of this interrelationship between plan components, the monitoring strategies for each plan will encompass measures of overall economic growth of the region as well as measures of implementation and success of specific plan objectives. Several components of this Action Plan are closely linked with the activities of CP-2, Wetlands Permitting Information Centers.

Documentation of Plan Implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Educational presentation materials are developed.
2. Speakers are recruited and trained.
3. A schedule of engagements is developed.
4. Educational program is presented according to the schedule developed.
5. Other protection programs are solicited for participation.
6. Materials are periodically updated as needed.
7. Presentation of educational program is continued.
8. Orientation of speakers is provided on a continuing basis.
9. Community individuals are trained to become specialists and work directly with the economic community.

Methods for Monitoring Plan Implementation

Measurable parameters

Assessment of task completion - As specified in the above criteria project activities will be documented and monitored by an independent Third Party.

Data collection methods

The Program Office will maintain records on the number of presentations conducted and summary data on the number and types of participants. The criteria for plan implementation will be assessed by an independent Third Party who will attend relevant meetings, assess the minutes of these meetings, evaluate implementation summary statistics and provide quarterly monitoring reports to the BTMC detailing the progress of implementation activities and any problems identified.

Sampling design and statistical methods

There are no relevant sampling design or statistical analyses for evaluation of plan implementation.

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Cost estimates

Based on the specified scope of services an estimated 56 person-hours will be required at an estimated total annual cost of \$2,800 which includes salary, fringe benefits, overhead and associated expenses.

Documentation of Plan Success

The following criteria will be used to determine plan success in meeting Action Plan objectives:

1. Summary statistics on the number of speaking and training engagements and level of participation each year.
2. Participant satisfaction.
3. Familiarity with the wetlands permitting process is increased.
4. There is regional growth in the number of business establishments; specifically in the number of new small business starts and/or expansions.
5. New jobs are created, earnings and income increase.

Methods for Monitoring Plan Success

Measurable parameters

Plan Specific

1. The number of speaking and training engagements and level of participation.
2. Participant satisfaction.
3. Familiarity with the wetland permitting process.

Overall Economic Growth

1. Total number of new business starts within the region (by industry type).
2. Total number of business establishments within the region (by industry type).
3. Total number of jobs (by industry type).
4. Average earnings per job (adjusted by appropriate CPI for the base year).
5. Total labor force participation.
6. Unemployment.
7. Per capita income (adjusted by appropriate CPI for the base year).

Data collection methods

Program Summary Statistics - The number of speaking and training engagements and level of participation will be collected and compiled by the Program Office.

Participant Satisfaction - Survey of program participants.

Familiarity With Permitting Process - Survey of area businesses.

Overall Economic Growth - Annual data at the parish and/or MSA level should be acquired for each measurement of economic growth specified above beginning 3 to 5 years prior to project implementation. Recommended data sources include:

1. Total new business starts - Listings of new businesses by type will have to be obtained from varying sources including: the Secretary of State, Louisiana Board of Commerce and Industry and the local agencies within the region responsible for issuing business permits. From these listings an unduplicated listing of businesses by type can be compiled.
2. Business establishments - U.S. Bureau of the Census, *County Business Patterns, annual series*.
3. Total number of jobs - U.S. Bureau of the Census, *County Business Patterns, annual series*.
4. Average earnings per job - BEA, *Regional Economic Information System*.
5. Total labor force participation - BLS, *Employment and Unemployment for State and Local Areas, annual series*.
6. Unemployment - BLS, *Employment and Unemployment for State and Local Areas, annual series*.

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7. Per capita income - BEA, *Regional Economic Information System*.
8. CPI - BLS, *Consumer Price Index*.

Sampling design and statistical methods

Program Summary Statistics - There are no relevant sampling design or statistical methods associated with this task.

Participant Satisfaction - Survey or surveys of participants will be utilized to ascertain satisfaction and usefulness of program resources provided. The frequency and sampling of participants contacted will depend on the level of participation, the number of participants and available funding.

Familiarity With Permitting Process - Survey or surveys of area businesses (including both program participants and non-participants) will be utilized to assess familiarity with the wetlands permitting process. The frequency and sampling of participants contacted will depend on the level of participation, the number of participants and available funding.

Overall Economic Growth - While the consensus of conventional research on evaluating economic development activities concludes that either the impacts of specific economic development projects cannot be feasibly quantified or are insignificant on the scale of the overall economic growth for a region, it is generally accepted that an assessment of area economic growth and well-being should be monitored as part of the development and evaluation of such programs (Bartik 1991; Courant 1994).

This is particularly applicable for what Bartik refers to as “new wave” economic developments which include the types of programs presented in the CCMP. Examples of “new wave” economic development programs include: providing businesses with advice and technical assistance, government-financed loan or equity programs, entrepreneurial training programs, technology transfer programs and export assistance.

These “new wave” programs are modestly funded in comparison to traditional programs such as tax incentives and are minuscule relative to total economy dollars (Bartik 1994). Bartik advocates the use of surveys and focus groups as valid measures of the effectiveness of these types of programs in conjunction with the monitoring indicators of overall economic welfare (Bartik 1994).

In the absence of practical control groups, it is recommended that regional economic growth indicators as specified in the above criteria are monitored over time and in comparison to statewide indicators. While it is important to monitor annual indicators, it should be noted that many important results from economic development programs will not necessarily appear within one year. Specific attention should be given to changes in regional indicators relative to changes in indicators for the state.

Cost estimates

Program Summary Statistics - Based on the scope of services required by an independent contractor for the review and analysis of project summary statistics and report preparation an estimated 16 person-hours will be required for an estimated total annual cost of \$800 which includes salary, fringe benefits, overhead and associated expenses.

Participant Satisfaction - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Familiarity With Permitting Process - The total cost of this effort will depend on the number of survey instruments needed and the number of individuals and agencies contacted. The unit cost estimate is \$30.00 per person or agency contacted. This includes components for survey development, implementation and analysis. The unit cost per contact will increase for sample size smaller than 50.

Overall Economic Growth - Based on the scope of services required by an independent contractor for data compilation and analysis and report preparation an estimated 50 person-hours will be required for an estimated total

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annual cost of \$2,500 which includes salary, fringe benefits, overhead and associated expenses. Since this monitoring component is common to all eight economic growth plans the cost can be shared across plans.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation and success will be undertaken by an independent Third Party. The Third Party evaluator will prepare quarterly reports and an annual summary describing actions of the BTMC concerning the implementation of this Action Plan. Monitoring reports for project success will be prepared and submitted to the BTMC quarterly for program summary statistics and annually for all other efforts.

Quality Assurance/Quality Control

The Quality Assurance Plan for monitoring plan implementation involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC.
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a quarterly schedule for reporting on BTMC activities.

Ecological Management

ECOLOGICAL MANAGEMENT ACTION PLANS

The Action Plans included under **Habitat Management** address the three most critical Priority Problems identified for the BTES - *Hydrologic Modification, Reduced Sediment Flows* and *Habitat Loss/Modification*. As such, they are considered by many to be the most important portion of the CCMP. Underlying these actions is the need for coordination with various other initiatives which have been created to address these critical problems, such as the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), and the state's LEAP 2000 program. Of particular importance is the CWPPRA program, as it will provide much of the federal funding required to implement the actions described in this section. Two feasibility studies - one for barrier island restoration, and the other for freshwater and sediment diversions - are presently being conducted in association with CWPPRA, and will significantly impact the specific implementation of these actions. Therefore, it is of the utmost importance that the recommendations included in this CCMP be considered in conjunction with CWPPRA and the other initiatives.

Several efforts have been initiated by the BTNEP in order to broaden the scientific knowledge of these issues, as well as to demonstrate the effectiveness of certain strategies. The BTNEP-sponsored report, *Current Status and Historical Trends of Hydrologic Modification, Reduction in Sediment Availability and Habitat Loss/Modification*, characterizes the current status as well as the spatial and temporal trends of the three Priority Problems. The data produced by this report has been incorporated into the CCMP, as well as the individual action plans. In addition, BTNEP has sponsored two modeling efforts: a landscape simulation model, which will help predict large-scale habitat changes in the BTES; and a hydrologic model, which will help to increase the understanding of water movement in the estuaries. BTNEP has also sponsored a demonstration project using donated Christmas trees to encourage marsh formation in abandoned canals.

In developing these action plans, the Ecological Management Alliance of the Management Conference produced two working documents: the *Phase One Document: Common Ground Strategy for Managing Coastal Wetlands, Barrier Islands and Adjacent Bay Habitat of the Barataria-Terrebonne Basins*; and, the *Phase Two Document: Plan Formulation and Implementation*. The first document identifies the strategies, or "tools" which can be used in habitat management, while the second applies these tools to the specifics of the BTES, including the incorporation of selected CWPPRA projects. These two documents form the basis for the seven Habitat Management Action Plans.

The **Water Quality** action plans directly address three Priority Problems identified by the BTNEP: *Eutrophication, Pathogen Contamination* and *Toxic Substances*. In addressing these problems, Alliance members were aware of the need to tie these actions in with the ongoing efforts of existing agencies, such as the Louisiana Department of Environmental Quality's Nonpoint Source Program, Water Quality Inventory, Water Pollution Control Program, and Toxics Release Inventory; the Louisiana Department of Natural Resources' Coastal Nonpoint Pollution Control Program; and, the Environmental Protection Agency's National Pollutant Discharge Elimination System. The focus of this effort was to work with these programs, avoiding duplications, to ensure that the specific needs of the BTES were addressed.

To support the work being done in this area, the BTNEP has sponsored several initiatives. A report entitled *Characterization of the Current Status and Historical Trends of Eutrophication, Pathogen Contamination and Toxic Substances in the Barataria and Terrebonne Estuarine Systems* was prepared to analyze current and historical data and literature on the three Priority Problems and provide additional data for the Action Plans. Additional studies were sponsored regarding fecal coliform monitoring and mapping of storm water drainage stations. Finally, a demonstration project was initiated to identify alternative agricultural practices which would reduce sediment runoff. A special Task Force on Water Quality was assembled in order to provide the specific experience needed to develop

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action plans in this area. The Task Force included members of the Alliance, as well as scientists from various universities and agencies who had expertise in a specific water quality issue. This collective effort produced seven action plans.

The **Living Resources** action plans address the Priority Problem of *Changes in Living Resources*. The actions proposed in this area not only serve to protect the living resources of the BTES, but also address the need to protect the estuaries from the negative impacts caused by certain species, such as zebra mussels and exotic vegetation. A related plan, addressing nutria herbivory, can be found in the Economic Growth section (plan *EG-3, Nutria Market Development*). Again, Alliance members worked towards integrating these actions into ongoing programs, rather than duplicating efforts. To provide the scientific foundation for the actions in this area, BTNEP sponsored a study, *Status, Trends, and Probable Causes of Change in the Living Resources of the Barataria-Terrebonne Estuary System*. In addition, BTNEP sponsored such projects as oyster grounds mapping and the formulation of a management plan for migratory birds. A Task Force of Alliance members, scientists and agency representatives was assembled to produce the Living Resources action plans.

The BTNEP publication, *Status, Trends and Probable Causes of Change in Living Resources in the Barataria-Terrebonne Estuarine System*, focused on a broad spectrum of species and animal groups within the estuaries. Selected invertebrates, finfish, amphibians, reptiles, birds and mammals are profiled in this document. A recurring management recommendation in the document was the importance of quality habitats, land and water, for a species' survival and for the sustainment of commercial considerations of the estuaries' harvestable aquatic resources. Quality habitat is a recurring statement of need in many of the action plans discussed here; including the action plan for migratory and resident birds (*EM-15*).

The absence of specific action plans for the many species profiled within the *Status and Trends* document is not a reflection of lesser importance than the three action plans included in this CCMP. To the contrary, many of the species profiled within the *Status and Trends* document are part of ongoing monitoring and assessment actions by state and federal agencies and reflect the longstanding importance of those species. The BTNEP endorses and encourages the continuation and expansion of these efforts.

The final plans in this section, **Accessible and Compatible Data Sets**, address the BTNEP Goal, *Create an accessible, comprehensive data base with interpreted information for the public*. In response to this goal, the BTNEP sponsored a study to assess the feasibility of a Data Information and Management System (DIMS) for the BTES. Such a system would establish information management tools and data formats that will best meet the needs of those managing the estuary.

EM-1 Hydrologic Restoration

OBJECTIVES

1. To restore the hydrology of the estuary in order to effectively use the fresh water, sediments and nutrients that already reach the basin marshes and to ameliorate the impacts of local hydrologic modifications.

DESCRIPTION

Hydrologic restoration is the use of plugs, weirs, culverts, shore stabilization and levee management to restore wetland hydrology to a state that more closely reflects hydrologic conditions prior to human alterations. The

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inclusion of specific structures and/or strategies depends upon the specific hydrologic alterations to be addressed by the project.

This action will create flow regimes which effectively use the freshwater, sediments, and nutrients that already reach the basin marshes. In areas where there is little or no freshwater, hydrologic restoration will be used to ameliorate the impacts of local hydrologic modifications. This will also be done in conjunction with freshwater and sediment diversions as "outfall management". In Terrebonne Basin, projects will focus on improved utilization of water and sediments from the Atchafalaya River. A saltwater barrier or lock in the Houma Navigational Canal is being considered. In the Barataria Basin, a major focus will be the control of tidal exchanges between the marshes of the upper and lower basin. Hydrology of the fringing marshes along the Mississippi River and Bayou Lafourche will also be improved.

BACKGROUND/MAJOR ISSUES

Hydrologic restoration projects are usually suggested for implementation in fresh, intermediate, brackish and saline marsh types, and are frequently recommended for cypress-tupelo swamps.

Hydrologic restoration projects use artificial means to restore artificially altered hydrologic regimes. The goals are to improve coastal marsh productivity, water quality and reduce land loss. In this case, artificially altered regimes include wetland areas which have been impacted by canal dredging and levee placement. Hydrologic restoration projects do not normally address alterations to marsh hydrology caused by levees on the Mississippi or Atchafalaya Rivers. These hydrologic problems are addressed by the actions described in Action Plan *EM-2, Freshwater and Sediment Diversions*.

Outfall management and the techniques used to achieve this management play a vital role in achieving the maximum gain from fresh water diversion projects. The approach to outfall management is to slow water velocities and to circulate diverted flows to bathe wetlands as much as possible with oxygenated, nutrient-rich, freshwater in the upper reaches of the project area and allow it to slowly flow through the estuary diluting ambient salinities. It is not an effort to impound water, but rather to incorporate retention measures for better water control, and to retard the rapid drainage typically enhanced by various types of man-made channels.

Some unavoidable impacts may include reduced access for recreational and commercial fishing, and potential for reduced ingress and egress of estuarine organisms. Plugs can eliminate access to some areas; and weirs and culverts can reduce access to varying degrees, depending on structural design. However, innovative approaches are being utilized in project design to facilitate passage of aquatic organisms and boats in all hydrologic restoration projects. Altered hydrologic exchange may reduce the amount of suspended sediment import to brackish marshes but this potential impact may be offset where suspended sediments are retained longer in the marsh, where there is no sediment source, or where marsh soils are largely organic and the requirement for sediment input is reduced.

Hydrologic restoration should be carefully implemented to avoid or address concerns regarding backwater flooding, potential impacts on infrastructure or landowners, adverse impacts on oyster leases and submerged aquatic vegetation, potential for water quality changes including eutrophication, increased duration of flooding on the marsh surface, adequate drainage for already flooded areas, and alterations to navigation.

BENEFITS

The primary benefit of hydrologic restoration projects is improved marsh productivity. This is achieved by increased freshwater retention within fresh and brackish marsh areas, enhanced nutrient and sediment retention in marshes, and

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reduced tidal exchanges. Reductions in tidal exchange and turbidity may also benefit submerged aquatic vegetation. Increased productivity of existing marshes is essential because of the high rates of coastal land loss and habitat change being experienced within the Barataria and Terrebonne basins.

IMPLEMENTATION SCHEDULE

This plan recommends that the Barataria-Terrebonne Management Conference (BTMC) and the citizens of the estuary support the implementation of hydrologic restoration as an ecological management tool wherever it is appropriate, economically feasible and conforms with the broader strategies for the coastal zone laid out in the *Louisiana Coastal Wetlands Restoration Plan* (also referred to as the CWPPRA plan). Specific recommendations are as follows:

Barataria Basin

This plan recommends CWPPRA projects which affect large areas of the basin, such as L'Ours Ridge restoration, which will plug the breaches in the ridge which allow north-south tidal flows; Central Basin Tidal drag, which will slow the opening of the central part of the basin and provides a stabilized ridge; GIWW to Clovelly, which will slow water level fluctuations; and, Little Lake Oil and Gas, which will restore hydrology in a heavily impacted area.

Terrebonne Basin

One of the biggest problems in the Penchant Sub-Basin is high water levels caused by excessive flooding from the Atchafalaya River and Lake Verret area, and insufficient drainage. The primary strategy to improve marsh conditions in this basin is to improve drainage from the basin, especially in the southern and eastern directions. Therefore, projects similar to the Upper Bayou Penchant Watershed Management, as described in the CWPPRA plan, are critical to improving this area. This improved drainage should also help marshes outside of this sub-basin.

In the Lake Boudreaux area of the Timbalier Sub-Basin, projects of secondary importance include the installation of Flap-gated culverts under Louisiana Highway 57 between Dulac and Louisiana Highway 56 and the installation of a structure having a large boat bay in Robinson Canal near Highway 56. The importance of culverts under Highway 57 is to allow for the flow of water north-to-south under the highway and to relieve ponding in this portion of the basin. The structure in Robinson Canal will reduce tidal fluctuations and saltwater penetration in the Lake Boudreaux area. The Lake Boudreaux Wetland project is also recommended.

While small-scale projects could be accomplished with a short-term time frame (0-3 years), the larger projects outlined above require careful design and planning. Short-term plans for this action include:

- S 1.00 BTMC support for the implementation of small-scale hydrologic restoration projects in areas where these are feasible, ecological benefits can be obtained, and funding is available.
- S 2.00 The BTMC should work to ensure that some of the specific projects recommended above are selected for CWPPRA funding.

Medium-term plans (3-6 years) are as follows:

- M 1.00 Projects approved for CWPPRA funding in the short-term should undergo planning, design and implementation phases within 5 years.
- M 2.00 The BTMC and citizens of the estuary should work to maintain interest in the ecological problems of the estuary and identify new areas where hydrologic restoration could be an effective ecological management tool. If such potential project sites can be identified, members of the BTMC should ensure that the projects

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are added to the CWPPRA Restoration Plan in order that they may be considered for future funding by that program.

Long-term plans (6 years and beyond) are as follows:

- L 1.00 The BTMC should ensure that implementors of hydrologic restoration projects constructed in the short- and medium- terms conduct necessary maintenance and monitoring of projects.
- L 2.00 Monitoring data should be evaluated by the Technical Committee of the BTMC to ensure that implemented projects are meeting their goals and not causing adverse impacts (e.g., prolonged flooding of the marsh surface).
- L 3.00 The BTMC should review the need for existing and future hydrologic management projects in the context of the findings of the Mississippi River Diversion feasibility study, and develop recommendations for any necessary changes in system management at all spatial scales.

LEAD AND SUPPORT IMPLEMENTORS

Small scale projects may be implemented in entirety by local land owners and parish governments. The lead implementor of the larger hydrologic restoration projects recommended in this action plan is more likely to be the CWPPRA Task Force which includes the U. S. Army Corps of Engineers, U. S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service, Environmental Protection Agency, the State of Louisiana, and the implementing state agency. The cooperation of local landowners and parish governments will continue to be essential to the successful implementation of any hydrologic restoration project.

Support implementors may include the State's Coastal Wetlands Conservation and Restoration Task Force which includes the Governor's Office of Coastal Activities, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Agriculture, and the Louisiana Department of Culture, Recreation, and Tourism.

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COSTS AND ECONOMIC CONSIDERATIONS

Table EM1-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table EM1-1. Cost Estimates.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ NEW | SUBSUME | Y 1-3 COSTS (Short Term) | Y 3-6 AVG COSTS (Medium Term) |
|-------------------|--|---------------|---------------------------|-------------|-----------------------------|-------------------------------------|
| EM-01 | | | | | \$756 | \$189 |
| EM-01S1.00 | <i>MC support: implem.</i> | | E | PI-2 | \$0 | \$0 |
| EM-01S2.00 | <i>MC support: funding</i> | | | | \$756 | \$0 |
| EM-01S2.01 | <i>funding support</i> | USACOE | E | | \$84 | \$0 |
| EM-01S2.02 | <i>funding support</i> | USEPA | E | | \$84 | \$0 |
| EM-01S2.03 | <i>funding support</i> | USFWS | E | | \$84 | \$0 |
| EM-01S2.04 | <i>funding support</i> | USDA | E | | \$84 | \$0 |
| EM-01S2.05 | <i>funding support</i> | NOAA/ NMFS | E | | \$84 | \$0 |
| EM-01S2.06 | <i>funding support</i> | LDWF | E | | \$84 | \$0 |
| EM-01S2.07 | <i>funding support</i> | LDNR | E | | \$84 | \$0 |
| EM-01S2.08 | <i>funding support</i> | BTPO | E | | \$84 | \$0 |
| EM-01S2.09 | <i>funding support</i> | USNRCS | E | | \$84 | \$0 |
| EM-01M1.00 | <i>plan; design; implementation</i> | CWPPRA | N: no estimate | | | |
| EM-01M2.00 | <i>additional site identification</i> | | | | | \$189 |
| EM-01M2.01 | <i>site identification</i> | USACOE | E | | | \$21 |
| EM-01M2.02 | <i>site identification</i> | USEPA | E | | | \$21 |
| EM-01M2.03 | <i>site identification</i> | USFWS | E | | | \$21 |
| EM-01M2.04 | <i>site identification</i> | USDA | E | | | \$21 |
| EM-01M2.05 | <i>site identification</i> | NOAA/ NMFS | E | | | \$21 |
| EM-01M2.06 | <i>site identification</i> | LDWF | E | | | \$21 |
| EM-01M2.07 | <i>site identification</i> | LDNR | E | | | \$21 |
| EM-01M2.08 | <i>site identification</i> | BTPO- EQS | E | | | \$21 |

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| | | | | | | | |
|------------|---------------------|--------|---|--|--|--|------|
| EM-01M2.09 | site identification | USNRCS | E | | | | \$21 |
|------------|---------------------|--------|---|--|--|--|------|

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$1,500
Total Funding Existing (Years 1-5): \$1,500
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The monitoring strategies outlined below are related to implementation of the CCMP action plan only and do not apply to actions by others.

Components of Plan

1. Improved utilization of Atchafalaya water and sediments in Terrebonne.
2. Control of tidal exchanges between marshes of upper and lower Barataria.
3. Improve hydrology of fringing marshes along the Mississippi River and Bayou Lafourche.

Interrelationships Among Components

BTMC supports implementation where feasible, ecologically beneficial and funding is available, and works to ensure that recommended projects are selected for CWPPRA funding. BTMC also needs to work to identify new projects in the medium term and ensure they are added to the CWPPRA plan. BTMC reviews monitoring data to ensure projects are meeting their goals and examines projects in the context of the findings of major Feasibility studies concerning Barataria-Terrebonne coastal marshes.

Documentation of Plan Implementation

CCMP Action Plan implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. BTMC passes motions/resolutions in support of hydrologic restoration projects that meet criteria laid out in Action Plan.
2. BTMC nominates supported projects at CWPPRA public meetings.
3. BTMC revises the list of hydrologic restoration projects recommended in the Action Plan.
4. BTMC reviews monitoring data for CWPPRA funded projects and provides comments to CWPPRA.
5. BTMC Technical Committee attends public meetings re. Mississippi River Diversion feasibility study and provides comments re. the feasibility study and existing CWPPRA Restoration Plan concerning hydrologic restoration projects recommended in the CCMP.

The following criteria will be used to evaluate the effectiveness of individual hydrologic restoration projects in meeting CCMP Action Plan objectives. Specific criteria may vary depending upon the characteristics of individual projects.

1. Coastal marsh productivity improves.
2. Freshwater retention in fresh and brackish marshes is increased.
3. Tidal exchanges are reduced.
4. Nutrient and sediment retention in marshes is enhanced.
5. Rates of land loss are reduced.

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6. Access for recreational and commercial fishing is maintained.
7. Ingress and egress of estuarine organisms is maintained.
8. Maintain or increase flushing in forested wetlands.
9. In brackish marsh areas where total suspended solids input is both required and available, total suspended solids input is maintained.
10. There are minimal adverse impacts:
 - a. on oyster leases;
 - b. on SAV;
 - c. on infrastructure or landowners;
 - d. related to backwater flooding;
 - e. caused by increased duration of marsh flooding;
 - f. or on navigation.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC as outlined in the above criteria will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 6 meetings per year and appropriate reporting. The level of effort is estimated at 80 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$4,000.

Recommendations and Feedback to Program/Implementor

Monitoring of CCMP Action Plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products prepared by CWPPRA and others. They will develop a report which outlines progress made towards accomplishment of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the meeting to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding project construction, operation, maintenance, and/or monitoring as well as landowners.

Quality Assurance/Quality Control

Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP Action Plan implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC activities (as outlined above).

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MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor hydrologic restoration projects implemented under CWPPRA. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM1-2. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plan. However, priorities for monitoring variables may vary based upon the characteristics, objectives and design of individual projects.

Table EM1-2. Steyer et al. (1995) classification of monitoring variables for hydrologic restoration.

| Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|----------------------------|---------------------------|--|---------------------------|
| Habitat Mapping | 1 | Fisheries | 6 |
| Salinity | 2 | Accretion/Elevation Change | 4 |
| Water Level | 3 | Water/Sediment Quality | None^a |
| Vegetation | 5 | | |

^a For forested wetlands, where the main objective is to increase flushing and water circulation, it is recommended that monitoring of water level fluctuations and dissolved oxygen be given high priority.

In addition to the parameters in Table EM1-2, it is recommended that the following parameters be measured to ensure that there are minimal adverse impacts associated with project implementation:

1. Productivity on adjacent oyster leases.
2. Coverage of SAV.

These measurements should be given lower priority than those in Table EM1-2. The other criteria concerning potential adverse impacts (e.g., impacts on landowners and backwater flooding) should not or cannot be measured directly but BTMC should be made aware of any complaints that are received by the implementing agency concerning these issues that directly relate to the project.

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Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they conform to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Salinity - The procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed. At least one continuous recording salinity gauge should be installed at each project and reference site.

Water Level - The basic procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed with the following detailed recommendations. At least one continuous water level gauge should be installed at each project and reference site. These gauges should be sufficiently accurate to record changes in water level of 1 cm and pressure transducers should be vented to allow for automatic correction of changes due to atmospheric pressure. If unvented transducers are used, data must be corrected for changes in barometric pressure.

Vegetation - As the monitoring criterion addresses coastal marsh productivity, rather than the abundance of species or communities, the recommendations of Steyer (1992) concerning aboveground biomass and of Steyer et al. (1995) concerning biomass measurements should be followed for assessment of emergent vegetation. For SAV, species composition can be obtained by transect sampling (USEPA, 1993) using an airboat-rake method (Chabreck and Hoffpauir, 1962) to collect the samples. The frequency of occurrence of individual species should be recorded. The methods described by USEPA (1993) for estimating density of SAV in beds can also be used, depending upon water clarity.

Fisheries - Minello (1992) provides details of high gear-efficiency techniques for fisheries sampling which are appropriate for hydrologic restoration projects and these are recommended. Sampling methods should focus on identification of density, size and biomass of nekton (Steyer et al., 1995). Enclosure devices are the most appropriate gear to be used and care should be taken to control for variations in water level both between sampling periods and between samples on a given day, as this can greatly impact catch efficiency (Minello, 1992). If long-term data sets already exist for the project area using other gear, these techniques should be considered in the development of individual monitoring plans. Sampling of oyster leases is also addressed by Minello (1992) and a variety of techniques are discussed. In this case, the monitoring goal is to identify any adverse impacts on adjacent oyster leases and the Nestier tray and Butler plate techniques recommended by Minello (1992) should be used to examine survival of existing oysters and settlement of oyster spat on appropriate leases.

Accretion/Elevation Change - As the goal of the project is to maintain or enhance contemporary rates of marsh accretion, the feldspar marker horizon technique may be most appropriate. This method is described in detail by both Reed (1992) and Steyer et al. (1995). Feldspar marker measurements should be combined with measures of soil bulk density and organic content (Reed, 1992) to allow for the calculation of organic and inorganic accumulation. However, sediment-erosion table techniques (Boumans and Day, 1993; Reed, 1992; Steyer et al., 1995) are appropriate for long-term measurements of the response of marsh elevation to accretionary processes. These should be employed where the marsh environment is appropriate (i.e., attached marshes) and where sampling design includes comparison with a reference area.

Water Quality (Dissolved Oxygen) - Dissolved oxygen sensors should be cross-calibrated using the Winkler titrametric method (Rabalis et al., 1995). In addition, care should be taken to ensure that measurements at one location are always taken at the same time of day to account for daily variability in dissolved oxygen which has been identified in most estuaries (Summers and Engle, 1992).

Sampling design and statistical methods

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The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly selected within each habitat type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., brackish marsh sub-area in project is compared to brackish marsh sub-area in reference area). If it is impossible to select a suitable reference area, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in marsh processes.

The size of the project area, the number of habitats included in the area, and heterogeneity of those habitats determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be used. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter.

Cost estimates

Estimated costs for evaluating hydrologic restoration projects have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depends upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM1-3 and are compared with monitoring costs associated with the final CWPPRA monitoring plan for the Jonathan Davis Hydrologic Restoration project.

Table EM1-3. Cost estimates for monitoring hydrologic restoration projects.

| Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis | BA-20 Jonathan Davis Est. Cost per year over 20 year |
|------------------------|---|--------------------|---|
| Habitat Mapping | \$12,250-18,600 | Annual per project | \$8,934 |
| Water Level & Salinity | \$23,600-96,400 | Annual per project | \$14,841 |
| Accretion - Feldspar | \$450 | Per sample | Included w/vegetation |
| Elevation Change | \$250 | Per measurement | Not monitored |
| Vegetation | \$2,250-6,750 | Annual per project | \$594 |
| Fisheries | \$150-200 | Per sample | Not monitored |

For hydrologic restoration projects implemented by CWPPRA, average annual monitoring costs shall not exceed \$25,875. This amount is pro-rated according to project size (Steyer et al., 1995) as follows: less than 1000 acres - 60%; 1000-5000 acres - 70%; 5000-15,000 acres - 80%; and greater than 15,000 acres - 100%. These requirements have constrained the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

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Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, Table EM1-4 presents these objectives as determined by Steyer et al. (1995).

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing. Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Calibration Procedures - Routine calibration of field and laboratory equipment will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Analytical Procedures - The procedures described by Steyer et al. (1995) and references therein will be followed for analysis of the identified measurable parameters.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTMC will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

Table EM1-4. Data Quality Objectives for identified measurable parameters (Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|---------------------------|-------------------|-----------------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Water Level | cm | 1.0 cm | 1.0 cm | 85% | -50-200 |
| Salinity | ppt | 0.75 ppt | 0.5 ppt | 85% | 0-36 |
| Soil/Sediment Sampling | | | | | |
| Percent Organic Matter | % | 10% | 15% | 85% | 0-100 |
| Bulk Density | g/cm ³ | 01. g/cm ³ | 15% | 85% | 0.01-0.90 |
| Vertical Accretion | | | | | |
| Feldspar marker | cm | 0.1 cm | 30% | 85% | 0-2 |
| Sediment-Erosion | cm | 0.1 cm | 30% | 85% | 0-2 |
| Table | | | | | |
| Veg. Biomass - clip plots | g/m ² | 20% | 20% | 85% | 0-2,000 |
| Fisheries Sampling | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Organism Counts | numbers | 10% | NA | 85% | NA |
| Size | mm | 1 mm | 1 mm | 85% | NA |
| Dissolved Oxygen | mg/l | 0.1 mg/l | 0.1 mg/l | 85% | 0-12 |

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EM-2 Fresh Water and Sediment Diversions

OBJECTIVES

1. To better utilize riverine resources of fresh water and sediment from the Mississippi and Atchafalaya rivers in order to decrease salinities and preserve and/or create marshes.

DESCRIPTION

This action is to encourage the appropriate reintroduction of freshwater and sediment to both the Barataria and Terrebonne Basins as a mechanism to preserve and/or restore wetland habitat and to combat saltwater intrusion. The specific actions to be taken to accomplish this objective will be identified after completion of BTNEP modeling studies currently underway, other BTNEP studies related to water supply or hydrology, and the feasibility study entitled "Mississippi River Sediment, Nutrient, and Freshwater Redistribution" being accomplished by the New Orleans District, U.S. Army Corps of Engineers for the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force. Final recommendation will take into account the overall benefits to our coastal wetland ecosystem. This would include, but not necessarily be limited to, benefits to vegetated wetlands, habitat for fish and wildlife resources, water supply for human consumption, flood protection of populated areas from diversion and backwater sources, and impacts to socioeconomic resources. In addition, a comprehensive public education program should be developed to inform citizens about the potential beneficial and adverse impacts associated with introductions of river flows.

BACKGROUND/MAJOR ISSUES

Between the period 1978 - 1990, the Barataria and Terrebonne Basins lost approximately 21 square mile of wetlands annually. To reduce these losses, freshwater and sediment diversions that will enhance existing wetlands and possibly rebuild those that were lost are needed. Freshwater and sediment diversions are deemed to be one of the most effective tools available to provide for the revitalization and building of marsh. Management of diversion outfalls could increase retention time of freshwater and sediments in the marshes and enhance marsh preservation.

In general, the BTNEP supports the introduction of freshwater and sediments to our deteriorating coastal wetlands. It is felt that the benefits to the ecosystem as a whole greatly outweigh the adverse impacts that would occur. This support is based in part on the belief that if actions are not taken to stabilize our remaining coastal wetlands, they and the resource they support will be forever lost. Moreover, other natural resource based economic activities, such as oil and gas activities, that provide livelihood for a large number of our residents would also be threatened. Also, without our vast expanses of coastal wetlands to protect our communities from the impacts of tropical storms, we feel our very homes are at risk. In short, the BTNEP firmly supports the notion that without our coastal marshes, our lives, our livelihoods, our heritage, and our total way of life are all seriously threatened.

It must be acknowledged, however, that besides the enormous benefits that could be realized by freshwater and sediment diversions, there are numerous potentially important adverse impacts that must be considered throughout the planning and evaluation process. The following is a brief discussion of some of those impacts.

Freshwater and sediment diversions are typically costly and require careful planning. Of particular concern is the need to acknowledge and address the potential for further flood protection measures resulting from such an action

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and to incorporate these potential actions into an overall basin-wide plan to address flooding from all sources, including backwater. If properly designed, it is unlikely that water elevations will increase significantly as a result of freshwater and sediment diversions. However, this critical issue of flood protection must be addressed throughout the process from the project's conceptual phase through to its operation.

Another issue to be addressed during the planning of any freshwater and sediment diversions would include the assurance that nutrient levels in the diverted water do not cause an increase in eutrophication in the marshes, or that other contaminants increase pollution levels within the outfall areas. Diversions should be designed to avoid or minimize unacceptable levels of eutrophication and contaminate introduction. However, the key here is the tradeoff/balance between water quality and wetland conservation or creation.

A major problem with some diversions involves adverse impacts on living resources. Of particular importance are the impacts on oyster growing areas. The duration, timing, and degree of freshening can have a detrimental and potentially lethal effect on the breeding, growth, and harvesting of the American oyster. This is a serious concern that will require resolution before future diversions are constructed in areas where oyster leases will be impacted. Special attention must be given to ensure that these oyster growers continue to be involved with and informed about the progress and timing of construction and operation of projects. Another potential adverse impact may be siltation of some navigable waterways generating a need for increased maintenance dredging in channels near diversion outfalls. Waterways affected could be Federally maintained navigation channels, oil field access channels, and/or natural streams. Potential negative impacts of outfall management could include limited access for recreational and commercial fishing and for estuarine fisheries. Plugs can eliminate access to some areas, while weirs and culverts can reduce access to varying degrees depending on structural design. Innovative measures are being used in project design to facilitate passage of aquatic organisms and boats in all outfall management projects. Such impacts have not so far prevented agency agreement on implementation of these projects. Depending on the location and site of the diversion, water flow could reduce ingress of juvenile fishes and crustaceans into some marsh nursery areas.

Water level in the Mississippi River is recognized as another critical issue that must be addressed. The Port of Baton Rouge, Port of New Orleans, and the Port of South Louisiana are three of the ten largest shipping ports in the nation. These shipping and associated transportation industries could not operate efficiently unless careful planning is undertaken to assure that enough volume of water continues down the river and that navigation channels are maintained. Because of the nature of this consideration, we feel confident that the BTNEP recommendations concerning diversions will not adversely affect the safe utilization of the river by commercial navigation interest.

There are three main types of riverine diversions:

1. *Controlled Diversions and Outfall Management.* One way to address the present hydrologic imbalances within the estuary is to re-introduce a source of riverine water, preferably at its historically fresh, upper end. This type of project is called a freshwater or controlled diversion because the project emphasis is the re-introduction of a freshwater source via water control structures that can vary flow rates. Such projects will usually only reach their full potential if the diverted water, once it enters the receiving area, moves across the marsh surface. This is called "outfall management". In this way, nutrients and suspended sediment nourish the marsh. This may be achieved through the use of water control structures such as weirs, culverts, plugs and spoil bank management. The general underlying philosophy guiding most of our controlled diversion operational management plans is to mimic historic, annual, overbank flooding patterns. The rationale for this is that since estuarine ecosystems and their component species are well adapted to annual freshwater inputs, as evidenced by the high productivity and diversity associated with the natural condition, a shift back towards those conditions should prove beneficial to restoring marsh. Also, by introducing water into the basins when the greatest amount is available

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(i.e. during high river stages) we will take advantage of the opportunity to introduce the greatest amounts of suspended sediment.

2. *Small Scale Diversions.* Numerous small scale controlled freshwater outfalls exist coast wide. These may take advantage of limited freshwater sources to enhance smaller parcels of wetland and improve water quality. Most of these projects involve utilizing upland pump station discharges or gravity drainage. Other diversions may utilize non-Mississippi River sources of freshwater by maximizing seasonal freshwater flows such as those coming down the GIWW from the Atchafalaya River. The Atchafalaya River connects with the GIWW at Morgan City and freshwater flows could be better utilized to offset saltwater intrusion and improve marsh productivity in the Terrebonne basin.
3. *Uncontrolled Diversions.* The primary objective of uncontrolled diversions is to re-introduce river-borne sediment into shallow areas that are conducive to marsh creation through the accumulation of these sediments. Uncontrolled diversions include large scale "sediment diversions" or smaller "crevasse-splay" projects. A "crevasse" is a channel through a river embankment, and the "splay" is the aerial fan of sediment that accumulates in the outfall area. Crevasses stimulate the natural marsh-building process by mimicking the delta formation process on a small scale.

Outfall management and the techniques used to achieve this management play a vital role in achieving the maximum gain from fresh water diversion projects. The approach to outfall management is to slow water velocities and to circulate diverted flows to bathe wetlands as much as possible with oxygenated, nutrient-rich, freshwater in the upper reaches of the project area and allow it to slowly flow through the estuary diluting ambient salinities. It is not an effort to impound water, but rather to incorporate retention measures for better water control, and to retard the rapid drainage typically enhanced by various types of man-made channels. However, outfall management techniques are not without controversy. For instance, one of the most important techniques used to achieve outfall management is spoil bank gapping. Under certain conditions, gapping can improve hydrologic conditions, promote sediment deposition, reduce flooding, promote marsh productivity, and increase access to the marsh for estuarine organisms. In other conditions, gapping can provide avenues for tidal export of organic sediment and under rare conditions salt water inflow; both of which can cause wetland loss. Spoil bank gapping in association with any outfall management plan must be evaluated on a project by project basis. Gapping should not be deeper than the adjacent marsh surface. The purpose is thus to re-establish over bank flooding.

BENEFITS

Sediment diversion is one of the few actions which can create large amounts of marsh by providing coarse sediments for new marsh substrate. This action achieves the overall alliance objective of restoring fluvial inputs of sediment and water to decrease salinities and preserve and create marshes.

IMPLEMENTATION SCHEDULE

Decisions regarding any new freshwater and sediment diversion projects should be finalized upon completion of the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Feasibility Study currently being undertaken by the U. S. Army Corps of Engineers under the direction of the CWPPRA Task Force. The Barataria-Terrebonne Management Conference (BTMC) will analyze the results of the Feasibility Study and provide recommendations on projects and implementation schedules.

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Specific recommendations are as follows:

Barataria Basin

The Mississippi River is a major resource for the entire deltaic plain, not just the BTES. The Management Conference recommends that a major diversion be built to divert water and sediments into Barataria Basin for the purpose of restoring existing marsh and/or building new marsh. Several potential sites may be identified by the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Study. The Management Conference will review the information generated as a result of this effort prior to making any recommendations.

We encourage the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Study to evaluate as one alternative, the managed retreat of the birdsfoot delta and identification of a new navigation channel. One aspect of this alternative is to maximize the deposition of coarse river sediments onto the marsh surface. Enough water must be allowed to flow down the Mississippi River to keep existing marshes viable while the new delta builds. We encourage the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Study to evaluate as another alternative, the construction of a smaller sediment diversion in lower Barataria Basin.

This plan strongly supports the 10,600 cfs Davis Pond freshwater diversion. This USACOE/LDNR project is expected to preserve 83,000 acres of marsh over the next fifty years. Development and construction of outfall management plans at Naomi, Davis Pond, and West Point a la Hache should be encouraged so that the benefits of these diversions can be increased. This plan does not support diversions in the northern part of the basin at Lagan and/or Des Allemands because additional fresh water is not needed in the extreme upper basin. We encourage the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Study to evaluate as another alternative, the construction of smaller fresh water diversion projects at Home Place, Happy Jack, and/or Hero Canal. Outfall management projects such as gapping spoil banks and other techniques are also recommended. However, these decisions should be made on a project by project basis as making gaps in levees or spoil banks may adversely impact the resource.

Terrebonne Basin

After all avenues of drainage are maximized in the Penchant Sub-Basin, the priority is to increase the flow of sediment into the area using Bayou Penchant and the GIWW. A closeable structure located possibly at the point where Bayou Schaffer is closest to Avoca Island Lake could be built. That would allow flow from the Atchafalaya River for a short time during the winter and/or spring period to maximize sediment inflow while giving marsh areas in this basin time to dewater during the growing season. Coupled with this project would be structures on the north side of the GIWW to ensure that this extra flow does not enter into the Lake Verret Sub-Basin and exacerbate flooding conditions there. Implementation of this strategy would provide sediment to build marsh in Avoca Island Lake and in the severely degraded open water areas adjacent to Bayou Penchant. Long-term flooding of the surrounding marsh habitats in the Penchant Sub-Basin should be minimized as this could result in an increase of landloss.

Critical to the Timbalier Sub-Basin is the encouragement of increased freshwater and sediment flow to the area, either from the west and north down the GIWW and Bayou Penchant, or from the east, through a Mississippi River diversion at Bayou Lafourche or Davis Pond. Projects that would increase the flow of Atchafalaya River water and sediment into the Timbalier Sub-Basin will probably be more critical and more feasible than those providing Mississippi River water and include several plans as identified in the CWPPRA report. The above various alternatives can be modeled to determine the most effective way to provide freshwater and sediment to this Sub-

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Basin. Outfall management techniques such as gapping of canal banks are recommended as well. However, it is critical to determine use of this and other techniques on a project by project basis.

Short-term plans (0-3 years) are as follows:

- S 1.00 Since major decisions regarding the reintroduction of freshwater and sediments hinges on the completion of both the BTNEP modeling studies and the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Feasibility Study/Environmental Impact Study, the BTNEP is attempting to complete their modeling studies as quickly as possible and encourages the CWPPRA Task Force to do the same. In addition, the BTMC requests that it be kept informed of the progress of the Feasibility/Environmental Impact Studies and be allowed to review the deliverables associated with these efforts.

- S 2.00 The BTMC will review information generated by the Hydrologic and Landscape Simulation models with respect to freshwater and sediment introduction. This information will be shared with CWPPRA and other ongoing coastal restoration efforts.

Medium-term plans (3-6 years) are as follows:

- M 1.00 The BTMC will review the Mississippi River Sediment, Nutrient, and Freshwater Redistribution Feasibility Study Report(s) and make recommendations to the CWPPRA Task Force concerning projects and implementation schedules.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan would be the CWPPRA Task Force which includes the U. S. Army Corps of Engineers, U. S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service, Environmental Protection Agency, the State of Louisiana, and the implementing state agency.

Support implementors would include the State's Coastal Wetlands Conservation and Restoration Task Force which includes the Governor's Office of Coastal Activities, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Agriculture, and the Louisiana Department of Culture, Recreation, and Tourism.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM2-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EM2-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1-3 COSTS (Short Term) | Y3-6 AVG COSTS (Medium Term) |
|------------|--------------------------------------|----------|-------------------|---------|----------------------------|------------------------------------|
| EM-02 | | | | | \$2,520 | \$630 |
| EM-02S1.00 | <i>MC progress updates</i> | BTMC | E | | \$0 | \$0 |
| EM-02S2.00 | <i>review/share sim. output</i> | | | | \$2,520 | \$0 |
| EM-02S2.01 | <i>review and share model output</i> | BTPO-EQS | E | | \$504 | \$0 |
| EM-02S2.02 | <i>review and share model output</i> | USACOE | E | | \$504 | \$0 |
| EM-02S2.03 | <i>review and share model output</i> | LDEQ | E | | \$504 | \$0 |
| EM-02S2.04 | <i>review and share model output</i> | LDNR | E | | \$504 | \$0 |
| EM-02S2.05 | <i>review and share model output</i> | USEPA | E | | \$504 | \$0 |
| EM-02M1.00 | <i>review/recommendations</i> | | | | | \$630 |
| EM-02M1.01 | <i>review/recommendations</i> | BTPO-EQS | E | | | \$126 |
| EM-02M1.02 | <i>review/recommendations</i> | USACOE | E | | | \$126 |
| EM-02M1.03 | <i>review/recommendations</i> | LDEQ | E | | | \$126 |
| EM-02M1.04 | <i>review/recommendations</i> | LDNR | E | | | \$126 |
| EM-02M1.05 | <i>review/recommendations</i> | USEPA | E | | | \$126 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$4,800
 Total Funding Existing (Years 1-5): \$4,800
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The monitoring strategies outlined below are related to implementation of the CCMP Action Plan only and do not apply to actions taken by others.

Components of Plan

1. Reintroduce freshwater and sediment into both Barataria and Terrebonne basins.
 - a. Large diversion into Barataria between Empire and Myrtle Grove, small sediment diversion at Buras. Implement Davis Pond and other small diversions.

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- b. Increase flow of sediment into Penchant sub-basin of Terrebonne, and increase freshwater and sediment inputs to Timbalier sub-basin from Atchafalaya.
 2. Develop public education program to inform citizens about potential benefits and impacts.
- N.B.** In many cases the use of Controlled Diversions is planned in conjunction with Outfall Management schemes. The Outfall Management components are similar to Hydrologic Restoration projects detailed in EM-1. Monitoring strategies for these components of the diversions should be as described under EM-1.

Interrelationships Among Components

Specific actions cannot be determined until after completion of modeling studies and Mississippi River Sediment, Nutrient and Freshwater redistribution feasibility study.

Documentation of Plan Implementation

CCMP Action Plan implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. Modeling studies commissioned by BTNEP re. freshwater and sediment diversions are completed.
2. BTMC reviews results of models and develops recommendations to CWPPRA.
3. BTMC reviews results of CWPPRA feasibility study and develops recommendations to CWPPRA.

Three types of projects are envisaged: Controlled Diversion (CD), Small Scale Diversions (SD) and Uncontrolled Diversions (UD). The following criteria will be used to evaluate the effectiveness of individual freshwater and/or sediment diversions in meeting Action Plan objectives. Specific criteria may vary depending upon the characteristics of individual projects.

1. Reduction in wetland loss rates within project areas (CD, SD and UD).
2. Wetland area increases within project area (UD).
3. Salinity fluctuations are reduced in the project area (CD, SD and UD).
4. Marsh productivity is improved (CD, SD and UD).
5. There are minimal adverse impacts:
 - a. on oyster leases;
 - b. on eutrophication;
 - c. on contaminant accumulation in sediments;
 - d. related to backwater flooding;
 - e. or on navigation.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC and provision of BTNEP deliverables on modeling, as outlined in the above criteria, will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 4 meetings per year and appropriate reporting. The level of effort is estimated at 56 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$2,800.

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Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products prepared by CWPPRA and others. They will develop a report which outlines progress made towards accomplishments of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the meeting to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding project construction, operation, maintenance, and/or monitoring, as well as landowners.

Quality Assurance/Quality Control

Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP Action Plan implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC activities (as outlined above).

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor freshwater and sediment diversions implemented under CWPPRA. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Generally, UD projects correspond with Sediment Diversions as defined by CWPPRA with CD and SD projects corresponding with freshwater diversions. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM2-2. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plan. However, priorities for monitoring

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variables may vary based upon the characteristics, objectives and design of individual projects. In addition to the parameters in Table EM2-2, it is recommended that the following parameters be measured to ensure that there are minimal impacts associated with project implementation:

1. Water quality (nutrients).
2. Sediment quality (trace metals and synthetic organic compounds).

These measurements should be given lower priority than those in Table EM2-2.

The other criteria concerning potential adverse impacts (e.g., impacts on backwater flooding) should not or cannot be measured directly but BTMC should be made aware of any complaints that are received by the implementing agency concerning these issues that directly relate to the project.

Table EM2 -2. Steyer et al. (1995) classification of monitoring variables for freshwater and sediment diversions.

| Diversion Type | Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|---------------------------|----------------------------|-----------------------|--|-----------------------|
| Freshwater (CD and SD) | Habitat Mapping | 1 | Fisheries (Oysters) | 5 |
| | Salinity | 2 | Discharge | 6 |
| | Water Level | 3 | Precipitation | 7 |
| | Vegetation | 4 | Wind Speed/Direction | 8 |
| Sediment (UD) | Habitat Mapping | 1 | Vegetation | 3 |
| | Bathymetry/ Topography | 2 | Fisheries (Oysters) ^a | 5 |
| | | | Total Suspended Solids | 6 |
| | | | Discharge | 4 |

^a Not considered by Steyer et al. (1995)

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they confirm to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Salinity - The procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed. At least one continuous recording salinity gauge should be installed at each project and reference site.

Water Level - The basic procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed with the following detailed recommendations. At least one continuous water level gauge should be installed at each project and reference site. These gauges should be sufficiently accurate to record changes in water level of 1 cm and pressure transducers should be vented to allow for automatic correction of changes due to atmospheric pressure. If unvented transducers are used, data must be corrected for changes in barometric pressure.

Vegetation - As the monitoring criterion addresses coastal marsh productivity, rather than the abundance of species or communities, the recommendations of Steyer (1992) concerning aboveground biomass and of Steyer et al. (1995) concerning biomass measurements should be followed.

Fisheries - Sampling of oyster leases is addressed by Minello (1992) and a variety of techniques are discussed. In this case, the monitoring goal is to identify any adverse impacts on adjacent oyster leases and the Nestier tray and Butler plate techniques recommended by Minello (1992) should be used to examine survival of existing oysters and settlement of oyster spat on appropriate leases. If long-term data sets already exist for the project area using other gear, these techniques should be considered in the development of individual monitoring plans.

Discharge (Velocity and Cross-sectional Area) - Powell (1992) and Steyer et al. (1995) describe general methods for the measurement of discharge. These methods should be followed. Direct measurement of discharge requires data for velocity and cross-sectional area. It is recommended that rating curves be developed for the discharge

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points of diversions sites such that detailed information on velocities and areas can be used over a longer period to interpret discharge from measurements of stage.

Precipitation - Continuously-recording, tipping-bucket rain gauges, as described by Powell (1992) and Steyer et al. (1995) should be used to measure rainfall inputs to the project area. Wind shields should be used on all rain gauges.

Wind Speed/Direction - Automatic wind speed and direction equipment should be used to measure this parameter, as described by Powell (1992) and Steyer et al. (1995). Sensors should be placed at a standard height above the ground (e.g., 2 m or 10 m) in order that data can be compared to data collected by the Louisiana Office of State Climatology for various sites in BTES.

Bathymetry/Topography - Bathymetry and topography should be measured using the techniques outlined by Steyer and Stewart (1992) and Steyer et al. (1995) noting that recording fathometers, measuring in m, should be used for bathymetric and topographic surveying with either GPS or conventional rod-and-level techniques recommended. The choice of survey techniques should be determined by the acceptable level of error and the sophistication of the available technology and equipment.

Total Suspended Solids - Various methods for measurement of total suspended solids concentration are described by Powell (1992) and Steyer et al. (1995). The difficulty with point measurements is their inability to resolve vertical and horizontal variations in the total suspended solids field, as well as temporal variations in total suspended solids concentration. Methods developed by Meade and Stevens (1990) for the measurement of total suspended solids discharge account for these variations but are sample-intensive. A combination of approaches should be adopted for UD projects where the main objective is to divert sediments. The equal-width-increment, depth-integration method (Meade and Stevens, 1990) should be used in conjunction with deployment of sensors which continuously monitor total suspended solids concentration (e.g., Downing and Beach, 1989). Deployed sensors must be regularly serviced to prevent fouling (as described by Powell (1992) and Steyer et al. (1995)).

Water Quality-Nutrients - The sample collection and analytical methods described by Demas (1992) and Steyer et al. (1995) should be adopted for data collection concerning nutrient levels.

Sediment Quality-Trace Metals and Synthetic Organic Compounds - Rabalais et al. (1995) note that measuring accumulation of contaminants in sediments in a receiving area provides a better indication of the potential for accumulation in organisms than contaminant measures in water samples. They also note the lack of a tight relationship between contaminant levels in sediments and those in organisms, as well as the difficulty of interpreting data concerning contaminant levels in organisms (see also USEPA, 1992). Therefore, it is recommended that this monitoring strategy address contaminants in sediments as a general indicator of the impact of diversions on contaminant levels in the receiving area. Equipment and procedures for measuring trace metals and synthetic organic compounds should follow those of USEPA (1992).

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly selected within each habitat type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., brackish marsh sub-area in project is compared to brackish marsh sub-area in reference area). If it is impossible to select a suitable reference area, as may be the case with large UD projects, then either pre-project monitoring or baseline monitoring (Steyer et al. 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in marsh processes. However, in the case of UD projects increases in wetland area are one of the main measures of project effectiveness and these are unlikely to be found under non-project conditions in BTES.

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The size of the project area, the number of habitats included in the area, and heterogeneity of those habitats determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be used. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter. In the case of UD projects comparisons may be more appropriate between one time interval and the next in order to identify progressive changes in wetland area. Standard linear regression models can be used to detect trends once sufficient annual data points have been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

Cost estimates

Estimated costs for evaluating freshwater and sediment diversion projects have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depends upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM2-3.

Table EM2-3. Cost estimates for monitoring freshwater and sediment diversion projects (after Steyer and Stewart, 1992).

| Diversion Type | Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|---------------------------|------------------------|---|--------------------|
| Freshwater (CD and SD) | Habitat Mapping | \$12,250-18,600 | Annual per project |
| | Hydrology ^a | \$39,200 - \$235,200 | Annual per project |
| | Vegetation | \$2,250-9,000 | Annual per project |
| | Fisheries (Oysters) | \$100-150 | Per sample |
| Sediment (UD) | Habitat Mapping | \$12,250-18,600 | Annual per project |
| | Hydrology ^b | \$46,200 - 92,400 | Annual per project |
| | Vegetation | \$2,000 - 4,000 | Annual per project |
| | Fisheries (Oysters) | \$100-150 | Per sample |
| | Sediment Quality | | |
| | trace metals | \$400-1,400 | Per sample |
| synthetic organics | \$440-3,000 | Per sample | |

^a Includes water level, precipitation, wind speed/direction, discharge, and total suspended solids as recommended for freshwater diversions by Steyer and Stewart (1992).

^b Includes water level, discharge, bathymetry/topography and total suspended solids as recommended for sediment diversions by Steyer and Stewart (1992).

The cost estimated for monitoring nutrients is \$50 per sample.

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For freshwater diversions (CD and SD) implemented by CWPPRA, average annual monitoring costs shall not exceed \$25,875. This amount is reduced to \$8,625 for sediment diversions (UD). The amounts for freshwater diversions are further pro-rated according to project size (Steyer et al. 1995) as follows: less than 1000 acres - 60%; 1000-5000 acres - 70%; 5000-15,000 acres - 80%; and greater than 15,000 acres - 100%. These requirements may constrain the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, Table EM2-4 presents these objectives as determined by Steyer et al. (1995). Data quality objectives for sediment trace metals and synthetic organic compounds will vary between the individual substances identified in the analyses.

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing.

Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Table EM2-4. Data Quality Objectives for identified measurable parameters (all from Steyer et al., 1995).

| Measurement Type | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected range |
|--------------------------------------|------------------|---------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photo interpretation | habitat | 7% | NA | 100% | NA |
| Photo registration | m | 15 m | NA | NA | NA |
| Water Level | cm | 1.0 cm | 1.0 cm | 85% | -50 - 200 |
| Salinity | ppt | 0.75 ppt | 0.5 ppt | 85% | 0 - 36 |
| Discharge | m/s | 0.1 m/s | 0.1 m/s | 85% | 0-2 |
| Current Speed | | | | | |
| Cross-Sectional Area | m ² | 5% | 5% | 85% | 0-500 |
| Total Suspended Solids | mg/L | 2 mg/L | 2 mg/L | 85% | 0-200 |
| Precipitation | cm/h | 10% | 5% | 85% | 0-15 |
| Wind Speed | m/s | 0.7 m/s | 0.5 m/s | 85% | 0-5 |
| Wind Direction | degrees | 5 degrees | 5 degrees | 85% | 0-360 |
| Bathymetry | cm | 4.0 | 4.0 | 85% | -200-0 |
| Topography | cm | 4.0 | 4.0 | 85% | -90-90 |
| Veg. Biomass - clip plots | g/m ² | 20% | 20% | 85% | 0 - 2,000 |
| Fisheries (Oysters) | | | | | |
| Size | mm | 1 mm | 1 mm | 85% | NA |
| H ₂ O Quality - nutrients | mg/L | 15% | 15% | 85% | 0.4-40 |
| NH ₄ | | | | | |
| NO ₃ | mg/L | 15% | 15% | 85% | 1-100 |
| NO ₂ | mg/L | 15% | 15% | 85% | 0.1-10 |

**Action Plan EM-2:
Freshwater and
Sediment Diversions**

| | | | | | |
|---------|------|-----|-----|-----|-------|
| Ortho P | mg/L | 15% | 15% | 85% | 0.2-3 |
|---------|------|-----|-----|-----|-------|

Calibration Procedures - Routine calibration of field and laboratory equipment will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Analytical Procedures - The procedures described by Steyer et al. (1995) and references therein will be followed for analysis of the identified measurable parameters.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTNEP will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

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EM-3 Evaluate the Effectiveness of Reactivating Bayou Lafourche as a Distributary Channel of the Mississippi River

OBJECTIVES

1. To evaluate the possibility of restoring Bayou Lafourche as an effective distributary of the Mississippi River in order to bring freshwater and sediments to Barataria and Terrebonne basin marshes to revitalize marshes and help counter coastal land loss and to ensure adequate freshwater consumptive supplies by combating saltwater intrusion.

DESCRIPTION

This action plan will aid in addressing the major priority problem for the BTES which is habitat loss and modification and, as a side benefit, help ensure adequate freshwater drinking supplies for nearly 250,000 Louisiana residents. Currently, the concept of reactivating Bayou Lafourche as an appropriate transport mechanism for the distribution of Mississippi River flows to both the Barataria and Terrebonne basins is one of the management alternatives being evaluated by the BTNEP. Varying quantities of diversion flow will be evaluated based on both beneficial and adverse socioeconomic and environmental impacts resulting from each flow quantity. Other alternatives evaluated could include the construction of a diversion channel roughly parallel to Bayou Lafourche. To best evaluate the impacts of diverting more freshwater down Bayou Lafourche, the BTNEP has worked with LSU to develop both a hydrologic and a landscape change model that can predict impacts of various management alternatives that would alter water flow patterns within of the basins. The output of these models will provide information related specifically to how the coastal marshes nourished by the bayou will respond to additional flow rates in the bayou. In addition, the BTNEP has initiated a project to identify all of the freshwater consumptive users of Bayou Lafourche, the location of their in-takes, their salinity criteria, their current and future projected usage quantities, and predictions of future salinity concentrations on a seasonal basis.

Outside of the BTNEP, this concept is being evaluated as part of the feasibility study entitled "Mississippi River Sediment, Nutrient, and Freshwater Re-distribution" being accomplished by the New Orleans District, U.S. Army Corps of Engineers. An interim report containing preliminary screening of alternatives is scheduled for completion in June 1996. The draft report is scheduled for completion in January 1998.

Important considerations essential to this evaluation are adverse impacts of raised water levels in Bayou Lafourche to home and property owners immediately adjacent to the bayou and the beneficial impacts to consumptive users related to reduced salinity concentrations in the bayou.

An objective of this plan is to ensure that the impacts of this action to our coastal marshes, to bayou residents especially in the Donaldsonville area, and to consumptive freshwater supplies are all considered prior to recommendations being made on the part of the BTNEP. If, after consideration of the results of the modeling efforts and the freshwater supply study, the BTNEP recommends reactivating Bayou Lafourche as a distributary, then the BTNEP will recommend an approach to implementation.

Action Plan EM-3: Evaluating the Effectiveness of Reactivating Bayou Lafourche as a Distributary of the Mississippi River

BACKGROUND/MAJOR ISSUES

A major hydrologic modification occurred in the Barataria and Terrebonne basins with the closing of Bayou Lafourche as a Mississippi River distributary in 1904. The French explorers Iberville and Bienville considered Bayou Lafourche the west fork of the Mississippi River-thus "Lafourche"-the fork. In the mid-1800's Bayou Lafourche carried roughly 12 percent (over 40,000 cubic feet per second) of Mississippi River flow. In 1955, a control structure was built on the Mississippi River at Donaldsonville to allow water to enter Bayou Lafourche. Currently, about a quarter of one percent (200 cubic feet per second) of the Mississippi River flow is allowed down the Bayou. This diversion is shut off if heavy rains have caused high water in the Bayou or if monitoring stations on the Mississippi River indicate a chemical spill has occurred upriver on the Mississippi.

The closing of Bayou Lafourche prevented freshwater from reaching the marshes in the southern Barataria and Terrebonne basins. Navigation through to the Mississippi River from Bayou Lafourche was eliminated. However, the closing allowed for increased development of the natural and man-made levees, intensified agricultural activities, and also creating and enhancing economic opportunity-especially with the petroleum industry boom increasing the job base. Seasonal flooding of Bayou Lafourche was controlled and farming, residential and business development could proceed predictably. Now, the Barataria and Terrebonne basins are experiencing the most severe coastal land loss rates in the state. Problems with drinking water supplies such as saltwater intrusion and agricultural chemicals are also increasing. Reactivating Bayou Lafourche could be a readily available means for maintaining adequate consumptive freshwater supplies and for coastal restoration by reintroducing freshwater and sediments into areas that were historically connected to freshwater flows of the river.

The evaluation of project alternatives to reactivate Bayou Lafourche must consider that portions of the levees on Bayou Lafourche are heavily populated. Homes, businesses, and agriculture exist up to the levee edge and even into the batture. Some areas of Bayou Lafourche may be prone to flooding. Costs of relocating or protecting homes, businesses or property must be considered. The potential for increased flooding must be evaluated, and minimized in the plan. Concerns about bank stability with additional water flows in the Bayou must be evaluated and resolved. Some bridges and other structures will need to be replaced. These costs must be considered. If it is determined that due to complications and costs associated with the existing development along Bayou Lafourche that another alternative, such as the construction of a parallel channel, is more feasible, then those costs and impacts would be fully considered as well. Construction of a channel roughly parallel to the Bayou, following the back swamp at the far edge of the agricultural fields, would drain not only the agricultural fields but could also change drainage patterns in the swamps. This, as well as water quality and ecosystem impacts would be fully analyzed for all alternatives evaluated. Credible modeling can assure that project related drainage improvements and/or flooding risks will be clearly identified and taken into account.

Numerous coastal restoration plans mention reactivating Bayou Lafourche. The CWPPRA Plan of November 1993 includes such concepts as reactivation of old distributary channels, and a freshwater diversion to Bayou Lafourche is included in the CWPPRA Basin Plan for the Barataria and Terrebonne basins. Reconnecting Bayou Lafourche to the Mississippi River is featured as a major point in the LSU CCEER Plan, (January, 1994) and the Governor's Office Plan, (August, 1994).

BENEFITS

The potential benefits of increasing diversion flows down Bayou Lafourche are mainly the nourishing of coastal marshes both on the east and west sides of the Bayou near Lockport, the combating of salt water intrusion from the Gulf of Mexico, and the provision of more reliable freshwater consumptive supplies for use by residents and

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industry. Reactivating Bayou Lafourche is a sustainable restoration technique, using the established natural process that nourished and created marshes prior to the closure of the Bayou. Freshwater, nutrients, and sediment should help revitalize marsh vegetation that is stressed by saltwater increases or by sediment deprivation. Comprehensive, credible modeling could demonstrate additional benefits, such as drainage improvements, or water source improvements, due to the increased capacity of the Bayou to move water. The Bayou is an existing natural distributary of the Mississippi River and the diversion structure at Donaldsonville already exists, so some cost savings over equally sized diversions elsewhere may be realized.

IMPLEMENTATION SCHEDULE

Short-term plans (0-3 years):

S 1.00 Modeling to determine the quantity of diversion flows and the best mechanism to transport those flows to maximize benefits to the marsh and minimize impacts to property. This modeling should explore reactivating old distributary channels of Bayou Lafourche and the Mississippi River.

Medium-term plans (3-6 years):

- M 1.00 If viable alternatives are identified, the BTMC would work with the appropriate entities to initiate project authorization, design and construction.
- M 2.00 Monitor pre-reactivation conditions.
- M 3.00 Fully develop, fund, and implement the plan for eliminating, reducing or compensating for impacts to property owners for adverse impacts.
- M 4.00 Initiate project with any required construction.
- M 5.00 Design and implement outfall management.
- M 6.00 Monitor impacts.

Long-term plans (6 years and beyond) include the continuation of monitoring the impacts.

LEAD AND SUPPORT IMPLEMENTORS

Local: Bayou Lafourche Freshwater District
State: LDNR, LDWF
Federal: EPA, USACOE, USFWS, NRCS

COSTS AND ECONOMIC CONSIDERATIONS

Table EM3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Action Plan EM-3: Evaluating the Effectiveness of Reactivating Bayou Lafourche as a Distributary of the Mississippi River

Table EM3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1-3 COSTS (Short Term) | Y3-6 AVG COSTS/YR (Medium Term) |
|------------|--|--------|-------------------|---------|----------------------------|---------------------------------------|
| EM-03 | | | | | \$0 | \$44,625 |
| EM-03S1.00 | <i>monitor pre- conditions</i> | | N: no estimate | | | |
| EM-03M1.00 | <i>Modeling</i> | CWPPRA | N | | | \$43,750 |
| EM-03M2.00 | <i>Initiate and construct projects</i> | | N: no estimate | | | |
| EM-03M3.00 | <i>outfall management</i> | | N: no estimate | | | |
| EM-03M4.00 | <i>monitor impacts</i> | | N: no estimate | | | |
| EM-03M5.00 | <i>compensation plan</i> | | | | | \$875 |
| EM-03M5.01 | <i>plan development</i> | CWPPRA | N | | | \$875 |
| EM-03M5.02 | <i>compensation costs</i> | | N: no estimate | | | |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$178,500
 Total Funding Existing (Years 1-5): \$178,500
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: CWPPRA funds to support this action plan have already been allocated. No new funding will be necessary.

EVALUATION METHODS

The monitoring strategies outlined below are related to the implementation of the CCMP Action Plan only and do not apply to actions taken by others.

Components of Plan

1. Evaluate varying quantities of flow, including beneficial and adverse socioeconomic and environmental effects.
2. Evaluate construction of diversion channel parallel to Bayou Lafourche.
3. Use models to determine how coastal marshes will respond to additional flow rates.
4. Identify all consumptive users of Bayou Lafourche freshwater.

Interrelationships Among Components

Evaluation of alternatives must consider that portions of the levee are heavily populated. Potential for increased flooding must be evaluated and minimized in plan. Water quality and ecosystem impacts, as well as impacts to local residents and landowners would be fully analyzed for all evaluated alternatives.

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Documentation of Plan Implementation

CCMP Action Plan implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. Models to predict socioeconomic and environmental impacts are completed.
2. Models are used to determine quantity of diversion flows necessary to maximize benefits to marsh and minimize impacts to property.
3. Models are used to determine best mechanism to transport flows to achieve benefits/minimize impacts.
4. Modeling should explore reactivating old distributary channels of Bayou Lafourche and the Mississippi River.
5. If viable alternatives are identified, the BTMC works with appropriate entities to initiate project authorization, design and construction.
6. Outfall management plans for diverted water are developed.
7. Impacts/benefits of project are monitored.
8. Plan for dealing with adverse impacts (eliminate, reduce or compensate) is developed.

The following criteria will be used to evaluate the effectiveness of any construction project implemented under this Action Plan in providing environmental benefits. Specific criteria may vary depending upon the characteristics of individual projects.

1. Reduction in wetland loss rates within project areas.
2. Salinity fluctuations are reduced in the project area.
3. Marsh productivity is improved.
4. Sediment inputs to marshes are maintained or increased.
5. There are minimal adverse impacts:
 - a. related to flooding of upland areas,
 - b. or on navigation.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC, Bayou Lafourche Freshwater District, and CWPPRA in implementing the plan in accordance with the above criteria will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 4 meetings per year, contacting implementing agencies, reviewing model runs and products, and appropriate reporting. The level of effort is estimated at 120 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$6,000.

Recommendations and Feedback to Program/Implementor

Monitoring of CCMP Action Plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products prepared by CWPPRA and others. They will develop a report which outlines progress made towards accomplishment of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly

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scheduled meeting of the BTMC and the independent Third Party will appear at the scheduled meeting of the BTMC to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding project construction, operation, maintenance, and/or monitoring, as well as landowners.

Quality Assurance/Quality Control CCMP Action Plan Implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP Action Plan implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on agency activities and modeling products (as outlined above).

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor freshwater and sediment diversions implemented under CWPPRA. It is recommended that this model be followed, whether or not project implementation is funded by CWPPRA. This project is similar to a Controlled Diversion project as outlined in EM-2. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM3-2. These have been assigned a priority for monitoring under this CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plan. However, priorities for monitoring variables may vary based upon the characteristics, objectives and design of individual projects.

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Table EM3 -2. Steyer et al. (1995) classification of monitoring variables for freshwater diversions modified for this project.

| Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|----------------------------|-----------------------|--|-----------------------|
| Habitat Mapping | 1 | Accretion/Elevation Change | 5 |
| Salinity | 2 | Discharge | 6 |
| Water Level | 3 | Precipitation | 7 |
| Vegetation | 4 | | |

Any effects on navigation should not or cannot be measured directly but BTMC and the implementing agency should be made aware of any complaints that are received by the implementing agency concerning these issues that directly relate to the project.

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they conform to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Salinity - The procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed. At least one continuous recording salinity gauge should be installed within the marsh area affected by the project and in a reference area. In addition, chloride levels within Bayou Lafourche should be measured to protect water intakes.

Water Level - The basic procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed with the following detailed recommendations. At least one continuous water level gauge should be installed within the marsh area affected by the project and in a reference area. In addition, water levels within Bayou Lafourche should be measured to document any flooding of upland areas. These gauges should be sufficiently accurate to record changes in water level of 1 cm and pressure transducers should be vented to allow for automatic correction of changes due to atmospheric pressure. If unvented transducers are used, data must be corrected for changes in barometric pressure.

Vegetation - For emergent vegetation the recommendations of Steyer (1992) concerning species composition, relative abundance and aboveground biomass and of Steyer et al. (1995) concerning biomass measurements should be followed.

Discharge (Velocity and Cross-sectional Area) - Powell (1992) and Steyer et al. (1995) describe general methods for the measurement of discharge. These methods should be followed. Direct measurement of discharge requires data for velocity and cross-sectional area. It is recommended that rating curves be developed for the discharge points of the diversion site such that detailed information on velocities and areas can be used over a longer period to interpret discharge from measurements of stage.

Precipitation - Continuously-recording, tipping-bucket rain gauges, as described by Powell (1992) and Steyer et al. (1995) should be used to measure rainfall inputs to the project area. Wind shields should be used on all rain gauges.

Accretion/Elevation Change - Any benefits of the project related to sediment input will be reflected in rates of marsh accretion and so the feldspar marker horizon technique may be the most appropriate. This method is described in detail by both Reed (1992) and Steyer et al. (1995). Feldspar marker measurements should be combined with measures of soil bulk density and organic content (Reed, 1992) to allow for the calculation of organic and inorganic accumulation. However, sediment-erosion table techniques (Boumans and Day, 1993; Reed, 1992;

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Steyer et al., 1995) are appropriate for long-term measurements of the response of marsh elevation to accretionary processes. These should be employed where the marsh environment is appropriate (i.e., attached marshes) and where sampling design includes comparison with a reference area.

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly selected within each habitat. Comparison between project and reference areas should then be based at the sub-area or habitat scale. If it is impossible to select a suitable reference area, as may be the case with this project as it potentially affects large areas of two hydrologic basins, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in processes, especially variations in rainfall and river discharge which will influence salinity and water level patterns in the area. The size of the project area, the number of habitats/environments included in the area, and heterogeneity of those habitats/environments determine the number of samples which need to be taken and the validity of the statistical analyses. The area affected by the project will be determined by the model evaluations. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be pursued. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter. In the case of this project comparisons may also be appropriate between one time interval and the next in order to identify progressive changes in barrier island area. In this case, trend analysis is appropriate. Standard linear regression models can be used to detect trends once sufficient annual data points have been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

Cost estimates

Estimated costs for evaluating freshwater diversion projects have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depend upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM3-3. These requirements may constrain the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

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Table EM3-3. Cost estimates for monitoring freshwater and sediment diversion projects (after Steyer and Stewart, 1992).

| Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|-----------------------------------|--------------------------------------|--------------------|
| Habitat Mapping | \$12,250-18,600 | Annual per project |
| Hydrology ^a | \$39,200 - \$235,200 | Annual per project |
| Vegetation | \$2,250-9,000 | Annual per project |
| Elevation Change | \$250 | Per measurement |
| Accretion - Feldspar ^b | \$450 | Per sample |

^a Includes water level, salinity, discharge, and total suspended solids as recommended for each diversion type by Steyer and Stewart (1992).

^b Includes accretion, bulk density, soil organic matter content.

For freshwater diversions implemented by CWPPRA, average annual monitoring costs shall not exceed \$25,875.

Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, Table EM3-4 presents these objectives as determined by Steyer et al. (1995).

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing.

Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Table EM3-4. Data Quality Objectives for identified measurable parameters (after Steyer et al., 1995).

| Measurement Type | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected range |
|-----------------------------|-------------------|-----------------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Water Level | cm | 1.0 cm | 1.0 cm | 85% | -50 - 200 |
| Salinity | ppt | 0.75 ppt | 0.5 ppt | 85% | 0 - 36 |
| Chloride | ppm | 5 ppm | 5 ppm | 85% | 0-300 |
| Discharge | m/s | 0.1 m/s | 0.1 m/s | 85% | 0-2 |
| Current Speed | | | | | |
| Cross-Sectional Area | m ² | 5% | 5% | 85% | 0-500 |
| Precipitation | cm/h | 10% | 5% | 85% | 0-15 |
| Vegetation | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |
| Biomass - Clip Plots | g/m ² | 20% | 20% | 85% | 0-2,000 |
| Soil Percent Organic Matter | % | 10% | 15% | 85% | 0-100 |
| Soil Bulk Density | g/cm ³ | 01. g/cm ³ | 15% | 85% | 0.01-0.90 |

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| | | | | | |
|------------------------|----|--------|-----|-----|-----|
| Vertical Accretion | | | | | |
| Feldspar marker | cm | 0.1 cm | 30% | 85% | 0-2 |
| Sediment-Erosion Table | cm | 0.1 cm | 30% | 85% | 0-2 |

Calibration Procedures - Routine calibration of field equipment (e.g., salinity gauges) will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTMC will follow procedures agreed to by the BTMC and the lead implementor .

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

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EM-4 Beneficial Use of Dredged and Non-Indigenous Material

OBJECTIVES

1. To make use of dredged and non-indigenous material in order to create, maintain and restore marshes.

DESCRIPTION

This action will take advantage of existing sediments which must be periodically removed from existing navigation channels or oil field canals. These materials will be used to restore degraded habitat and to create new habitat. Dredged material from maintenance dredging operations, is periodically removed from ports, harbors, navigation channels, and oil field canals representing a potential source of material. Using dredged material beneficially is an alternative to ocean disposal of dredged material, upland disposal or other non-beneficial disposal options. Dedicated dredging, where material is deliberately removed from one area in order to enhance another represents another potential source of material.

Dredging of oil and gas field canals occurs frequently in the Barataria-Terrebonne basin. The material excavated from oil and gas pipeline and production canals may be readily usable in beneficial ways. In addition, non-indigenous materials such as red mud (spent bauxite), compost or sewage sludge might also be used under certain circumstances, if deemed harmless and appropriate.

Although a number of factors - including logistics, grain size, and presence of contaminants - will limit beneficial use of dredged materials and certain non-indigenous materials, use of these materials to nourish, restore, and create coastal habitat will be encouraged.

BACKGROUND/MAJOR ISSUES

Dredged materials can be used for various purposes that are beneficial to society and to the environment. Numerous uses for dredged materials may be considered beneficial based on the user's perspective. Conservation uses could consist of the creation of habitat and the restoration of degraded habitat. Development uses could consist of new land for ports, infrastructure or parks. The National Environmental Policy Act (NEPA) requires consideration of project alternatives that are environmentally sound, so beneficial use should be considered for operations requiring dredged material disposal.

Two source categories for dredged material should be defined:

1. Dredged material removed from new or existing navigation channels, ports, or harbors, and from the construction or maintenance of oil and gas pipeline and production canals may be used as a resource in a productive way.
2. Dedicated dredging, which is the deliberate removal of material from one site to restore or enhance another site.

Historical beneficial use of maintenance dredged material within the BTES has been varied. Initial use was to establish new land for ports, airports, homes and industries. Over the past twenty years, however, use has shifted to

Action Plan EM-4: Beneficial Use of Dredged and Non- Indigenous Material

conservation with wetland and barrier island restoration projects and the construction of upland areas, bird nesting islands, wetlands and woodland restoration projects, and aquatic and marine habitat.

Dredged materials from both maintenance dredging and dedicated dredging operations are used beneficially in Louisiana. Plans exist for using maintenance dredged materials in projects such as marsh creation, nesting habitat creation, canal filling, and barrier island restoration. There are plans for using dedicated dredging to accomplish barrier island breach sealing, shoreline protection, beach and dune nourishment, nesting habitat creation, and marsh creation projects. Implementation of these actions is hampered by high costs and conflicting uses of water bottoms (ie., the presence of oyster leases). Because of cost implications, these actions can only be accomplished economically in areas free of oyster leases, near waterways where maintenance dredging is undertaken, or where dedicated dredging is possible. However, it might be possible to use innovative technologies to transport dredged material through newly constructed pipelines for this purpose over greater distances than currently practiced.

Permits under the Department of the Army Section 404 and Section 10 permit system are required for the construction or maintenance of oil and gas pipeline and production canals. These permits may be conditioned to require that the dredged material be used beneficially whenever possible. Due to the smaller volumes removed for these dredging operations, compared to Federal navigation channels, it may be more feasible from an economic and engineering standpoint to use dredged material from oil and gas canals beneficially.

Non-indigenous materials are those not normally present in the environment of a specific location under natural conditions. Placement of non-indigenous materials, and/or mixtures of such materials with indigenous materials such as dredged material and soils, to create wetlands and other habitats could be considered beneficial use of the non-indigenous material.

The specific habitat type and conditions where the beneficial use of non-indigenous material could be effective is neither well defined nor sufficiently studied. Use of certain non-indigenous materials such as red mud (spent bauxite) generate more questions as to suitability than does the use of non chemically processed materials such as compost from vegetative material. Industrial process residue material such as red mud might be appropriate for use in some coastal restoration sites, such as would be encountered in some coastal marsh restoration projects; however, tests must be conducted under field conditions. The testing regime described in the USACOE/EPA Draft Inland Testing Manual for dredged material suitability, and other appropriate testing regimes, should be followed for non-indigenous materials. Only if laboratory and demonstration-project-scale tests can show that the non-indigenous material will be beneficial, will be suitable for accomplishing the intended end use option, and will be cost effective, should its use be supported. Adverse impacts to the entire ecosystem must be quantified and analyzed.

BENEFITS

This action supports the overall alliance objective of maintaining and restoring existing marshes and swamps. Beneficial use projects done with maintenance dredged material provide a productive use for a material that may otherwise be disposed of non-beneficially. Beneficial use of dredged material from Federal dredging operations in channels, ports, and harbors is complicated by economics, timeliness, safety, and the engineering practicality of moving material to an appropriate beneficial use site. Beneficial use of oil and gas pipeline and production canal material also is hampered by the same constraints. These dredging activities, however, usually involve smaller quantities of material and are in close proximity to potential beneficial use sites. Dedicated dredging projects are expensive, but can be very effective as is evidenced by the LaBranche wetlands creation project. Beneficial use and dedicated dredging projects can provide dramatic results, such as the protection provided to Isle Dernieres, by a Terrebonne Parish restoration project using dredged materials, during hurricane Andrew. Successful projects done with dredged material may provide relatively long lasting benefits through habitat restoration or creation.

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IMPLEMENTATION SCHEDULE

Dredged material should be used to restore and create marsh at all possible locations with available technology whenever it is cost effective to do so. Because of economic and engineering realities, such as the high cost of pumping dredged material by pipe over two or three miles in Federal operations, this action is recommended only where it is economically feasible to do. Beneficial use of dredged material from oil and gas pipeline and production canals should be promoted whenever feasible, and managed through the Department of the Army permit program. The use of non-indigenous material is recommended in those situations where it can be used in a safe and cost-effective fashion. This plan also recommends the development of new technology to make the beneficial use of dredged and non-indigenous material more cost effective.

Medium-term plans (1-6 years) are as follows:

- M 1.00 Building on reports on beneficial use of dredged material prepared by both the U.S. Army Corps of Engineers, New Orleans District, and the Louisiana Department of Natural Resources, begin a comprehensive effort to identify sites in the Barataria-Terrebonne basin appropriate for the beneficial use of dredged material, including sites where oil and gas pipeline and production dredging activity occurs.
- M 2.00 Support experimenting with new technologies including the use of newly constructed pipelines for long distance sediment transport. If such technology is developed here, it could be marketed to other places enhancing our economic growth.

Long-term plans (6 years and beyond) are as follows:

- L 1.00 Continue to identify sites appropriate for the beneficial use of dredged material.
- L 2.00 Continue to develop and utilize new technologies for the transportation of sediment to sites that will benefit from the addition of dredged material.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementors of this action plan would be the U. S. Army Corps of Engineers and the Louisiana Department of Natural Resources.

Additional implementors may be the U. S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service, Environmental Protection Agency, Louisiana Port or Waterway Authorities, local or parish governments, and oil and gas pipeline and production companies.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM4-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Beneficial Use of Dredged and Non-
Indigenous Material**

Table EM4-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1-3 COSTS (Short Term) | Y3-6 AVG COSTS/YR (Medium Term) |
|-------------------|----------------------------------|-------------|---------------------------|----------------|------------------------------------|--|
| EM-04 | | | | | \$0 | \$58,743 |
| EM-04M1.00 | <i>begin site identification</i> | | | | | \$7,000 |
| EM-04M1.01 | <i>identify sites</i> | LDNR | E | | | \$3,500 |
| EM-04M1.02 | <i>identify sites</i> | USACOE | E | | | \$3,500 |
| EM-04M2.00 | <i>new technologies</i> | | | | | \$51,743 |
| EM-04M2.01 | <i>secure grant funding</i> | BTPO-EQS | E | | | \$1,743 |
| EM-04M2.02 | <i>additional projects</i> | LDNR | N | | | \$25,000 |
| EM-04M2.03 | <i>additional projects</i> | USACOE | N | | | \$25,000 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$235,000
 Total Funding Existing (Years 1-5): \$35,000
 Total New Funding Necessary (Years 1-5): \$200,000

Table EM4-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|------------------------|---------------|---------------------|---------------------|---------------|---------------|
| LDNR | | \$100,000 CWPPRA | | | |
| USACOE | | | \$100,000 CWPPRA | | |

Summary of new funding strategy: Two projects similar to the *Alternative Dredging and Spoil Deposition Techniques in Coastal Louisiana* will be carried out in Years 2 and 3. CWPPRA funds should be used to support these projects.

EVALUATION METHODS

The monitoring strategies outlined below are related to implementation of the CCMP Action Plan only and do not apply to actions taken by others.

Components of Plan

1. Utilize sediments periodically removed from existing navigation channels or oil field canals to restore degraded habitat or create new habitat.
2. Utilize dedicated dredging to restore degraded habitat or create new habitat.
3. Utilize non-indigenous materials such as red mud (spent bauxite), and compost or sewer sludge to restore

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degraded habitat or create new habitat if these materials are deemed safe and appropriate for use.

Interrelationships Among Components

The procedures and techniques recommended here for evaluation of dredged material may also be relevant to projects implemented under EM-5 Preservation and Restoration of Barrier Islands when dredged material is used in beach nourishment or island restoration projects.

Documentation of Plan Implementation

CCMP Action Plan implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. Sites in the Barataria-Terrebonne basin appropriate for the beneficial use of dredged material have been identified by BTMC.
2. New technologies, including the use of newly constructed pipelines for long distance sediment transport, have been developed.

The following criteria will be used to evaluate the effectiveness of individual beneficial use projects in restoring degraded wetland habitat or creating new habitat. Specific criteria may vary depending upon the characteristics of individual projects.

1. Elevation of water bottom increases sufficiently to support emergent vegetation.
2. Dredged material is colonized by emergent wetland vegetation.
3. Wetland area increases.
4. There are minimal adverse impacts:
 - a. on oyster leases,
 - b. or on SAV.

In addition, monitoring may be required to ensure that potentially toxic substances are not released into the environment as a consequence of the dredging or use of non-indigenous materials.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC and assessment of new technologies, as outlined in the above criteria, will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 2 BTMC meetings per year, review of minutes of meetings, investigation of new technologies and appropriate reporting. The level of effort is estimated at 80 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$4,000.

Recommendations and Feedback to Program/Implementor

Monitoring of CCMP Action Plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products by CWPPRA and others. They will develop a report which outlines progress made towards accomplishment of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the meeting to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding

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project construction, operation, maintenance, and/or monitoring, as well as landowners.

Quality Assurance/Quality Control

CCMP Action Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC activities (as outlined above).

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor dredged material projects implemented under CWPPRA. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables and Substitutions as shown in Table EM4-3. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation and enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plans.

Table EM4-3. Steyer et al. (1995) classification of monitoring variables for beneficial use of dredged material.

| Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|----------------------------|-----------------------|--|-----------------------|
| Habitat Mapping | 1 | Shoreline Markers | 4 |
| Vegetation | 2 | | |
| Bathymetry/Topography | 3 | | |

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In addition to the parameters in Table EM4-3, it is recommended that the following parameters be measured to ensure that there are minimal adverse impacts associated with project implementation:

1. Productivity on adjacent oyster leases.
2. Coverage of SAV.
3. Sediment quality (trace metals and synthetic organic compounds).
4. Toxicity testing.

These measurement should be given lower priority than those in Table EM4-3, except where toxicity levels in dredged or non-indigenous materials are expected to be high. In this case, acute toxicity tests should be conducted before the project is implemented.

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they conform to the data quality objectives described under QA/QC.

Vegetation - Species composition and abundance should be measured using the Braun-Blanquet method as described by Steyer (1992) and Steyer et al. (1995) with the qualification that appropriate training be provided to ensure consistency between individual's assessments of abundance. For SAV, species composition can be obtained by transect sampling (USEPA, 1993) using an airboat-rake method (Chabreck and Hoffpauir, 1962) to collect the samples. The frequency of occurrence of individual species should be recorded. The methods described by USEPA (1993) for estimating density of SAV in beds can also be used, depending upon water clarity.

Bathymetry/Topography - Bathymetry and topography should be measured using the techniques outlined by Powell (1992) and Steyer et al. (1995) noting that recording fathometers, measuring in m, should be used for bathymetric and topographic surveying with either GPS or conventional rod-and-level techniques recommended. The choice of survey techniques should be determined by the acceptable level of error and the sophistication of the available technology and equipment.

Shoreline Markers - Shoreline markers should be used to assess changes in the position of the newly created land over time. This information may also be obtained from the bathymetric and topographic surveys of the project areas. The procedures of Letzsch and Frey (1980) can be used to document changes in the marsh margin at the small scale. Details are described in Steyer et al. (1995).

Fisheries-Oysters - Sampling of oyster leases is addressed by Minello (1992) and a variety of techniques are discussed. In this case, the monitoring goal is to identify any adverse impacts on adjacent oyster leases and the Nestier tray and Butler plate techniques recommended by Minello (1992) should be used to examine survival of existing oysters and settlement of oyster spat on appropriate leases. If long-term data sets already exist for the project area using other gear, these techniques should be considered in the development of individual monitoring plans.

Sediment Quality-Trace Metals and Synthetic Organic Compounds - The sample collection and analytical methods described by Demas (1992) and Steyer et al. (1995) should be adopted for data collection concerning these parameters.

Benthic Toxicity - Where there are specific concerns regarding toxicity of dredged or non-indigenous materials, acute toxicity testing should be conducted before project implementation using benthic organisms recommended by the Inland Testing Manual (USEPA and DOA, 1994). Following project implementation chronic toxicity tests should be conducted using organisms recommended by USEPA and DOA (1994) using growth, reproduction and survival as indicators of toxicity.

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an

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appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly selected within each habitat type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., brackish marsh sub-area in project is compared to brackish marsh sub-area in reference area). If it is impossible to select a suitable reference area, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in marsh processes. Toxicity tests may include comparison of dredged or non-indigenous material with reference material from natural marshes in the vicinity of the project.

The size of the project area, the number of habitats included in the area, and heterogeneity of those habitats determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be pursued. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter. In the case of marsh creation projects using dredged material, comparisons may be more appropriate between one time interval and the next in order to identify progressive changes in wetland area. In this case, trend analysis is appropriate. Standard linear regression models can be used to detect trends once sufficient annual data points have been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

Cost estimates

Table EM4-4. Cost estimates for monitoring dredged material projects.

| Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|-------------------------------|--------------------------------------|--------------------|
| Habitat Mapping | \$12,250-18,600 | Annual per project |
| Vegetation ^a | \$2,000 | Annual per project |
| Hydrology ^b | \$10,500-21,000 | Annual per project |
| Fisheries - Oysters | \$150-200 | Per sample |
| Water and Sediment Quality | | |
| Water - trace metals | \$200-800 | Per sample |
| Water - synthetic organics | \$200-1,500 | Per sample |
| Sediment - trace metals | \$400-1,400 | Per sample |
| Sediment - synthetic organics | \$440-3,000 | Per sample |

^a Includes species composition and relative abundance.

^b Includes bathymetry, topography and soil salinity.

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Estimated costs for evaluating dredge material projects have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depend upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM4-4.

Cost estimates for shoreline markers are \$150-300 per measurement (Reed, 1992). Costs for toxicity tests depend upon the character of the material and the number of organisms utilized in the tests. For dredged material projects implemented by CWPPRA, average annual monitoring costs shall not exceed \$4,325. These requirements have constrained the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For some of the measurable parameters recommended in this monitoring strategy, Table EM4-5 presents these objectives as determined by Steyer et al. (1995). Data quality objectives for water and sediment trace metals and synthetic organic compounds will vary between the individual substances identified in the analyses. The targets of the analyses will vary with the source of the dredged material.

Table EM4-5. Data Quality Objectives for selected identified measurable parameters (all from Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|--|---------|---------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Species Composition and relative abundance | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |
| Bathymetry | cm | 4.0 | 4.0 | 85% | -200-0 |
| Topography | cm | 4.0 | 4.0 | 85% | -90-90 |
| Shoreline Markers | | | | | |
| Conventional Surveying | m | 0.3 m | 0.3 m | 85% | 0-300 |
| Small Scale | cm | 5 cm | 5 cm | 85% | 0-200 |

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing. Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Calibration Procedures - Routine calibration of field and laboratory equipment will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Analytical Procedures - The procedures described by Steyer et al. (1995) and references therein will be followed for analysis of the identified measurable parameters.

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Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTMC will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

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EM-5 Preservation and Restoration of Barrier Islands

OBJECTIVES

1. To preserve and restore barrier islands in order to protect environmental and economic resources.

DESCRIPTION

This action will preserve and restore barrier islands by pumping sand to elevate dunes, narrow tidal inlets, and provide greater island width. This action will also provide for building of back-island salt marshes and filling abandoned oil and gas canals. The two main technologies to be used are beach nourishment - the addition of sediment (sand) to a beach to replace that which has been lost to erosion - and island restoration by material addition - the use of imported sediment to repair island damage or reduce future degradation by heightening and widening an island. In addition, some of the tools described in the action plan regarding *Shoreline Stabilization and Induced Sediment Deposition (EM-6)* will be utilized on the barrier islands as appropriate.

BACKGROUND/MAJOR ISSUES

The barrier islands of the BTES are eroding rapidly and, in the Terrebonne basin, are expected to be lost completely within 20 years. These islands need to be elevated and widened to provide habitat for living resources and to prevent breaching and overwash. These problems can be addressed by the importation of sediments. Supplementing natural processes by continued sediment importation is the best method of barrier island preservation and restoration where there are no human structures to be preserved and islands can be allowed to migrate. The ongoing supply of sediment by beach nourishment, and island restoration by material addition to heighten and widen barrier islands, are the best methods of accomplishing this. However, the restoration and maintenance of the barrier island system alone will not reverse the trend of marsh loss in the Barataria and Terrebonne basins.

Structural island stabilization such as groins and seawalls is expensive and is only warranted where there are human structures to protect, islands cannot be allowed to migrate, or physical construction activities cannot occur on the barrier island itself. In sediment deficient systems, such as the BTES barrier islands, sediment trapping structures, such as the groins, should only be constructed if sufficient sediment can be added to make up for sediment trapped by the structure. An ongoing supply of sediment should be required to mitigate for long-term, down-drift impacts of the structures. The use of sediment trapping structures would also be appropriate to trap sediments where the littoral drift is going to completely remove sediments from the BTES's barrier islands system.

Wherever structural island stabilization is proposed, costs of structures, with the necessary sediment addition, should be compared to that of more frequent beach nourishment.

Since the barrier islands serve as vital nesting area for wading birds and sea birds and a resting area for migratory birds, unnecessary disruptions by humans should be avoided whenever possible. Shore parallel canals which have been dredged on or immediately adjacent to the barrier islands lead to the breakup of the island. These canals should be filled to the height of the barrier island when the need for the canal has ceased. Navigation canal protection jetties should have a regular program of sediment by-passing, or should be shortened or removed, so that the natural flow of sediments to adjacent flanking barrier islands is not disrupted.

The BTNEP has sponsored hydraulic modeling efforts in an attempt to determine the impacts of the existing barrier

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islands on wetland hydrology within the Barataria and Terrebonne systems. Dr. Joe Suhayda of LSU ran a computer model to determine how much of an effect different barrier island configurations would have on the depth and duration of wetland flooding under average and extreme weather conditions. The results of this effort indicated that, under average tide conditions, reducing the cross sectional areas of the inlets between the islands did not have a significant effect on the depth and duration of wetland flooding. Only when those inlets were reduced in size and number to smaller levels than what occurred in 1850, were significant impacts on tidal flooding realized.

The model run for the BTES did show that, under extreme storm conditions, the island height and inlet size did have a significant effect on the depth and duration of flooding. Under conditions similar to those of Hurricane Andrew, maximum surge elevations at Cocodrie would have been 1 foot higher with all the barrier islands removed and as much as 4 to 5 feet lower if the barrier islands were raised and inlets narrowed.

A barrier island and barrier shoreline feasibility study, funded under CWPPRA, is currently being undertaken under the leadership of LDNR. In addition, an Environmental Impact Statement for the use of sands from Ship Shoal for placement on the BTES Barrier Islands is being written under the joint oversight of LDNR, Minerals Management Service, and NMFS. Phase 1 of the feasibility study is intended to identify those projects in the BTES that provide the greatest protection to the barrier islands and the resources they protect at the least cost. These documents are expected to be finished by 1997.

BENEFITS

Barrier islands provide nesting and foraging habitat for rare and endangered wading birds, sea birds, migratory birds. They also provide important recreational fishing opportunities. Thus, the restoration and maintenance of these islands enhance and protect those resources and uses. Maintaining and restoring existing barrier islands to protect living resources, oil and gas infrastructure, and some mainland marshes is one of the primary restoration objectives of the Ecological Management Alliance of the BTMC. In addition to the protection of some marshes from waves during normal tidal cycles, the barrier islands may reduce the level of inundation associated with storm surges, thereby protecting oil and gas infrastructure and those living in communities in the southern portion of the BTES.

IMPLEMENTATION SCHEDULE

There are no barrier island projects in the Barataria Basin on the CWPPRA Priority Lists 1 - 4. In the Terrebonne Basin, restoration of East Island of the Dernieres chain is on the first Priority List, restoration of the west end of Trinity Island is on the second list, and restoration of Whiskey Island is on the third list. Phase 1 restoration of East Timbalier Island is on the third list and Phase 2 is on the fourth list. These projects have been funded and should be under construction by 1997.

Dredged material from the Barataria Waterway will soon be placed on West Grand Terre under Section 204 of the Water Resources Development Act (WRDA) of 1990. Plans are complete and all that remains is the signing of the Project Cost-sharing Agreement between the USACOE and the LDNR.

Specific recommendations are as follows:

Restoration and maintenance of the barrier islands in the Barataria and Terrebonne basins will be considered critical, as they serve to provide important habitat for fish and wildlife resources. In addition, the restoration of the

Terrebonne barrier islands will also be considered critical, as their loss is imminent and they provide unique habitat in the lower basin.

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Short-term plans (0-3 years) for this action include the following:

- S 1.00 The BTMC encourages the USACOE and the LDNR to quickly resolve any concerns and enter into a Cost-Sharing Agreement regarding the use of dredge material on West Grand Terre Island.
- S 2.00 Since major decisions regarding the rebuilding of barrier island hinges on the completion of the Barrier Island Feasibility Study/Environmental Impact Study, the BTMC encourages the CWPPRA Task Force to complete the Feasibility Study as soon as practical. In addition, the BTMC requests that it be kept informed of the progress of the Feasibility/Environmental Impact Studies and be allowed to review the deliverables associated with these efforts.

Medium-term plans (3-6 years) are as follows:

- M 1.00 The BTMC encourages the CWPPRA Task Force to proceed expeditiously with the initiation and completion of all approved and funded barrier island projects.
- M 2.00 The BTMC will review the Barrier Island Feasibility Study Report(s) and make recommendations to the CWPPRA Task Force concerning projects and implementation schedules. Water Resources Development Act funding for more expensive projects should be aggressively sought.
- M 3.00 The plan also should consider the removal or shortening of the rock jetties at Empire Waterway and Belle Pass. These jetties block the longshore drift of sediment east to west and deprive headlands and barrier islands west of the jetty of sand necessary for their maintenance.
- M 4.00 The regulatory agencies (USACOE and LDNR) together with the BTMC and the local Coastal Zone Management Council should meet with oil and gas companies maintaining wells near Timbalier and East Timbalier islands. Discussions should be held concerning spoil maintenance dredged from access channels beneficially to maintain and rebuild the islands. The more costly and beneficial hydraulic dredging should be considered as mitigation for adverse impacts to the islands. Possibly, rebuilding of these islands could serve as a mitigation bank for the company, under existing regulations developed by LDNR and largely accepted by the USACOE.

Long-term plans (6 years and beyond) are as follows:

- L 1.00 Consider implementing a large-scale diversion from the Mississippi River into the Barataria Basin south of Empire. Sand and sediment from the diversion would provide sediment necessary for maintaining and rebuilding barrier islands in the Barataria basin.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan would be the CWPPRA Task Force which includes the U. S. Army Corps of Engineers, U. S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service, Environmental Protection Agency, the State of Louisiana and the implementing state agency. In addition, the USACOE and LDNR are potential lead implementors of this action plan. These agencies have developed Long Term Management Strategies/Long Term Disposal Plans for beneficial use of dredged material from maintenance of Federal navigation channels and they are responsible for issuing permits for dredging and disposal operations in waters of the United States and the Louisiana Coastal Zone.

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Support implementors would include the State's Coastal Wetlands Conservation and Restoration Task Force which includes the Governor's Office of Coastal Activities, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Agriculture, and the Louisiana Department of Culture, Recreation, and Tourism.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM5-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table EM5-1. Estimated Costs.

| ACTION DESCRIPTOR | LEAD | EXISTING / SUBSUME NEW | Y1-3 | Y3-6 AVG |
|-------------------|--|---------------------------|-----------------------|---------------------------|
| | | | COSTS (Short Term) | COSTS/YR (Medium Term) |
| EM-05 | | | \$0 | \$2,161,345 |
| EM-05S1.00 | <i>resolve concerns/cost-share</i> | BTMC | | \$0 |
| EM-05S2.00 | <i>encourage Feas. studies</i> | BTMC | | \$0 |
| EM-05M1.00 | <i>encourage project compl'n</i> | BTMC | | \$0 |
| EM05M2.00 | <i>review reports, seek funding</i> | BTMC | | \$2,837 |
| EM-05M3.00 | <i>remove/shorten rock jetties</i> | BTMC | | \$2,157,500 |
| EM-05M4.00 | <i>meet w/ oil & gas companies</i> | | | \$1,008 |
| EM-05M4.01 | <i>meet with oil & gas companies</i> | USACOE | E | \$336 |
| EM-05M4.02 | <i>meet with oil & gas companies</i> | LDNR | E | \$336 |
| EM-05M4.03 | <i>meet with oil & gas companies</i> | CZMC | E | \$336 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$8,645,000
 Total Funding Existing (Years 1-5): \$15,200
 Total New Funding Necessary (Years 1-5): \$8,630,000

Table EM5-2. Summary of New Funding Sources.

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| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------|---------------|-----------------------|-----------------------|-----------------------|-----------------------|
| BTMC | | \$2,157,500 CWPPRA | \$2,157,500 CWPPRA | \$2,157,500 CWPPRA | \$2,157,500 CWPPRA |

Summary of new funding strategy: The \$2,157,000 cost in Years 2-5 will result from removing and shortening rock jetties in the Barrier Island area of the estuary. CWPPRA funds should be used to support this action plan.

EVALUATION METHODS

The monitoring strategies outlined below are related to implementation of the CCMP Action Plan only and do not apply to actions taken by others.

Components of Plan

1. Beach nourishment - the addition of sediment (sand) to a beach to replace that which has been lost to erosion.
2. Island restoration - the use of imported sediment to repair island damage, or prevent future degradation, by heightening and widening an island.
3. Consideration of removal or shortening of rock jetties at Empire Waterway and Belle Pass.
4. Provide for building of back-island salt marshes and filling abandoned oil and gas canals.

Interrelationships Among Components

Must be coordinated with freshwater and sediment diversions. Structural island stabilization only warranted under certain conditions. CWPPRA barrier island and barrier shoreline feasibility study will identify alternatives for BTES by 1997.

Documentation of Plan Implementation

CCMP Action Plan implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. Concerns between the USACOE and LDNR have been resolved, and a Cost-Sharing Agreement regarding the use of dredge material on West Grand Terre Island has been reached.
2. The CWPPRA Task Force has completed the Barrier Island Feasibility Study/Environmental Impact Statement.
3. The BTMC has been kept informed of the progress of the Feasibility/Environmental Impact Studies and has received the associated deliverables.
4. All approved and funded barrier island projects have been initiated and completed by the CWPPRA Task Force.
5. The BTMC has reviewed the Barrier Island Feasibility Study Report(s) and made recommendations to the CWPPRA Task Force concerning projects and implementation schedules.
6. BTMC has aggressively sought Water Resources Development Act funding for more expensive projects.
7. The removal or shortening of rock jetties at Empire Waterway and Belle Pass has been considered by BTMC and recommendations have been made to CWPPRA.
8. Regulatory agencies (USACOE and LDNR) together with BTMC and the local Coastal Zone Management Council have met with oil and gas companies maintaining wells near Timbalier and East Timbalier islands to discuss spoil maintenance and mitigation banking.

The following criteria will be used to evaluate the effectiveness of the Action Plan in preserving and restoring barrier islands. Specific criteria may vary depending upon the character of individual projects.

1. Barrier island/beach nourishment plans recommended by the Feasibility Study are successful.

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2. The planned schedule for maintenance is successful in maintaining restored island area and/or shoreline position.
 3. There are minimal adverse impacts on colonial nesting seabirds and wading birds.
- In addition, if there are concerns regarding the quality of dredged material used for barrier island restoration or beach nourishment, these concerns should be addressed using the procedures described in EM-4.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the various agencies outlined above in implementing the plan in accordance with the above criteria will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 4 BTMC and CWPPRA meetings per year, contacting implementing agencies, and appropriate reporting. The level of effort is estimated at 80 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$4,000.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products prepared by CWPPRA and others. They will develop a report which outlines progress made towards accomplishment of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the meeting to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding project construction, operation, maintenance, and/or monitoring, as well as landowners.

Quality Assurance/Quality Control

CCMP Action Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC activities (as outlined above).

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

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The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor barrier island projects implemented under CWPPRA. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM5-3. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plan. However, priorities for monitoring variables may vary based upon the characteristics, objectives and design of individual projects.

Table EM5-3. Steyer et al. (1995) classification of monitoring variables for barrier island restoration.

| Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|----------------------------|---------------------------|--|---------------------------|
| Habitat Mapping | 1 | Shoreline Markers | 3 |
| Vegetation | 4 | | |
| Bathymetry/Topography | 2 | | |

Because of the importance of the barrier islands as nesting and foraging habitat for wading birds, seabirds and migratory birds, it is recommended that the following parameters be measured to document any adverse impacts and/or verify the benefits associated with project implementation:

1. The number of colonies for colonial nesting seabirds.
2. The number of colonies of wading birds.
3. The number of species present in these colonies.

These measurements should be given lower priority than those in Table EM5-3.

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they conform to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Vegetation - Species composition and abundance should be measured using the Braun-Blanquet method as described

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by Steyer (1992) and Steyer et al. (1995) with the qualification that appropriate training be provided to ensure consistency between individual's assessments of abundance.

Bathymetry/Topography - Bathymetry and topography should be measured using the techniques outlined by Steyer and Stewart (1992) and Steyer et al. (1995) noting that recording fathometers, measuring in m, should be used for bathymetric surveying with either GPS or conventional rod-and-level techniques recommended for topographic surveying. The choice of survey techniques should be determined by the acceptable level of error and the sophistication of the available technology and equipment.

Shoreline Markers - Shoreline markers should be used to assess changes in the position of the island shore over time.

This information may also be obtained from the bathymetric and topographic surveys of the barrier islands. The procedures of Letzsch and Frey (1980) can be used to document changes in the marsh margin at the back of the islands. Details are described in Steyer et al. (1995).

Colonies of Colonial Nesting Birds - LDWF currently conducts surveys of colonial nesting birds (Martin and Lester, 1990). Either LDWF procedures or those described here should be followed. Lane (1994) suggests the use of methods described by Slack et al. (1992) whereby surveys are conducted annually during a two-week period beginning in the last week of May as this corresponds to the incubation period of most colonial nesting birds. Surveys should be conducted from the ground using 2-4 people viewing the colony on foot or from a boat. The species composition of the birds in the colony is recorded along with an estimate of the size of the colony.

Colonies of Wading Birds - LDWF currently conducts surveys of wading birds (Martin and Lester, 1990). Either LDWF procedures or those described here should be followed. Loesch et al. (1994) indicate that the development of population survey methods is required before assessments can be made of wading bird utilization of wetland habitat.

Similar methods employed for colonial nesting birds should be adopted for the CCMP. This may employ a stratified random sampling design (Dubovsky et al., 1988) if colonies are thought to be clustered.

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats/barrier environments and replicate samples randomly selected within each habitat/environment type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., dune terrace sub-area in project is compared to dune terrace sub-area in reference area). If it is impossible to select a suitable reference area, as may be the case with barrier island projects which affect a whole chain of islands, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in barrier processes, especially storm impacts.

The size of the project area, the number of habitats/environments included in the area, and heterogeneity of those habitats/environments determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be pursued. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the

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parameter. In the case of large projects comparisons may be more appropriate between one time interval and the next in order to identify progressive changes in barrier island area. In this case, trend analysis is appropriate. Standard linear regression models can be used to detect trends once sufficient annual data points have been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

Cost estimates

Estimated costs for evaluating preservation and restoration of barrier islands have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depend upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM5-4.

Table EM5-4. Cost estimates for monitoring barrier island restoration projects.

| Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|-------------------------|---|--------------------|
| Habitat Mapping | \$12,250-18,600 | Annual per project |
| Vegetation ^a | \$2,000-4,000 | Annual per project |
| Hydrology ^b | \$11,000-21,000 | Annual per project |

^a Includes species composition and relative abundance.

^b Includes bathymetry, topography and wind speed/direction.

Cost estimates for shoreline markers are \$150-300 per measurement (Reed, 1992).

It is estimated that ground surveys of colonial nesting birds for one barrier island chain (e.g., Isles Dernieres) would require a team of two trained observers and would take approximately three days per year. Estimated costs for this effort including salary, fringe benefits, boat costs and reporting are \$4-5,000 per year. For barrier island restoration projects implemented by CWPPRA, average annual monitoring costs shall not exceed \$4,325. These requirements have constrained the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For some of the measurable parameters recommended in this monitoring strategy, Table EM5-5 presents these objectives as determined by Steyer et al. (1995). For the measurable parameters pertaining to birds, the main constraint on data quality is observer training and performance. It is recommended that anyone participating in bird surveys participate in taxonomic identification workshops before surveys.

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing. Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Calibration Procedures - Routine calibration of field equipment (e.g., surveying gear) will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

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Table EM5-5. Data Quality Objectives for identified primary measurable parameters (all from Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|---|---------|---------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Species Composition and relative abundance | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |
| Bathymetry | cm | 4.0 | 4.0 | 85% | -200-0 |
| Topography | cm | 4.0 | 4.0 | 85% | -90-90 |
| Shoreline Markers | | | | | |
| Conventional Surveying | m | 0.3 m | 0.3 m | 85% | 0-300 |
| Small Scale | cm | 5 cm | 5 cm | 85% | 0-200 |

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTMC will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

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EM-6 Shoreline Stabilization and Induced Sediment Deposition

OBJECTIVES

1. To facilitate the maintenance and restoration of existing marshes and swamps by reducing shoreline erosion along bays, lakes, canals and bayous.
2. To trap or induce the deposition of sediments in order to maintain and restore existing marshes and swamps, as well as build new marshes.

DESCRIPTION

Shoreline erosion occurs wherever land meets water and people have been trying to combat it since ancient times. Shoreline erosion results in wetlands that were not previously directly connected to the Gulf to become susceptible to marine tidal invasion. Shoreline stabilization refers to those measures that reduce or halt shoreline erosion. Sediment inducers and sediment trappers, on the other hand, refer to those measures that promote the deposition of suspended sediment from the water column with the objective of reducing erosion and building subaerial land in open water habitats.

In general, shoreline stabilization is recommended in areas where shoreline erosion is a problem and the use of sediment inducers is impractical or infeasible due to project locality, cost, and/or the lack of available suspended sediment. Sediment inducers will be used in high wave energy environments to reduce wave energy and allow suspended sediment in the water column to settle. This will serve to reduce erosion, promote lateral and vertical sediment accumulation for land creation. Sediment trapping will be used in lower wave energy environments to improve sediment deposition and prevent sediment re-suspension in shallow water bodies in interior marshes which cannot infill because of wave fetch.

Table EM6-1 - Types of tools used to prevent shoreline erosion and promote sediment deposition.

| Technology | Shoreline Stabilization | Sediment Inducer | Description and Comments |
|-------------|-------------------------|------------------|--|
| Breakwaters | yes | can be | Barriers, typically made of stone, but frequently made of other materials, which are constructed parallel to and off a shoreline. Breakwaters are constructed to lower wave energy that reaches the shore and slow sediment movement. |
| Bulkheads | yes | no | Wall type hard structures built at the shoreline designed to protect the land behind the bulkhead from erosion or to stabilize a vertical earthen embankment. Bulkheads may be constructed from timber, steel, plastic or concrete sheet piles; or cast in place concrete. |
| | | | |

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Sediment Deposition**

| Technology | Shoreline Stabilization | Sediment Inducer | Description and Comments |
|----------------------------|--------------------------------|-------------------------|---|
| Revetments | yes | no | A revetment is a hardened skin constructed on the slope of an existing shore face to protect it from erosion due to wave attack and current movement. They are usually constructed of stone, precast concrete armor units, or cast in place concrete and usually have some type of filter system designed so that soil material is not washed from behind the revetment by water. |
| Vegetative Planting | yes | can be | Vegetative planting projects rely on vegetation, usually established by sprigging or the planting of seeds, to stabilize sediments and accumulate imported sediments |
| Material Replacement | yes | no | The filling of an eroded shoreline, usually with dredged material, to a historical or other desired configuration. |
| Seawalls | yes | no | Wall type hard structures built at or behind the shoreline usually designed to protect the land behind the seawall from erosion due to wave attack. Seawalls may be constructed from timber, steel, plastic or concrete sheetpiles; stones, or cast in place concrete. |
| Groins | yes | yes | Groins are barriers constructed perpendicular to the beach. The purpose of groins is to trap sediment on the upstream side of the groin in the littoral drift or to prevent longshore erosion of the downstream side of the groin. As groins trap sediment on their upstream face, they prevent sediment from reaching their downstream face. A series of groins called a groin field may be constructed for this purpose. This technology is not recommended due to the potential for downdrift sediment starvation. |
| Segmented Rock Breakwaters | yes | yes | Segmented rock breakwaters are rectangular rock structures placed parallel to a shoreline at varying intervals in open water. The breakwaters serve to diffract incoming waves causing them to lose energy and deposit sediment leeward of the structure. Breakwaters can potentially be used in sediment starved systems. |
| Technology | Shoreline | Sediment | Description and Comments |

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| | Stabilization | Inducer | |
|---|----------------------|-----------------|--|
| Foreshore Dikes | yes | yes | These low rock dikes are placed adjacent to a channel bank and promote sediment deposition when waves break over them. They are useful along the banks of major navigation channels such as the HNC and the GIWW. |
| Brush Fencing (Christmas Tree Fencing) | yes | yes | Brush fences are useful in low energy environments where there is adequate suspended sediment. The structures consist of treated timber cribbing and are filled with discarded brush material (usually old Christmas trees). Fences slow current velocities and promote suspended sediment deposition. |
| Terracing | yes | yes | This technology utilizes a small dredge or plow to pile sediment to an elevation at which marsh vegetation can colonize. Terraces can be created in any orientation but are generally built in linear or grid patterns that surround shallow open water areas. Terraces baffle wave energy and create conditions favorable for the establishment of submerged aquatic vegetation and marsh expansion while protecting adjacent marsh from wind driven erosion. |
| Timber Pylons | yes | yes | Timber pylon breakwaters consist of treated timber pilings driven deep into soft sediments in a "V" formation. Timber cross members are attached to the pilings such that the structure appears as a wide "V" shaped fence with the point of the "V" pointing away from the land. The breakwaters are designed to baffle wave energy and promote suspended sediment deposition on the landward side. |
| Foreshore reefs | yes | yes | These structures are engineered to promote the growth of biological organisms such as oysters and create conditions favorable to oyster reef establishment. Oyster reefs can reduce wave energy impinging and promote the deposition of suspended sediment. |
| Rock Gabions | yes | can be | Gabions function by diffracting and baffling wave energy to protect the shoreline and promote deposition of suspended sediment. They have been shown to be effective in soft unconsolidated sediments. |
| | Shoreline | Sediment | |

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Shoreline Stabilization and Induced
Sediment Deposition**

| Technology | Stabilization | Inducer | Description and Comments |
|------------------|---------------|---------|---|
| Geotextile Tubes | yes | can be | Geotextile fabric tubes function much like rock gabions in that they are self contained and might function well in soft sediments. The structures consist of a fine mesh pillow-shaped fabric tube that can be placed in position then filled with dredged material. Geotextile tubes are easily positioned can be placed in a variety of arrangements depending upon wave climate and desired results. |

BACKGROUND/MAJOR ISSUES

Monitoring of segmented rock breakwaters in Cameron Parish indicates that the breakwaters are effectively promoting sediment accumulation. Observations at Turtle Cove indicate that the rock gabions are promoting the deposition of suspended sediment.

The success of these structures depends upon the availability of suspended sediment for trapping. Possible adverse impacts may include undermining of rock structures by storm wave action and disruption of sediment transport. Many sediment inducing structures provide a hard substrate for colonization by reef building organisms and provide enhanced fishing habitat. Development of a special plow, which could be pulled behind a marsh buggy, should be encouraged as a way to make terracing more cost-effective.

Sediment trapping has been most effective where they baffle only small wind-generated waves and suspended sediment concentration is high. They also are not as useful in areas of high wave activity such as along canal banks, navigation channels (e.g., the Gulf Intracoastal Waterway) where boat wakes can destroy fence structures or the Gulf of Mexico shoreline.

A principal issue that stake in the use of sediment inducers, sediment trappers and material placement is the ownership of created land when the project is constructed using federal or state funds. The state Attorney General's opinion (92-472) states that:

Should accretion form as alluvion from a coastal restoration or vegetation project on a navigable river or stream, it would belong to the owner of the bank, subject to the right of public use defined by the Civil Code. Any accretion forming as alluvion or dereliction on lakes, bays, arms of the sea and the shore of the sea belongs to the state and is subject to public use up to the ordinary high water mark of 1812. Thus the public would have the right to use these areas but go no further.

BENEFITS

This action supports the overall alliance objective of maintaining and restoring existing marshes and swamps by protecting the slightly elevated shoreline rim and therefore protecting marshes behind the shore from wave attack and salt water.

IMPLEMENTATION SCHEDULE

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This plan supports limited construction of projects of local concern that might not affect large areas of the basin, but are favored by local government and landowners. This action is recommended especially in areas where there are blowouts - where erosion has occurred to the point where marshes abut canals and other water bodies. This plan recommends shoreline stabilization projects in areas where extensive marsh erosion may occur.

It is difficult to lay out a conceptual time line for the implementation of this action plan. Locations where shoreline erosion is a problem have been well identified in the BTES. In addition, other areas may become critical if threatening a pipeline or other important structure and could require attention of private or local concern. However, the lack of a reliable source of funding for these projects and the general high cost of shore protection precludes setting up a time line for implementation.

The Barataria-Terrebonne Management Conference (BTMC) will be responsible for evaluating potential projects, identifying priorities within the BTES, advising the CWPPRA Task Force on the appropriateness of projects, and advocating projects which support the criteria and objectives listed in this plan. In addition, the BTMC will provide an additional forum for public involvement into the project evaluation and selection process.

Existing and Authorized CWPPRA Projects in the BTES:

BA-15 Lake Salvador Shore Protection (Demonstration)

This project will protect a portion of the northwest lake shore by reducing wave energy impinging on the shoreline. Different types of shore protection/sediment trapping devices will be tested to determine the best means to trap sediment and protect shorelines where water bottoms are soft and unconsolidated, making the use of rock structures impractical.

BA-23 Barataria Bay Waterway Shore Protection (west side)

This project calls for approximately two miles of rock shoreline armor on the west bank of the Barataria Bay Waterway just out of The Pen.

TE-17 Falgout Canal Planting (Demonstration)

TE-18 Timbalier Island Planting (Demonstration)

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan would be the CWPPRA Task Force which includes the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service, Environmental Protection Agency, the State of Louisiana, and the implementing state agency.

Support implementors would include the State's Coastal Wetlands Conservation and Restoration Task Force which includes the Governor's Office of Coastal Activities, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Agriculture, and the Louisiana Department of Culture, Recreation, and Tourism.

Other implementors acting jointly or independently could include the Barataria-Terrebonne Management Conference, Louisiana Department of Natural Resources, U. S. Army Corps of Engineers, Natural Resource Conservation Service, Bayou Lafourche Fresh Water District, Soil and Water Conservation Districts and other quasi state agencies, citizen action groups, parish governments, and landowners.

COSTS AND ECONOMIC CONSIDERATIONS

Action Plan EM-6: Shoreline Stabilization and Induced Sediment Deposition

Table EM6-2. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1-3 COSTS (Short Term) | Y3-6 AVG COSTS/YR (Medium Term) |
|----------|---|------|-------------------|---------|----------------------------|---------------------------------------|
| EM-06 | | | | | | |
| EM-06.00 | NO IMPLEMENTATION TASKS IDENTIFIED | | N | | | \$0 |
| | | | | | | |

Table EM6-2 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$0
 Total Funding Existing (Years 1-5): \$0
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: No implementation tasks have been identified.

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Components of Plan

1. Use shoreline stabilization in areas where shoreline erosion is a problem and the use of sediment inducers is

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- impractical or infeasible due to project locality, cost, and/or the lack of available total suspended solids.
2. Use sediment inducers in high wave energy environments to reduce wave energy and allow total suspended solids in the water column to settle.
 3. Use sediment trapping in lower wave energy environments to improve sediment deposition and prevent sediment re-suspension in shallow water bodies in interior marshes which cannot infill because of wave fetch.

Interrelationships Among Components

Many techniques/tools can act to both stabilize the shoreline and induce sediment deposition.

Documentation of Plan Implementation and Effectiveness

Plan implementation

No implementation plan was recommended for this Action Plan due to the lack of a reliable source of funding for these projects and the general high cost of shore protection.

Project effectiveness

The effectiveness of any individual project in shoreline stabilization (SS), inducing sediment deposition (SI), or trapping sediment (ST) should be evaluated according to the following criteria. Specific criteria may vary depending upon the characteristics of individual projects.

1. The rate of shoreline erosion is halted or reduced (SS, SI).
2. Wave energy is reduced (SI).
3. Sediment accumulation is increased (SI, ST).
4. Elevation of water bottoms increases (SI, ST).

Methods

Measurable parameters

Table EM6-3. Steyer et al. (1995) classification of monitoring variables for shoreline stabilization and induced sediment deposition.

| Stabilization Type | Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|---------------------------|----------------------------|-----------------------|--|-----------------------|
| Shoreline Protection | Habitat Mapping | 4 | Vegetation | 3 |
| | Shoreline Markers | 1 | Bathymetry/Topography | 2 |
| Sediment Trapping | Habitat Mapping | 4 | Total Suspended Solids | 2 |
| | Vegetation ^a | 3 | Bathymetry | 1 |

^a Includes species composition and relative abundance

Steyer and Stewart (1992) list variables which may be measured to monitor shoreline protection and sediment trapping projects implemented under CWPPRA. Their assessment does not identify sediment inducers as a separate approach from sediment trapping. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Measurable parameters identified by Steyer and Stewart (1992) have been revised and prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM6-3. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of the CCMP compared to CWPPRA (restoration, creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the projects as described in the Action Plan. However, priorities for monitoring variables may vary based upon the characteristics, objectives and design of individual projects.

Action Plan EM-6: Shoreline Stabilization and Induced Sediment Deposition

In addition, it is recommended that monitoring of projects classified as sediment inducers, should specifically include measurements of wave height and period, as the reduction of wave energy is the primary means by which sediment inducers increase accretion and bottom elevation. Associated measurements of wind speed and direction should be made to allow assessment of wave forcing in relation to project effectiveness. For these projects, these parameters should be assigned a priority above vegetative and habitat assessments.

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they confirm to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Vegetation - Species composition and abundance should be measured using the Braun-Blanquet method as described by Steyer (1992) and Steyer et al. (1995) with the qualification that appropriate training be provided to ensure consistency between individual's assessments of abundance.

Bathymetry/Topography - Bathymetry and topography should be measured using the techniques outlined by Powell (1992) and Steyer et al. (1995) noting that recording fathometers, measuring in m, should be used for bathymetric surveying with either GPS or conventional rod-and-level techniques recommended for topographic surveying. The choice of survey techniques should be determined by the acceptable level of error and the sophistication of the available technology and equipment.

Total Suspended Solids - Various methods for measurement of total suspended solids concentration are described by Powell (1992) and Steyer et al. (1995). The difficulty with point measurements is their inability to resolve vertical and horizontal variations in the total suspended solids field, as well as temporal variations in total suspended solids concentration. Water samplers should be used in conjunction with deployment of sensors which continuously monitor suspended solids concentration (e.g., Downing and Beach, 1989). Deployed sensors must be regularly serviced to prevent fouling (as described by Powell (1992) and Steyer et al. (1995)).

Shoreline Markers - Shoreline markers should be used to assess changes in the position of the shore over time. This information may also be obtained from the bathymetric and topographic surveys of the project area. The procedures of Letzsch and Frey (1980) can be used to document changes in the marsh margin in the area impacted by the project, and the reference area. Details are described in Steyer et al. (1995).

Wave Activity - Measurements of waves are not addressed by Steyer and Stewart (1992). Measurement of wave height and period requires the deployment of water level sensors (i.e., pressure transducers) which can record water level changes at least a frequency of 5 Hz. The selection of sensor type is critical, as the type of water level variation expected in the project area due to waves (frequently less than 0.5 m in areas where sediment inducers are deployed) must be detectable. The best range for pressure transducer sensitivity is 0-2.5 psi or 0-5 psi, depending upon the project environment.

Wind Speed/Direction - Automatic wind speed and direction equipment should be used to measure this parameter, as described by Powell (1992) and Steyer et al. (1995). Sensors should be placed at a standard height above the ground (e.g., 2 m or 10 m) in order that data can be compared to data collected by the Louisiana Office of State Climatology for various sites in BTES.

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly

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selected within each habitat type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., brackish marsh sub-area in project is compared to brackish marsh sub-area in reference areas). If it is impossible to select a suitable reference area, as may be the case with large shoreline protection projects, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in erosive/depositional processes.

The size of the project area, the number of habitats/environments included in the area, and heterogeneity of those habitats/environments determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be pursued. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter.

Cost estimates

Estimated costs for evaluating shoreline stabilization and sediment trapping projects have been developed for CWPPRA by Steyer and Stewart (1992). The actual costs depend upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM6-4.

Table EM6-4. Cost estimates for monitoring shoreline stabilization and induced sediment deposition projects.

| Stabilization Type | Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|---------------------------|-------------------------|---|--------------------|
| Shoreline Protection | Habitat Mapping | \$12,250-18,600 | Annual per project |
| | Hydrology ^a | \$6,000-11,000 | Annual per project |
| Sediment Trapping | Habitat Mapping | \$12,250-18,600 | Annual per project |
| | Vegetation ^b | \$2,000 | Annual per project |
| | Hydrology ^c | \$6,000-33,100 | Annual per project |

^a Includes bathymetry, topography and wind speed/direction.

^b Includes species composition and relative abundance.

^c Includes bathymetry and topography.

Cost estimates for shoreline markers are \$150-300 per measurement (Reed, 1992). The deployment of two sensors to detect wave height and period would be approximately \$12,000 in the first year (including instrument acquisition) and \$4,000 in subsequent years. Estimated costs for total suspended solids sampling are approximately \$14,000 in the first year (including instrument acquisition) and \$4,000 in subsequent years. For projects implemented by CWPPRA, average annual monitoring costs shall not exceed \$2,150 for shoreline protection projects and \$4,325 for sediment trapping projects. These requirements have constrained the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

Action Plan EM-6: Shoreline Stabilization and Induced Sediment Deposition

Quality Assurance/Quality Control

Project effectiveness

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, Table EM6-5 presents these objectives as determined by Steyer et al. (1995).

Table EM6-5. Data Quality Objectives for identified measurable parameters (after Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|---|---------|---------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Species Composition and relative abundance | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |
| Bathymetry | cm | 4.0 | 4.0 | 85% | -200-0 |
| Topography | cm | 4.0 | 4.0 | 85% | -90-90 |
| Shoreline Markers | | | | | |
| Conventional Surveying | m | 0.3 m | 0.3 m | 85% | 0-300 |
| Small Scale | cm | 5 cm | 5 cm | 85% | 0-200 |
| Total Suspended Solids | mg/L | 2 mg/L | 2 mg/L | 85% | 0-200 |
| Wave Height | cm | 5 cm | 5 cm | 85% | 0-75 |
| Wave Period | s | 0.5 s | 0.5 s | 85% | 0-5 |
| Wind Speed | m/s | 0.7 m/s | 0.5 m/s | 85% | 0-5 |
| Wind Direction | degrees | 5 degrees | 5 degrees | 85% | 0-360 |

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing.

Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Calibration Procedures - Routine calibration of field and laboratory equipment will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Analytical Procedures - The procedures described by Steyer et al. (1995) and references therein will be followed for analysis of the identified measurable parameters.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the BTMC will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

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EM-7 Marsh Management

OBJECTIVES

1. To stabilize water levels and salinity to provide conditions conducive to the establishment and growth of emergent and submerged marsh plants.

DESCRIPTION

Marsh management consists of controlling water levels inside an area by manipulating water control structures. Combinations of fixed-crest weirs, variable-crested weirs, flap-gated culverts and pumps are used to control water levels.

BACKGROUND/MAJOR ISSUES

Marsh management can be divided into two basic types: passive and active. The passive type makes use of non-adjustable structures such as fixed-crest weirs, slotted weirs, rock weirs, plugs and levees (similar to those used in Action Plan *EM-1, Hydrologic Restoration*). In passive marsh management projects, the goal is often to maintain a minimum water level inside the management area, and reduce the tidal exchange and velocity.

Operation of water control structures for active marsh management can have as many as three phases, however active marsh management will always include Phase One. Phase One is draw down which typically occurs in the spring and early summer months of every third year, as needed, but can be conducted more or less frequently. Structures are configured to discharge water and preclude the entry of all water except rainfall. The goal is to sustain water levels below the normal high tide level to allow the growth of emergent vegetation on exposed substrates, induce or invigorate the growth of submerged aquatic vegetation, and invigorate the growth of emergent marsh plants. Phase Two immediately follows Phase One and its goals are to stabilize water levels and salinity and to maintain as much exchange with the estuary as possible without compromising the management effort. To achieve this, the crest of variable crest weirs is often set at about six inches below marsh level and flap gated structures are locked open. During waterfowl and trapping seasons, the water level is typically raised to at least marsh elevation to allow access for trappers and hunters. Phase Three, a flow-through phase, is a recent innovation. The goal of this phase is to increase input of freshwater and nutrients and/or sediments into the managed area to invigorate the growth of emergent marsh plants and to retain sediments. Phase Three is appropriate only where sources of freshwater and sediment are available to the management area.

Marsh management projects should be designed and operated to minimize adverse impacts to fisheries access and suspended sediment import. Alterations to marsh hydrology can impact the utilization of Louisiana coastal marsh habitat by estuarine fishes and macrocrustaceans. Structures in channels may prevent their movement through the marsh system and prevent the completion of their life cycle. Manipulation of water levels within managed areas, especially drawdown, can prevent access to marsh surface habitat. While some of the impacts of marsh management on habitat quality, i.e., the promotion of submerged aquatic vegetation, are beneficial to juvenile fishes and macrocrustaceans, access must be maintained for the organisms to benefit. Responsive management strategies can be adapted to allow the ingress and egress of certain species, but if marshes are hydrologically isolated for some part of the year, access by some species will be reduced. Some studies have indicated that marsh vertical accretion and plant health within managed areas is reduced compared to non-managed areas, and sediment deposition appears to be

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reduced. In some instances, marsh management activities appear to have increased the percentage of marsh loss compared to a nearby control.

Marsh management projects may be less necessary over the long-term once hydrologic restorations and diversions are implemented, particularly in the northern and central part of Barataria and the Penchant Subbasin in Terrebonne.

BENEFITS

Marsh management techniques may be a useful tool in protecting, restoring and enhancing vegetated wetlands on site specific areas.. Marsh management techniques have been effective in protecting and restoring low-salinity wetlands where adversely affected by human-induced alterations. Marsh management techniques may also help protect deteriorating brackish marshes growing on organic soils once occupied by fresh or low-salinity marshes. Marsh management techniques have proven useful, in some instances, in increasing coverage and diversity of submerged aquatic vegetation. Some studies have shown that accretion and vigor has been enhanced through management while surrounding areas continue to erode.

IMPLEMENTATION SCHEDULE

Marsh management is a useful tool on site specific areas, and like all other projects, the best methods will be examined and implemented to meet the objectives of an individual project. Maintenance programs for structural features should be established in the permit and adhered to. Once undertaken, management activities should not be abandoned unless planned site restoration is done.

The Barataria-Terrebonne Management Conference (BTMC) recommends that studies be conducted of the designs of water control structures in order to address the issue of fisheries access. The BTMC will actively seek funds to pursue such studies. The findings of completed and ongoing studies should be reflected in the design of future water control structures.

At this time, no specific marsh management sites are recommended by the BTMC. However, the BTMC shall participate in the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) and in the State of Louisiana wetland restoration efforts, as well as initiatives undertaken locally or through the private sector. In addition, the BTMC will provide an additional forum for public involvement in these processes.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementors of marsh management projects consist mainly of landowners. Support implementors include the Natural Resource Conservation Service, U. S. Fish and Wildlife Service, Louisiana Department of Wildlife and Fisheries, and Louisiana State University Cooperative Extension Service.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM7-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Table EM7-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1-3 COSTS (Short Term) | Y3-6 AVG COSTS/YR (Medium Term) |
|----------|---------------------------------------|------|-------------------|---------|----------------------------|---------------------------------------|
| EM-07 | | | | | | |
| EM-07.00 | NO IMPLEMENTATION TASKS IDENTIFIED | | N | | | \$0 |
| | | | | | | |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$0

Total Funding Existing (Years 1-5): \$0

Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: No implementation tasks have been identified.

EVALUATION METHODS

The monitoring strategies outlined below are related to implementation of the CCMP Action Plan only and do not apply to actions taken by others.

Components of Plan

1. Utilize water control structures to control water levels inside marsh areas.
2. Conduct studies of water control structure design to address fisheries access issues.

Interrelationships Among Components

Benefits to vegetation and wildlife may be accompanied by adverse impacts to fisheries and sediment inputs. May be less necessary as hydrologic restoration and diversion projects are implemented.

Documentation of Plan Implementation

CCMP Action Plan Implementation

The following criteria will be used to determine if CCMP Action Plan implementation steps were accomplished:

1. BTMC works to ensure that studies are initiated to evaluate the design of water control structures in order to address fisheries access issues.
2. BTMC ensures the dissemination of the results of these studies to various agencies and entities involved in the design of future water control structures.

Should the construction of any marsh management projects be supported in the future by BTMC under this Action Plan, the following criteria would be used to evaluate their effectiveness. Specific criteria may vary depending upon the characteristics of individual projects.

1. Water level fluctuations are reduced.
2. Salinity fluctuations are reduced.
3. Cover of emergent vegetation is increased.

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4. Growth/vigor of emergent vegetation is increased.
5. Cover of SAV is increased.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC in implementing the plan in accordance with the above criteria will be monitored by an independent Third Party.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 2 BTMC meetings per year, contacting appropriate agencies and institutions, and appropriate reporting. The level of effort is estimated at 40 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$2,000.

Recommendations and Feedback to Program/Implementor

Monitoring of CCMP Action Plan implementation will be undertaken by an independent Third Party. This independent Third Party will review project monitoring products prepared by CWPPRA and others. They will develop a report which outlines progress made towards accomplishment of CCMP Action Plan objectives. The CCMP Action Plan implementation monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the scheduled meeting of the BTMC to discuss the report. Monitoring reports concerning CCMP Action Plan effectiveness will also be provided to the agencies or institutions funding project construction, operation, maintenance, and/or monitoring, as well as landowners for the project and references areas (as appropriate).

Quality Assurance/Quality Control

CCMP Action Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report (monitor) information on CCMP implementation status (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC activities (as outlined above).

MONITORING STRATEGIES ASSOCIATED WITH EXISTING PROJECTS OR PROGRAMS

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the CCMP Action Plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be

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recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required.

The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects. For example: the monitoring currently being done by LDNR in conjunction with CWPPRA projects would not be replaced by monitoring described in any particular CCMP Action Plan.

Methods

Steyer and Stewart (1992) list variables which may be measured to monitor marsh management projects implemented under CWPPRA. It is recommended that this model be followed, whether or not any particular project is funded by CWPPRA. Measurable parameters identified by Steyer and Stewart (1992) have been prioritized by Steyer et al. (1995) into Essential Variables or Additional Variables or Substitutions as shown in Table EM7-2. These have been assigned a priority for monitoring under the CCMP Action Plan. The priorities have been assigned based upon the broader mission of CCMP compared to CWPPRA (restoration creation or enhancement of vegetated wetlands is not necessarily the primary goal of CCMP Action Plans) and the objectives of the project as described in the Action Plan.

Table EM7-2. Steyer et al. (1995) classification of monitoring variables for marsh management.

| Essential Variables | BTNEP Priority | Additional Variables or Substitutions | BTNEP Priority |
|----------------------------|---------------------------|--|---------------------------|
| Habitat Mapping | 6 | Accretion/Elevation Change | 4 |
| Salinity | 1 | | |
| Water Level | 2 | | |
| Vegetation | 3 | | |
| Fisheries | 5 | | |

Table EM7-2 includes parameters to document not only the effectiveness of the project in achieving its stated goals but also parameters which identify any adverse impacts to fisheries and sediment inputs associated with achieving project benefits.

Data collection methods

This section provides guidance on the types of data collection methods which are currently available and appropriate for monitoring these types of projects. There may be alternative existing or new techniques which could be adopted as long as they conform to the data quality objectives described under QA/QC.

Habitat Mapping - The procedures and methods outlined by Handley (1992) and Steyer et al. (1995) should be followed.

Salinity - The procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed. At least one continuous recording salinity gauge should be installed at each project and control site.

Water Level - The basic procedures and methods outlined by Powell (1992) and Steyer et al. (1995) should be followed with the following detailed recommendations. At least one continuous water level gauge should be installed at each project and control site. These gauges should be sufficiently accurate to record changes in water level of 1 cm and pressure transducers should be vented to allow for automatic correction of changes due to atmospheric pressure. If unvented transducers are used, data must be corrected for changes in barometric pressure.

Vegetation - For emergent vegetation the recommendations of Steyer (1992) concerning species composition, relative abundance and aboveground biomass and of Steyer et al. (1995) concerning biomass measurements should be followed. Measurements of relative abundance incorporate assessment of coverage. For SAV, species

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composition can be obtained by transect sampling (EPA, 1993) using an airboat-rake method (Chabreck and Hoffpauir, 1962) to collect the samples. The frequency of occurrence of individual species should be recorded. The methods described by EPA (1993) for estimating density of SAV in beds can also be used, depending upon water clarity.

Fisheries - Minello (1992) provides details of high gear-efficiency techniques for fisheries sampling which are appropriate for marsh management projects and these are recommended. Sampling methods should focus on identification of density, size and biomass of nekton (Steyer et al., 1995). Enclosure devices are the most appropriate gear to be used and care should be taken to control for variations in water level both between sampling periods and between samples on a given day, as this can greatly impact catch efficiency (Minello, 1992). If long-term data sets already exist for the project area using other gear, these techniques should be considered in the development of individual monitoring plans.

Accretion/Elevation Change - Any adverse impacts of the projects related to sediment input, will be reflected in rates of marsh accretion so the feldspar marker horizon technique may be most appropriate. This method is described in detail by both Reed (1992) and Steyer et al. (1995). Feldspar marker measurements should be combined with measures of soil bulk density and organic content (Reed, 1992) to allow for the calculation of organic and inorganic accumulation. However, sediment-erosion table techniques (Boumans and Day, 1993; Reed, 1992; Steyer et al., 1995) are appropriate for long-term measurements of the response of marsh elevation to accretionary processes. These should be employed where the marsh environment is appropriate (i.e., attached marshes) and where sampling design includes comparison with a reference area.

Sampling design and statistical methods

The sampling design for monitoring project effectiveness must include comparison of the project area with an appropriate reference area. Monitoring projects without the use of a reference area can lead to misinterpretation of monitoring data through the lack of a comparative site to identify natural interannual changes in marsh processes, and/or other difficulties (Steyer et al., 1995). It is necessary to ensure that reference and project areas are comparable. Both project and reference areas should be divided into marsh habitats and replicate samples randomly selected within each habitat type. Comparison between project and reference areas should then be based at the sub-area or habitat scale (e.g., brackish marsh sub-area in project is compared to brackish marsh sub-area in reference area). If it is impossible to select a suitable reference area, as may be the case with projects implemented in areas with highly modified hydrology or where a number of restoration projects are adjacent to one another, then either pre-project monitoring or baseline monitoring (Steyer et al., 1995) may be adopted as an alternative. Both of these approaches reduce the validity of the monitoring results as the monitoring then fails to account for natural interannual variability in marsh processes.

The size of the project area, the number of habitats included in the area, and heterogeneity of those habitats determine the number of samples which need to be taken and the validity of the statistical analyses. Steyer et al. (1995) describe appropriate procedures for the determination of sample size within the project area. The use of parametric (e.g., ANOVA, Student's t-test) or non-parametric (e.g., Mann-Whitney U-test, Kolmogorov-Smirnov test) statistical procedures will depend upon the character of the datasets. If data are not normally distributed, as may frequently be the case with the collected data (e.g., salinity in a fresh or intermediate marsh), then transformations, such as logarithmic and square root transformations, should be applied and the transformed data tested for normality. If a normal distribution cannot be achieved in this manner, non-parametric tests should be pursued. The most basic statistical design for project evaluation is a two-tail test of whether the mean value for a measurable parameter within the project areas is equal to the mean for the reference area. If inequality is identified, further analyses can then determine if the effect of the project is to increase the parameter or decrease the parameter. In the case of projects where no reference site can be identified, comparisons may be made between one time interval and the next in order to identify progressive changes in vegetative parameters. In this case, trend analysis is appropriate. Standard linear regression models can be used to detect trends once sufficient annual data points have

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been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

Cost estimates

Estimated costs for evaluating marsh management have been developed for CWPPRA by Steyer and Stewart (1992).

The actual costs depend upon the size of the project and the number of stations sampled/samples collected. These estimates have been revised where possible in consideration of the recommendations presented here regarding measurable parameters and data collection methods. Ranges are presented for cost estimates on an annual or per sample basis (Steyer and Stewart, 1992) in Table EM7-3.

Table EM7-3. Cost estimates for monitoring marsh management projects.

| Parameters | Est. Cost (Steyer and Stewart, 1992) | Cost Basis |
|-----------------------------------|---|--------------------|
| Habitat Mapping | \$12,250-18,600 | Annual per project |
| Vegetation ^a | \$2,250-6,750 | Annual per project |
| Hydrology ^b | \$23,600-96,400 | Annual per project |
| Salinity/Temperature | \$20,000-30,000 | Annual per project |
| Fisheries | \$150-200 | Per sample |
| Elevation Change | \$250 | Per measurement |
| Accretion - Feldspar ^c | \$450 | Per sample |

^a Includes species composition, relative abundance, and aboveground biomass.

^b Includes precipitation, wind speed/direction, water level, bathymetry, topography, and discharge.

^c Includes accretion, bulk density, soil organic matter content.

For marsh management projects implemented by CWPPRA, average annual monitoring costs shall not exceed \$25,875. This amount is pro-rated according to project size (Steyer et al., 1995) as follows: less than 1000 acres - 60%; 1000-5000 acres - 70%; 5000-15,000 acres - 80%; and greater than 15,000 acres - 100%. These requirements have constrained the development of monitoring plans for CWPPRA projects to below ideal levels which are more realistically reflected in the cost estimates of Steyer and Stewart (1992).

Quality Assurance/Quality Control

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by lead implementor).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, Table EM7-4 presents these objectives as determined by Steyer et al. (1995).

Sampling Procedures - The data collection methods are as described above.

Sample Custody - Collected samples will be in the custody of the monitor from collection to sample processing.

Should contractors be utilized for sample processing, written documentation of sample transmission and receipt shall be maintained by the monitor.

Calibration Procedures - Routine calibration of field and laboratory equipment will be undertaken in accordance with manufacturer's instructions or at least annually. Written documentation of the calibration procedures and records shall be maintained by the monitor.

Analytical Procedures - The procedures described by Steyer et al. (1995) and references therein will be followed for analysis of the identified measurable parameters.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database. Statistical analysis done for the

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BTMC will follow procedures agreed to by the BTMC and the lead implementor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be identified and made available to the BTMC.

Table EM7-4. Data Quality Objectives for identified measurable parameters (all from Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|---|-------------------|-----------------------|----------------|-------------------|----------------|
| Habitat Mapping | | | | | |
| Photointerpretation | habitat | 7% | NA | 100% | NA |
| Photoregistration | m | 15 m | NA | NA | NA |
| Species Composition and relative abundance | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |
| Biomass - Clip Plots | g/m ² | 20% | 20% | 85% | 0-2,000 |
| Water Level (Stage) | cm | 1.0 cm | 1.0 cm | 85% | -50-200 |
| Salinity | ppt | 0.75 ppt | 0.5 ppt | 85% | 0-36 |
| Temperature | centigrade | 0.5 C | 0.2 C | 85% | 5-35 |
| Fisheries Sampling | | | | | |
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Organism Counts | numbers | 10% | NA | 85% | NA |
| Size | mm | 1 mm | 1 mm | 85% | NA |
| Soil Percent Organic Matter | % | 10% | 15% | 85% | 0-100 |
| Soil Bulk Density | g/cm ³ | 01. g/cm ³ | 15% | 85% | 0.01-0.90 |
| Vertical Accretion | | | | | |
| Feldspar marker | cm | 0.1 cm | 30% | 85% | 0-2 |
| Sediment-Erosion Table | cm | 0.1 cm | 30% | 85% | 0-2 |

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EM-8 Nutrient, Bacteria and Toxic Contaminant Load Evaluation

OBJECTIVES

1. To quantitatively estimate the sources of pollutants entering and originating within the BTES.
2. To allow managers and researchers to expeditiously develop quantitative estimates of present loading, of loads under standardized climatic scenarios, and of projected impacts of proposed projects on eutrophication and contamination levels within the BTES.
3. To provide a basis for estimating loads to the Gulf of Mexico from the BTES under present and proposed conditions.

DESCRIPTION

This action will develop a computerized tool for quantitatively estimating loads from existing, projected, and proposed nutrient and contaminant sources within the study basins. The “load” of a material is the amount of material entering a watershed from all sources, including natural, urban and agricultural runoff, municipal and industrial sources, spills, and settling from the atmosphere. Load is measured in units of mass or weight or amount per unit of time (e.g. pounds per day, tons per year). Specifically, loads of plant nutrients including phosphorous and nitrogen, coliform bacteria, and selected toxic contaminants will be evaluated. These load evaluations will provide a basis for efficient allocation of resources for pollution control by identifying the significance of sources.

The database will include:

1. A geographic database of land use and estimated average runoff nutrient, bacterial, and contaminant concentrations and discharges.
2. A geographic database of other sources including municipal and industrial dischargers, unsewered sanitary discharges, and stormwater pump outfalls. Concentration and loads from these sources will be estimated.
3. A geographic database of interbasin flows and concentrations entering or leaving the study basins.
4. A computation and report generation component capable of reporting average monthly and annual loading for each study basin, and by Louisiana Department of Environmental Quality (LDEQ) basin/segment/subsegment designations. Loading will be estimated using data retrieved from the geographic databases developed under this project. Capability will also be incorporated to project loadings under alternative management scenarios. Specifically, the proposal to divert increased discharge through Bayou Lafourche should be evaluated in terms of the overall nutrient loading and contamination of the BTES.

BACKGROUND/MAJOR ISSUES

Eutrophication is identified as a Priority Problem within the bayous, lakes, and estuaries of the BTES, and in the Gulf of Mexico. Through the development of a comprehensive GIS, linking land uses to nutrient loadings, estimating traditional point source and any other source loadings within the basins, and estimating loadings from interbasin discharge (e.g., the Mississippi River) could be accomplished. Similarly, loading of coliform bacteria and toxic contaminants will assist managers in addressing and evaluating identified problems related to public health and aquatic toxicity. Without such a system, managers will be faced with the task of redeveloping such estimates for

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each individually proposed project or any management changes within the two basins. Additionally, speculation concerning the eutrophication and contaminant impacts by project opponents may be difficult or impossible to successfully dispute if a systematic quantitative approach for loading projection is not put in place prior to specific project evaluations. Long delays in project implementation may result if this comprehensive tool is not developed.

BENEFITS

Development of a comprehensive loading evaluation approach for the Barataria and Terrebonne Basins will provide a clear estimate of the relative impacts of the various existing and proposed sources of nutrients, bacteria, and toxic substances within the basins. This perspective will assist managers in targeting the most effective, efficient, and justifiable methods for controlling eutrophication and pollution problems within the basins. This management tool will also help to focus critical evaluation of projects, provide a method to identify significant areas of concern, and reduce qualitative conjectures concerning impacts of proposed projects. Overall, a project evaluation and environmental impact analysis will be expedited by the availability of this system.

IMPLEMENTATION SCHEDULE

Considerable progress has already been made toward the goals of this project. Numerous GIS databases have been compiled by researchers for the BTNEP and for other programs. The stormwater pump GIS project documented use of land drained and receiving water body classification. Most major and minor point source dischargers are located in the DIGIS discharger database developed for the LDEQ. Individual treatment system sanitary discharge density has also been compiled in a GIS for BTNEP. Water quality of interbasin surface waters transferred into the basins is characterized by LDEQ and the U. S. Geological Survey (USGS) water quality monitoring, and discharge and stage of streams are monitored by the USGS and the U. S. Army Corps of Engineers (USACOE). Water quality in stormwater runoff can be estimated using typical "literature values" as well as the limited data specifically available for the study basins. Nutrient budget estimation in these basins and other south Louisiana Basins can also provide a basis for estimation of runoff concentrations. Relationship of rainfall and runoff have been studied by the State Office of Climatology and others. This project should therefore require no new field monitoring or data collection to provide an initial GIS linked database tool for load estimation. Data gaps and uncertainties may be identified in this initial implementation and result in suggestions for modification of monitoring plans.

Short-term plans (0-1 years) call for an emphasis on completing the nutrient load estimation components: compilation and/or input of land use and other data, development of computerized analysis and management support capability, and completion of the prototype nutrient loading evaluation system as a prototype for the bacteria and toxic substance evaluation systems. Specifically, the plans are:

- S 1.00 A one year initial project and database development for LDEQ (or other implementor):
 - S 1.01 Assess and compile databases (months 0-4).
 - S 1.02 Review and translate for Computer GIS (months 3-10).
 - S 1.03 Input of data by land use category (months 6-10); continue to input and refine data (ongoing).
 - S 1.04 Develop computational and reporting components (months 8-10).
 - S 1.05 Evaluate current status and proposed projects/alternatives (months 10-12).

Medium-term plans (1-5 years) involve:

- M 1.00 Management decision support, project evaluation.
 - M 1.01 Complete extension of system to bacteria and toxic substances.
 - M 1.02 Calibrate data and land-use information.

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M 1.03 Utilize database to project estimated loadings under alternative scenarios.

M 1.04 Continue to update/revise data and land-use information.

The long-term plan (5-10 years) calls for improved and streamlined project selection, evaluation, design, and monitoring. An ultimate goal is to also reduce costs for evaluation and monitoring. Specific elements include:

L 1.00 Continued utilization for decision making.

L 2.00 Verification of projections versus observed changes (monitoring).

L 3.00 Expansion to Louisiana coastal or wider scope.

LEAD AND SUPPORT IMPLEMENTORS

The LDEQ is the most logical lead implementor because the project falls within the role and scope of the organization, its previous experience and current expertise, and the availability of facilities.

The support of the U. S. National Biological Service, the Louisiana Department of Natural Resources, the University of Southwestern Louisiana, Louisiana State University, the Environmental Protection Agency, the New Orleans District of the U. S. Army Corps of Engineers, and the U. S. Geological Survey is critical, as all have information and expertise required for the completion of this action. Each of these agencies also has the capabilities, including facilities and expertise, to assist LDEQ in the plan's implementation.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM8-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|-------------------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| EM-08 | | | | | \$108,486 | \$26,250 |
| EM-08S1.00 | <i>begin site identification</i> | | | | \$108,486 | \$0 |
| EM-08S1.01 | <i>assess and compile databases</i> | LDEQ | E | | \$21,000 | \$0 |
| EM-08S1.02 | <i>review and translate for GIS</i> | LDEQ | E | | \$21,000 | \$0 |
| EM-08S1.03 | <i>input of data by category</i> | LDEQ | E | | \$21,000 | \$0 |
| EM-08S1.04 | <i>develop components</i> | LDEQ | E | | \$24,486 | \$0 |
| EM-08S1.05 | <i>evaluate current status</i> | LDEQ | E | | \$21,000 | \$0 |
| EM-08M1.00 | <i>mgt. decision support</i> | | | | | \$26,250 |
| EM-08M1.01 | <i>complete extension of system</i> | LDEQ | E | | | \$10,500 |
| EM-08M1.02 | <i>calibrate data/land use info</i> | LDEQ | E | | | \$7,004 |
| EM-08M1.03 | <i>project loadings</i> | LDEQ | E | | | \$5,250 |
| EM-08M1.04 | <i>continue to update/revise</i> | LDEQ | E | | | \$3,497 |

Table EM8-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing

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responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$213,500
Total Funding Existing (Years 1-5): \$213,500
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined below do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

EM-8 establishes a geographic database that will document and/or estimate point and nonpoint source loads of nutrients, coliform bacteria, and selected toxic contaminants in the BTES. The database will be compatible for linkage to a GIS. Eventual capabilities will be to 1) determine interbasin flows, 2) estimate loads entering into, originating within, or leaving the BTES, and 3) project loadings under alternative management scenarios.

Interrelationships Among Components

1. Existing GISs, databases, and results of various projects should provide the foundation for the geographic database. These include monitoring data available from LDEQ, LDHH, USGS, EPA, NOAA, and USACOE. Existing GISs are housed in LDNR (cooperative with NBS/SSC, e.g., GIS of oyster resources in BTES), and in LDEQ for water quality subsegments, point source dischargers (DIGIS), and a GIS for characterization of nonpoint source pollution (developed by Remote Sensing and Image Processing Laboratory, LSU). BTNEP provided funding for a GIS of individual treatment system sanitary discharge density, mapping of storm water drainage stations, and monitoring of fecal coliforms (Kilgen et al. 1994). BTNEP funded a demonstration project to identify alternative agricultural practices in order to reduce sediment runoff, which should provide data for estimation of runoff. BTNEP sponsored modeling efforts that may be useful in the implementation of EM-8: a landscape simulation model and a hydrologic model. Development of this geographic database overlaps with objectives of EM-13 (Contaminated Sediment Database), EM-18 (Centralized Data Sets), and somewhat with the database to be developed as part of EM-9 (Oil and Produced Water Spill Prevention and Early Detection).
2. Several agencies have need for the database and its capabilities when linked with a GIS: LDEQ (Water Pollution Control Program and Nonpoint Source Program), LDNR (Coastal Nonpoint Pollution Control Program and Coastal Restoration Division), LDHH (Oyster Water Monitoring Program and Office of Public Health), and

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USACOE. LDEQ is identified as the lead implementor; the source of funding is not identified.

3. Monitoring of this Action Plan overlaps minimally with the Ecological Indicators monitoring plan (CCMP-Part 4, "Monitoring Plan for Ecological Indicators") for water quality issues in that routine water quality monitoring data of various state and federal agencies can be used in testing whether the loadings generated from the geographic database are realistic.

Documentation of Plan Implementation and Success

Monitoring for this Action Plan includes assessing the timely implementation of the components of the Action Plan, and the eventual success of implementation (i.e., usable database that accurately predicts loadings). Neither component is conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring is designed to determine whether such a database was developed, whether it provides accurate load estimates, and whether it proves useful (i.e., resource managers use it). Specific examples of success are proposed below; they can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

Plan implementation

A time line developed jointly by the funding agency and the implementor will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of many agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

1. A lead agency is selected as implementor (or a lead agency solicits a contractor through a competitive process), source of funding is identified and secured, a project team is identified, and a detailed time line for the project is established (months 0-2).
2. An appropriate existing GIS system is identified to be supplemented with the database to be developed (months 1-2).
3. Appropriate databases for the geographic system are identified, assessed, and compiled into the database (months 3-7).
4. Land-use data are incorporated in the database and calibrated (months 3-7).
5. Computational and reporting components are developed (months 8-10).
6. Hydrographic linkages are developed and incorporated into the geographic database (months 8-10).
7. Nutrient loading geographic database completed (months 11-12).
8. Geographic database is used to calculate basin-wide nutrient loads (months 11-12).
9. Initial geographic database for nutrient loading is modified for bacteria and toxic substances (end of year 2).
10. Nutrient, bacteria, and toxic substances databases are modified (end of each year).
11. Land-use information is updated (end of each year).
12. Geographic database is used to calculate basin-wide nutrient loads (months 11-12).
13. Geographic database is used to predict changes in nutrient loads given proposed management alternatives (months 11-12).
14. Geographic database is used to calculate basin-wide bacteria and toxic loads (end of years 2 and 3).
15. Geographic database is used to predict changes in bacteria and toxic loads given proposed management alternatives (end of years 3 and 4).

Project success

Long-term success of the Action Plan is for a usable, reliable geographic database. After completion of the database according to the above schedule, the following accomplishments shall be monitored:

1. Relevant agencies (e.g., LDNR Coastal Restoration Division, LDEQ Nonpoint Source Program, USACOE) are able to access and use the geographic database to estimate the sources of pollutants entering and originating within the BTES (years 3-10).

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2. Relevant agencies (e.g., LNDR Coastal Restoration Division, LDEQ Nonpoint Source Program, USACOE) are able to access and use the geographic database to determine interbasin flows (years 3-10).
3. Estimates of loadings from geographic database under standard climatic conditions are accurate reflections of ambient water quality parameters available in monitoring data sets (years 3-10).
4. Relevant agencies (e.g., LNDR Coastal Restoration Division, LDEQ Nonpoint Source Program, USACOE) are able to access and use the geographic database to calculate loads of nutrients, bacteria, and toxics under varying management scenarios (years 3-10).

Methods

Measurable parameters

Plan Implementation

1. Database is developed.
2. Database is operable.

Project Success

1. Database is accessible to targeted users (examples above).
2. Database is user-friendly for multiple agency personnel.
3. Computations from database provide reasonable load estimates under present conditions and altered management scenarios.

Data collection methods

Plan Implementation - The monitor will contact the implementor to gather data (examples below) that will be incorporated into a monitoring report:

1. Check-off system according to time line of project developed between funding agency and implementor as landmark dates are encountered and project objectives are met.
2. Documentation of person-months involved in developing database.
3. List of users of geographic database maintained by implementor, including computer time, examples of output, and comments made by users as to applicability of geographic database to their specific needs.

Project Success - The monitor will contact relevant agency personnel who have accessed the database and used it in developing various computations. Monitor will also access the database to determine its usability and accuracy in predicting loads. Data to be incorporated into a monitoring report include:

1. Assessment of implementor's comparison of geographic database load outputs with actual monitoring data to test validity of projections.
2. Assessment of accessibility of the geographic database and accuracy of varying loads under different scenarios.
3. Canvassing of relevant agency personnel to determine how database has been used by them. Canvassing of relevant agency personnel to determine how accurate the database was in predicting loads.

Sample design and statistical methods

There are no relevant sample designs or statistical analyses for the evaluation of plan implementation or project success.

Cost estimates

Estimate one person-month per year. Activities will change during plan implementation from monitoring development of the database (years 0-2) and assessing its usefulness and accuracy (years 3-10). Including salary, fringe, incidental costs, and indirect costs = \$8,000. Modifications in monitoring plan (see below) should result in modifications of cost.

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Implementation of Monitoring

Monitor

A monitor selected by BTMC will prepare reports to be submitted to BTMC. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and/or activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Description of databases developed.
 - c. Descriptions of computational outputs, estimated loadings under varying conditions, etc.
 - d. Compilation of users and comments from users.
 - e. Assessment of comparisons of database loading estimates with monitoring data.
 - f. Assessment of accessibility and usefulness of the geographic database.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the implementor, the independent reviewer, and BTMC.

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Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of implementor and/or cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about geographic databases, GISs, nutrient budgets, loadings estimates, water quality monitoring programs and databases.
3. Application of standard formats for quarterly reports.
4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.

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EM-9 Oil and Produced Water Spill Prevention and Early Detection

OBJECTIVES

1. To reduce the number, volume, and/or impact of petroleum and related fluid spills into the BTES.
2. To place an emphasis on the prevention and/or early detection of petroleum and oilfield brine spills in the BTES.

DESCRIPTION

The intent of this action plan is to encourage the development and implementation of a strategy to reduce the number, volume and/or impacts of petroleum and related fluid spills into the BTES. This is not a plan which is intended to address oil spill response; rather, it is a plan to emphasize prevention and early detection of petroleum and oil field brine spills. Several federal and state agencies along with numerous private groups already have extensive spill response programs. This action plan seeks to build upon existing programs which emphasize the premise that preventing spills of petroleum and related oil production fluids would be less environmentally damaging and less costly to industry than reacting to them once they occur.

BACKGROUND/MAJOR ISSUES

Petroleum is complex mixture of hydrocarbons which can be quite toxic to the plants and animals impacted from a release or spill. Oilfield brine, in addition to being highly saline, also contains petroleum hydrocarbons and, in oil-bearing formations common to those found in the BTES, usually is associated with high concentrations of radionuclides such as radium 226. These radionuclides often occur naturally in subsurface formations, but at far greater concentrations than levels found in unimpacted surface waters.

The BTES is particularly vulnerable to releases of oilfield fluids because of the numerous storage vessels, production facilities, and miles of pipelines, flowlines and injection lines located within its borders. The petroleum industry along with its supporting infrastructure constitutes an enormous presence within the BTES. Much of this infrastructure is located within the sensitive coastal wetlands of the southern BTES.

As one indication of petroleum industry importance and magnitude, the total value of severance taxes and royalties alone paid to the state in 1987 from oil and gas produced within the BTES alone was slightly over \$221 million. This represents 30% of the total paid statewide.

Many spills are classified as accidental or due to equipment, storage tank, or pipeline failures. Many of these incidents are either totally avoidable or could be significantly reduced in impact simply through a more effective enforcement of existing federal and state spill prevention regulations. Clearly, it is preferable to prioritize prevention over response when considering spills of oilfield brine and petroleum products as an issue. Additionally, by altering future flowline placement practices in marshlands where possible, early detection of spills could be enhanced.

As an example of one possible beneficial change in current practices, flow lines could be placed along canal spoil

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banks whenever possible rather than across vegetated wetlands. Then, in the event of a flowline failure, spilled fluids would be noticed more quickly. Corrective actions could then be initiated more expeditiously, reducing the magnitude of the spill and resulting impacts.

Some of the more damaging and monetarily expensive spills of petroleum are those which occur from flow lines and transfer lines running through internal wetland areas. A leak can go unnoticed for weeks or longer before enough oil has been released to flow through thick wetland vegetation into an adjacent water body where the telltale sheen might be observed.

Perhaps the most ecologically damaging types of oilfield related spills are those which involve releases of oilfield brine from buried injection lines. Since there is often no petroleum-related sheen associated with spills of these highly saline fluids, they can go unnoticed initially, becoming evident much later when overlying vegetation begins to show signs of stress or dies.

Either of these types of spills usually results in lengthy and labor-intensive response efforts by agency and industry personnel. The remediation efforts required by the responsible parties in these cases can be very expensive.

Unfortunately, petroleum and oilfield brine spills are a frequent occurrence in the BTES. Exact numbers of petroleum and oilfield brine releases are difficult to obtain since no single agency maintains spill data for the area within the program boundaries. However, there are indications that spill impacts may be increasing in magnitude.

In each of the LDEQ Regional offices, the Water Quality Management Division personnel maintain figures on the amount of time spent on several categories of work. These figures are in the format of man-days, with one man-day representing an 8-hr. work day. In the Bayou Lafourche Regional Office which is responsible for a portion of the BTES, the man-day figures typifying work hours spent on spill response alone were reviewed for the time period from 1990 through 1994 (Table EM9-1.)

Table EM9-1. Spill response by the LDEQ, Bayou Lafourche Region from 1990 through 1994.

| Year | # of Spills | Man-Days |
|-------------|--------------------|-----------------|
| 1990 | 138 | 72.1 |
| 1991 | 134 | 66.5 |
| 1992 | 143 | 235.2 |
| 1993 | 102 | 208.4 |
| 1994 | 80 | 246.3 |

Table EM9-1 indicates that the number of spills reported to the Bayou Lafourche Region has decreased from 138 in 1990 to a total of 80 in 1994. Conversely, the amount of time spent on spill response in the Bayou Lafourche Region increased from 72.1 man-days in 1990 to 246.3 man-days in 1994. There are several ways to interpret this data. Either these spills are occurring in the more remote areas of coastal Louisiana, requiring increased time to

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access these sites, or, these spills are more severe in their impacts and require increased time to monitor clean-up efforts.

BENEFITS

The successful implementation of this action plan relates to most of the programmatic goals established by the BTNEP Management Conference in November of 1992. Spills of petroleum and related fluids are a source of toxins in the BTES. Prevention of these incidents will enhance the support of diverse biological communities.

Certain components of petroleum products, particularly the lighter, more volatile fractions, can be quite toxic to wetland plants. Additionally, many spills of oil are also associated with releases of oil field brine which can result in the loss of impacted vegetation. As the plant community is lost, the loosely consolidated sediments may be quickly eroded and can revert to less productive open water systems. The successful implementation of this action plan could effectively lessen impacts to those areas where spills are now occurring.

The creation of an accessible, comprehensive data base with interpreted information for the public will ensure that the general public as well as agency and industry personnel are better informed of the magnitude and impacts of oilfield related spills. This awareness is a critical first step to developing a truly effective spill prevention program for the BTES. Also, this data base is essential to the formulation of a system to monitoring the success of the overall program.

IMPLEMENTATION SCHEDULE

The goals of this action plan can be accomplished under existing programs administrated by federal and state agencies. On the federal level the United States Coast Guard (USCG) and the U.S. Environmental Protection Agency (EPA) both have responsibilities for responding to spills of petroleum and/or other oilfield products. Facilities having spills are required by federal law to report those incidents to the National Response Center (NRC).

From the NRC, spills located within and below the Gulf Intracoastal Waterway (GIWW) are transferred to the USCG. Those spills which occur above the GIWW are transferred to the EPA. The current policy of the USCG limits their response to spills of oil in sufficient quantities which will cause the formation of a sheen. These include sheens created from the discharge of produced water.

The EPA responds to spills of oil, but their responsibilities also require them to be involved in any violation of the Clean Water Act of 1972 which would include spills of oilfield brine. Both, the USCG and the EPA maintain data bases through the NRC which could possibly be used for this action plan. However, the data base may be somewhat cumbersome for use as a monitoring tool to measure the success of this plan because it is not limited to the BTES and only figures for petroleum, not brine spills, are maintained.

On the State level, several agencies have responsibilities which are pertinent to this action plan. All spills of petroleum as well as those of produced oilfield brine are legislatively required to be reported to the LDEQ. Additionally, LDEQ has specific regulations (similar to EPA's) dealing with spill prevention and containment safeguards, such as yearly flowline pressure testing, impervious decking requirements, etc. However, the resources required to maintain an effective spill prevention program are not available.

In 1991, the Louisiana legislature passed the Oil Spill Prevention and Response Act (Act No. 7) which was intended to compliment the Oil Pollution Act of 1990, a federal law commonly known as OPA'90. The Oil Spill Prevention and Response Act (OSPRA) created the Office of the Louisiana Oil Spill Coordinator. OSPRA also created the

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Interagency Council which was to assist the Coordinator in the development of a statewide oil spill prevention and contingency plan. The Act also specifically authorizes the Interagency Council to assist "... the coordinator in preparing and approving an annual work plan, identifying state agency needs which must be met in order to comply with the state oil spill contingency plan". The plan is due sometime this year (1995). It is important to note that OSPRA does not include authority over oilfield brine spill prevention.

The Office of Conservation, under the Louisiana Department of Natural Resources (LDNR) also is a key state agency with oil spill prevention responsibilities. The Office of Conservation has specific regulations dealing with containment structures, operational safeguards during the drilling process, oilfield waste disposal, etc.

Short-Term Plan (0-1 year) are:

- S 1.00 Form a work group to examine and evaluate the currently-used spill data base maintained by the LDEQ, Surveillance Section and the NRC (LDEQ, LOSCO, LDNR, EPA, USCG)
- S 2.00 Design a data base which would maintain accumulated spill data such as source of spill, volumes lost, habitats affected, magnitude of impact, reason for spill, costs associated with clean-up, etc. (Data base work group).
- S 3.00 Construct a data base form using an appropriate, widely-used data base program and install it on the LDEQ VAX system (Data base work group).
- S 4.00 Maintain data base by relying on the LDEQ field offices responsible for responding to these spills to enter data from regional offices via computer links to the LDEQ VAX system (LDEQ).
- S 5.00 Develop and implement educational programs which would serve to inform industry, federal, state, and local entities of the seriousness of the spill issue (BTMC, EPA, USCG, LDEQ).
- S 6.00 Form a work group to address the Interagency Council to inform them of agency needs which must be met in order to comply with the state oil spill contingency plan (BTMC, EPA, USCG, LDEQ).
- S 7.00 Encourage effective and fair enforcement of spill prevention regulations (BTMC, EPA, USCG, LDEQ, LDNR, LOSCO).

Medium-Term Plan (2-5 years) are:

- M 1.00 Continue the maintenance of the spill data base (LDEQ).
- M 2.00 Encourage federal and state agencies with oil and produced water spill prevention responsibilities to increase inspections of applicable facilities within the BTES (BTMC, EPA, USCG, LDEQ, LDNR).
- M 3.00 Continue effective and fair enforcement of spill prevention regulations (EPA, USCG, LDEQ, LDNR).
- M 4.00 Continue educational efforts and incorporate figures on the costs associated with clean-up of spills into educational programs in order to demonstrate the sensibility of effective preventative maintenance programs (even without considering the usually-unquantifiable ecological costs).

Long-Term Plan (5-10 years) are:

- L 1.00 Continue the maintenance of the spill data base and use accumulated data to measure the success of this action plan (LDEQ).
- L 2.00 Continue effective and fair enforcement of spill prevention regulations (EPA, USCG, LDEQ, LDNR).
- L 3.00 Use data base to identify areas in which success is apparent and those in which further efforts are needed (LDEQ).
- L 4.00 Adjust or redirect the spill prevention program efforts into those areas in which the data base figures indicate continuing problems (EPA, USCG, LDEQ, LDNR).
- L 5.00 Dedicate state resources specifically to oil and oilfield brine spill prevention.

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LEAD AND SUPPORT IMPLEMENTORS

As discussed above several state and federal agencies share varying degrees of responsibilities primarily pertaining to the prevention of petroleum spills. LDEQ, however, has spill prevention duties which include petroleum as well as produced waters. LDEQ, therefore, would be a logical choice for lead implementor of this action plan on the state level. Support implementors should include the USEPA, USCG, the La. Oil Spill Coordinator, and LDNR/Office of Conservation.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM9-2. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|--------------------------------------|-------------|-------------------|-------------|--------------------------|---------------------------------------|
| EM-09 | | | | | \$13,019 | \$6,785 |
| EM-09S1.00 | <i>database work group</i> | | | | \$958 | \$0 |
| EM-09S1.01 | <i>work group participation</i> | USCG | E | | \$160 | \$0 |
| EM-09S1.02 | <i>work group participation</i> | LOSCO | E | | \$160 | \$0 |
| EM-09S1.03 | <i>work group participation</i> | LDNR | E | | \$160 | \$0 |
| EM-09S1.04 | <i>work group participation (*2)</i> | BTPO | E | | \$319 | \$0 |
| EM-09S1.05 | <i>work group participation</i> | USEPA | E | | \$160 | \$0 |
| EM-09S2.00 | <i>design oil spill database</i> | LDEQ | E | | \$1,615 | \$0 |
| EM-09S3.00 | <i>construct database</i> | LDEQ | E | | \$3,500 | \$0 |
| EM-09S4.00 | <i>maintain database</i> | LDEQ | E | | \$1,938 | \$0 |
| EM-09S5.00 | <i>education programs</i> | | | | \$4,846 | \$0 |
| EM-09S5.01 | <i>education programs</i> | LDEQ | E | | \$1,615 | \$0 |
| EM-09S5.02 | <i>education programs</i> | USCG | E | | \$1,615 | \$0 |
| EM-09S5.03 | <i>education programs</i> | USEPA | E | | \$1,615 | \$0 |
| EM-09S6.00 | <i>work group: address IC</i> | BTMC | | PI-2 | \$162 | \$0 |
| EM-09S6.01 | <i>work group</i> | BTPO- PD | E | | \$81 | \$0 |
| EM-09S6.02 | <i>work group</i> | LDEQ | E | | \$81 | \$0 |
| EM-09S7.00 | <i>encourage enforcement</i> | BTMC | E | PI-2 | \$0 | \$0 |
| EM-09M1.00 | <i>continue spill dbase maint.</i> | LDEQ | E | | | \$1,938 |
| EM-09M2.00 | <i>encourage inspections</i> | BTMC | E | PI-2 | | \$0 |
| EM-09M3.00 | <i>continue enforcement</i> | BTMC | E | | | \$0 |
| EM-09M4.00 | <i>continue educational efforts</i> | | | | | \$4,846 |
| EM-09M4.01 | <i>education programs</i> | LDEQ | E | | | \$1,615 |
| EM-09M4.02 | <i>education programs</i> | USCG | E | | | \$1,615 |
| EM-09M4.03 | <i>education programs</i> | USEPA | E | | | \$1,615 |

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Table EM9-2 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$40,200
Total Funding Existing (Years 1-5):\$40,200
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

EM-9 establishes an accessible, comprehensive computerized database of petroleum and related fluids spills in the BTES. Interpretive information from the database will be provided to agency and industry personnel and the public to keep them informed of the magnitude and impacts of oilfield related spills. The usefulness of the database and transfer of information will be evident in increased awareness of the impacts of such spills and eventually increased prevention of such spills in BTES. Ultimately, number and volume of spills will be reduced along with petroleum-related contaminants in the BTES.

Interrelationships Among Components

1. Existing databases are housed in LDEQ (both petroleum and oilfield brine spills) and the NRC, oil spill data from the USCG and EPA. The Oil Spill Prevention and Response Act created an Interagency Council which is to assist the LOSCO in the development of a statewide oil spill prevention and contingency plan (finished in 1995). The LDNR Office of Conservation is one of several state agencies with responsibilities for oil spill prevention. The responsibilities and authorities of the above-named agencies are outlined in the Action Plan.
2. LDEQ is the suggested lead implementor with assistance from each of the above-named agencies. The LOSCO has the authority under the Oil Spill Prevention and Response Act 1) to use funds from the Oil Spill Contingency Fund for oil spill prevention and response purposes, and 2) to delegate responsibility for the implementation of an oil spill prevention program. LOSCO is identified as the source of funding; the designated implementor would logically be LDEQ.

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3. The development of this database overlaps with the objectives of EM-8 (Nutrient, Bacteria, and Toxic Contaminant Load Evaluation) and EM-13 (Contaminated Sediment Database).

Documentation of Plan Implementation and Success

Monitoring for this Action Plan includes assessing the timely implementation of the components of the Action Plan, and the eventual success of implementation (i.e., oil spill prevention increased and petroleum-source contaminants reduced). The first component is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring of implementation is designed to determine whether such a database was developed, whether it was used in interpretation of information to the public, and whether a better informed public (including agencies and industry) resulted. Eventual project success can be monitored with an analysis of data that shows a reduction of petroleum-related spills, and a reduction in petroleum-source contaminants in the water, sediments, and biota of BTES. The success of various Action Plans that target reduced sewage pollution, reduced oil related spills, and storm water management may all be manifested in similar improvements in water quality. If all Action Plans are working in parallel and water quality improves, it will be difficult to determine the cause and effect. Since the scale of implementation will vary among Action Plans, the level of success in improved water quality will also vary. The probability is high that implementation of any single management scenario may have varying effects in different environments. It is also possible that no single indicator may indicate program success, but rather success will be seen in a combination of indicators. The end result of multiple actions to improve water quality, however, will be noticeable in indicators of basinwide ecosystem-level health (see CCMP-Part 4, "Monitoring Plan for Ecological Indicators"). Specific examples of project success are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

Plan Implementation

A time line developed jointly by the funding agency and the implementor will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of many agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

1. A lead agency is selected as implementor, a project work group is identified and responsibilities outlined, and a detailed time line for the project is established (months 0-1).
2. Source of funding is identified and secured (months 2-6).
3. Appropriate, current databases for spills are identified and assessed (months 1-3).
4. A database is developed to compile appropriate data from the various sources that meets the information needs of the Action Plan and a preventative oil spill program, and is installed on the LDEQ computer system (months 3-6).
5. Database is maintained by relying on LDEQ field offices and by LDEQ obtaining data from NRC (months 6-12).
6. Educational programs to inform industry, federal, state and local entities of the seriousness of petroleum and related fluid spill issues are developed and implemented (months 6-12).
7. Work group of LDEQ, EPA, USCG, and BTMC formed and informs the Interagency Council of agency needs which must be met to comply with the state oil spill contingency plan (months 6-9).
8. Work group of LDEQ, EPA, USCG, LOSCO and BTMC develops plan for encouraging effective and fair enforcement of spill prevention regulations and implements plan (months 4-12).
9. Plan developed and implemented for encouraging relevant agencies to increase inspections of applicable facilities within BTES (year 2).
10. Additional personnel assigned to inspect oil production facilities (end of year 2).
11. Database is updated by relying on LDEQ field offices and by LDEQ obtaining data from NRC (years 2-10).

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12. Inspections for potential sources of petroleum spills conducted by relevant agencies (years 2-10).
13. Work group of LDEQ, EPA, USCG, LOSCO and BTMC continues encouraging effective and fair enforcement of spill prevention regulations and implements plan (years 2-10).
14. Educational programs to inform industry, federal, state and local entities of the seriousness of petroleum and related fluid spill issues are modified to include costs associated with clean-up vs. costs of prevention (year 2).
15. Educational programs disseminated to agency and industry personnel and public (years 2-10).
16. Work group of LDEQ, EPA, USCG, LOSCO and BTMC works to adjust and/or redirect spill prevention program into areas with continuing problems (end of years 5 and 10).
17. State funds and resources dedicated specifically to petroleum related spill prevention (within year 5-10 period).
18. Better informed public and agency personnel (end of years 5 and 10).
19. Increased petroleum and related spills prevention (end of years 5 and 10).

Project success

1. Reduction in number of person-days in response to petroleum related spills (end of years 5 and 10).
2. Reduction in the number and volume of spills reported and responded to (end of years 5 and 10).
3. Reduction in contaminants from petroleum and related spills in BTES (end of years 5 and 10).

Methods

Measurable parameters

Plan Implementation - The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Existence of spill database.
2. Spill database is functional (i.e., data can be accessed, utilized, and analyzed). Data entered into database in acceptable formats, etc.
3. Increased personnel assigned to oil production facility inspections.
4. Increased personnel assigned to and participating in educational program development and dissemination.
5. Increased public, agency and industry awareness of petroleum and related spill problems, causes, and preventative measures.
6. Problem areas for spills are addressed and efforts redirected.

Project Success - Any reductions in petroleum and related spills will be assessed by a statistical analysis of:

1. Person-days dedicated to spill response.
2. Spill number and volume.
3. Petroleum spills and related fluids contaminants in water, sediments, and biota of BTES.
4. Classification of non-compliance of water subsegments for 305(b) reports due to petroleum-related contamination.

Data collection methods

Plan Implementation - The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring project:

1. Check-off system according to time line of project developed between funding agency and implementor as landmark dates are encountered and project objectives are met.
2. List and descriptions of educational programs developed.
3. List of recipients of educational programs, including dates, types of programs, and comments made by recipients of educational programs as to usefulness of the program.
4. Project monitor accesses spill database and utilizes the data in examples of data analysis listed above.

Project Success - The monitor will access appropriate databases and conduct statistical analyses. Examples are:

1. Petroleum and related spills database.
2. Relevant agency personnel records.

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3. Water, sediment, and biota contaminant data (e.g., LDEQ, EPA EMAP, NOAA Status and Trends).
4. 305(b) Water Quality Inventory reports designation of water subsegments.

Sample design and statistical methods

Plan Implementation - There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Project Success - Suitable baseline data may be available in LDEQ, NRC, the proposed spill database, EPA EMAP, and NOAA Status and Trends. Trends may not be identifiable after 5 years; however, the analysis should be conducted. At a minimum, a determination of the usefulness of the database will be made. Identification of any long-term trends needs to be within the context of the variability of the system. Several statistical methods applicable to analysis of trends may be suitable. Data may be normalized and standard linear regression models can be used to detect trends once sufficient data points have been obtained (e.g., 15 years is considered the minimum for similar trend analyses conducted by Rabalais et al. 1995). If data cannot be normalized, nonparametric trend analysis techniques should be employed (e.g., modified Mann-Kendall tau tests and seasonal Kendall slope estimator tests; see Hirsch et al. 1982). Seasonal Kendall tau test is a nonparametric trend test that is appropriate for detecting monotonic trends in "time series" data, i.e., data routinely collected over time (or space). Differences can also be assessed geographically by an analysis of variance on transformed data for site differences. Where sites differ significantly, post-hoc comparisons are run to determine which sites differ from others. Power analysis will estimate the probability of detecting trends of a certain magnitude given a certain number of observations (see Appendix D in Regional Monitoring Program for The Galveston Bay Plan, Lane 1994). N.B. Identification of trends or correlations does not provide cause and effect relationships.

Cost estimates

Estimate one person-month per year for monitoring all the aspects of the Action Plan and the cooperative efforts of each agency. Including salary, fringe, incidental costs, and indirect costs = \$8,000 for each year (no inflation). Costs of statistical analyses are estimated at 4 person-months (\$32,000 in each of years 5 and 10). A statistical consultant should also be used in year 1 to help design the statistical analysis to be employed at the end of years 5 and 10 and to determine the suitability of existing data and what baseline data are needed (\$16,000 in year 1). Modifications in monitoring plan (see below) should result in modifications of cost.

Implementation of Monitoring

Monitor

A monitor selected by BTMC will prepare reports to be submitted to BTMC. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC. An additional outside monitor (i.e., statistician) should be contracted by BTMC in years 1, 5 and 10. The results of the statistical analysis should be provided to the overall monitor of the Action Plan for presentation to the BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly

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scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc. Statistical analysis of petroleum and related spills data will be conducted at the end of years 5 and 10.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Assessment of cooperating agency contributions.
 - c. Description of educational programs.
 - d. Compilation of recipients of educational programs and their comments.
 - e. Assessment of petroleum spill database (accessibility and usefulness).
 - f. Statistical analyses.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.
4. Data collected as part of statistical analyses shall be submitted in DIMS compatible format.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the implementor and cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about petroleum and related spills issues, contaminant databases, public outreach programs, water quality monitoring programs and databases.
3. Application of standard formats for quarterly reports.
4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.

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6. Standard data collection methods.
 - a. Application of standard quality control for entry of LDEQ and NRC data into database.
 - b. Verification of data entries.
 - c. Examination of suspect data points.
 - d. Selected examination of concurrence of field data with data entries in database.
 - e. Compatibility with DIMS format.

EM-10 Reduction of Sewage Pollution

EVALUATION METHODS

Components of Plan

EM-10 establishes a combination of educational programs, incentive programs, regulation development, inspection and enforcement mechanisms, and capital improvement programs with the end result being a reduction in the fecal coliform counts in BTES waterbodies. The usefulness of the various programs will be evident in 1) increased awareness of the sources of fecal coliforms and causes of impaired water bodies, 2) increased sewage pollution control, and 3) decreased fecal coliform counts.

Interrelationships Among Components

Several projects, as outlined in the Action Plan, are currently underway to support the Action Plan:

LDEQ Nonpoint Source Program and BTNEP production of video regarding proper sewage disposal and maintenance of septic systems and individual treatment systems.

LDEQ educational brochures on septic systems.

- ◆ LDEQ educational workshops on septic systems and sewage treatment in the Florida Parishes.
- ◆ LDWF Clean Vessel Program.
- ◆ GOMP Shellfish Challenge Plan.
- ◆ LDNR Coastal Nonpoint Pollution Control Program.
- ◆ Barataria-Terrebonne Foundation educational unit.

Communication of information from various existing nonpoint projects is essential for cost effectiveness and efficiency of technology transfer. Regulatory agencies with direct involvement are LDEQ, LDWF, LDHH, EPA, and local governments. The LCES will be an integral part of education outreach.

- Existing databases for fecal coliform counts are housed in LDEQ (Water Quality Inventory) and LDHH (Office of Public Health and Oyster Water Monitoring Program). LDEQ ambient water quality monitoring data are used to classify whether a water body is meeting fecal coliform criteria, and LDWF closes oyster beds to harvesting based on fecal coliform counts at LDHH monitoring sites. BTNEP funded a fecal coliform monitoring study (Kilgen et al. 1994), and a component of the water quality status and trends report incorporated a data analysis of pathogen contamination (Rabalais et al. 1995). LDHH currently has a regional database of sewage treatment plants and individual treatment systems. EPA also lists major and minor point discharge sources in the NPDES.
- The proposed implementor for the plan is BTMC with support from LDEQ, LDHH, LDWF, LDNR, LCES, EPA, and Barataria-Terrebonne educational unit. Funding is most logical under LDEQ's 319 Nonpoint Program, but could not be included in LDEQ's annual 319 plan until 1997. Other potential funders are LDNR's Coastal Nonpoint Pollution Control Program, LDEQ's Revolving Loan Fund, LDWF's Clean Vessel Program, LDOTD State Transportation Improvement Trust Fund, and GOMP.

Documentation of Plan Implementation and Success

Monitoring for this Action Plan includes assessing the timely implementation of the components of the Action Plan, and the eventual success of implementation (i.e., fecal coliform contaminants reduced). The first component is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring of implementation is designed to determine whether a better informed public (including agencies and local governments) resulted, and whether sewage pollution control increased within BTES. Eventual project success can be monitored with an analysis of data such as a reduction in fecal coliform contaminants in BTES or a reduction in the number of water bodies not meeting fecal coliform criteria. The success of action plans that target reduced sewage pollution, reduced agricultural pollution, and storm water management may all be manifested in similar improvements in water quality and indicators of ecosystem health. If all Action Plans are working

in parallel and water quality improves, it will be difficult to determine the cause and effect. Since the scale of implementation will vary among Action Plans, the level of success in improved water quality will also vary. The probability is high that implementation of any single management scenario may have varying effects in different environments. It is also possible that no single indicator may indicate program success, but rather success will be seen in a combination of indicators. The end result of multiple actions to improve water quality, however, will be noticeable in indicators of basinwide ecosystem-level health (see CCMP-Part 4, "Monitoring Plan for Ecological Indicators"). Specific examples of project success are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

Plan implementation

A time line developed jointly by the funding agency and the implementor will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of many agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

A lead agency is selected as implementor, source of funding is identified and secured, a project work group is identified and responsibilities outlined, and a detailed time line for the project is established (months 0-1).

Educational presentations are developed and workshops are held (months 2-12).

- Video and brochures concerning sewage pollution and controls are disseminated (months 2-12).
- Information concerning LDWF Clean Vessel Program is disseminated (months 6-12).

LDHH database on sewage treatment plants and individual treatment plants is expanded (months 2-12).

- Regulations concerning vessels and home treatment plants are developed and/or modified (months 12).

Incorporate BTES into the Gulf of Mexico Shellfish Challenge Plan (end of year 2).

- Education efforts are continued (years 2-5).

Sewage collection systems in BTES are expanded to incorporate rural communities or areas with no treatment (end of year 5).

Treatment levels for sewage facilities are upgraded (end of year 5).

Investigate alternative technology for sewage and storm water runoff treatment involving natural or constructed wetlands (years 2-5).

Number of marinas with pump stations and dump stations is increased (end of year 5).

- Development of recycling and options for gray-water (years 2-5).
- Increased inspection of septic systems and on-site treatment systems (years 2-5).
- Continue education efforts (years 6-10).

Continue to expand sewage treatment facilities, continue to upgrade, continue to incorporate unsewered areas (years 6-10).

Continue inspections of septic tanks, on-site treatment facilities, vessels and marinas (years 6-10).

- Number of unsewered areas is decreased (years 6-10).
- Levels of treatment and areas of incorporation of treatment are expanded over 5- and 10-year periods.

Project success

Long-term success for implementation of sewage pollution controls is the reduction in number of fecal coliforms and the number of water bodies not meeting fecal coliform criteria. At the end of years 5 and 10, a statistical analysis should be conducted of the various fecal coliform criteria to determine whether the educational programs and sewage pollution controls have resulted in improved water quality. Examples of studies are:

Decreased fecal coliform counts in selected areas targeted for sewage pollution control, such as

Receiving water bodies adjacent to municipalities.

- ◆ Receiving water bodies adjacent to suburban areas with improved water treatment.
- ◆ Receiving waters adjacent to areas where the number of septic systems is substantially increased.
- Decreased number of water subsegments not meeting primary contact criteria in selected areas targeted for sewage pollution control, such as those listed above.

Methods

Measurable parameters

Plan Implementation - The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

- Increased public education programs concerning sewage impacts and sewage treatment.
- Increased public awareness of sewage impacts and sewage pollution.
- Increased number of boats, commercial vessels, and marinas with adequate sewage treatment.
- Expanded and improved databases of large and small point sources of treated sewage, and targeted locations of untreated or improperly treated sewage.
- Expanded regulations for municipal and small rural communities sewage treatment facilities, home treatment systems, vessels.
- Expanded inspections of sewage treatment facilities.
- Expansion of sewage treatment facilities, incorporating more areas, and reduction in unsewered areas.
- Expansion of marina treatment facilities.
- Increased number of septic and on-site sewage treatment inspections.

Project Success - Any reductions in sewage pollution will be assessed by:

- Fecal coliform counts.
- Classifications of water subsegments for 305(b) reports.

Data collection methods

Plan Implementation - The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring report:

- Check-off system according to time line of project developed between funding agency and implementor as landmark dates are encountered and project objectives are met.
- Person-months of involvement of various agency personnel are documented by the implementor.
- List and descriptions of educational programs developed.
- List of recipients of educational programs, including dates, types of programs, and comments made by recipients of educational programs as to usefulness of the program.
- Lists of recipients of brochures and video presentations provided to monitor for incorporation in reports.
- Lists of marinas visited and number of boat owners contacted regarding LDWF Clean Vessel Program.
- Number of data entries in LDHH database on sewage treatment plants and individual treatment plants is tracked.
- Number of inspections of septic systems, on-site treatment systems, sewage facilities is tracked.
- Synthesis of changes in regulations concerning sewage treatment.
- Synthesis of changes, upgrades, expansions of sewage treatment facilities.
- Examination of reports for investigations of alternative technologies involving natural or constructed wetlands.

Project Success - The monitor will access appropriate data sets and conduct statistical analyses. Examples are:

- LDHH and LDEQ fecal coliform monitoring databases.
- Changes in designated water body usages in biennial LDEQ Water Quality Summary Reports.
- Statistical analysis of changes over time in variables that indicate a reduction in fecal coliform numbers.

Sample design and statistical methods

Plan Implementation - There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Project Success - Suitable baseline data may be available in LDEQ or LDHH databases. If not, a baseline status needs to be developed for studies of specific targeted areas (see above). Identification of any trends needs to be within the context of the variability of the system. Several statistical methods applicable to analysis of trends may be suitable. Data may be normalized and standard linear regression models can be used to detect trends once sufficient data points have been obtained (e.g., 15 years is considered the

minimum for similar trend analyses conducted by Rabalais et al. 1995). If data cannot be normalized, nonparametric trend analysis techniques should be employed (e.g., modified Mann-Kendall tau tests and seasonal Kendall slope estimator tests; see Hirsch et al. 1982). Seasonal Kendall tau test is a nonparametric trend test that is appropriate for detecting monotonic trends in “time series” data, i.e., data routinely collected over time (or space). Differences can also be assessed geographically by an analysis of variance on transformed data for site differences. Where sites differ significantly, post-hoc comparisons are run to determine which sites differ from others. Power analysis will estimate the probability of detecting trends of a certain magnitude given a certain number of observations (see Appendix D in Regional Monitoring Program for The Galveston Bay Plan, Lane 1994). N.B. Identification of trends or correlations does not provide cause and effect relationships.

Cost estimates

Because of the multiple plans throughout the 10-year period and the number of cooperating agencies, a 1.5 person-month per year is estimated for monitoring all the aspects of the Action Plan and the cooperative efforts of each agency (approximately one person-week per agency per year). Including salary, fringe, incidental costs, and indirect costs = \$12,000 for each year (no inflation). Costs of statistical analyses are estimated at 4 person-months (\$32,000 in each of years 5 and 10). A statistical consultant should also be used in year 1 to help design the statistical analysis to be employed at the end of years 5 and 10 and to determine the suitability of existing data and what baseline data are needed (\$16,000 in year 1). Modifications in monitoring plan (see below) should result in modifications of cost.

Implementation of Monitoring

Monitor

Since BTMC is the proposed implementor for this Action Plan, an outside monitor not selected directly by BTMC is desirable. The combined work group of representatives of the cooperating agencies should agree to an outside monitor who will then be contracted by BTNEP. A monitor will prepare reports to be submitted to BTMC. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC. An additional outside monitor (i.e., statistician) should be contracted by the working group in years 1, 5 and 10. The results of the statistical analysis should be provided to the overall monitor of the Action Plan for presentation to the BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc. Statistical analysis of fecal coliform data will be conducted at the end of years 5 and 10.

Guidance for monitoring reports

- Quarterly reports to BTMC shall provide suitable components, such as:
 - ◆ Check-off of project landmarks according to the project time line.
 - ◆ Description of educational programs.
 - ◆ Compilation of recipients of educational programs and their comments.
 - ◆ Compilation of various enumerated data.

- ◆. Assessment of cooperating agency contributions.
 - ◆. Statistical analyses.
- . Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
- . In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - ◆. identify problems observed during the reporting period and their potential causes;
 - ◆. predict the short- and long-term consequences of the problems;
 - ◆. recommend actions to address the problems, as well as a potential implementor(s);
 - ◆. identify a time frame for accomplishment of the recommendations.
- . Data collected as part of statistical analyses shall be submitted in DIMS compatible format.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of cooperating agencies, the independent reviewer, and BTMC.

QA/QC

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

- . Collection of information in an objective and systematic manner.
- . Use of qualified and experienced personnel.
 - ◆. Independent Third Party with no vested interest, not a BTNEP employee.
 - ◆. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - ◆. Knowledgeable about sewage treatment systems and issues, education and demonstration projects, water quality monitoring programs and databases.
- . Application of standard formats for quarterly reports.
- . Maintenance of a quarterly schedule.
- . Consistent and timely review of monitoring reports by BTMC.
- . Standard data collection methods.
 - ◆. Application of standard quality control for entry of LDEQ and LDHH data into database.
 - ◆. Verification of data entries.
 - ◆. Examination of suspect data points.
 - ◆. Selected examination of concurrence of field data with data entries in database.
 - ◆. Compatibility with DIMS format.

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EM-11 Reduction Of Agricultural Pollution

OBJECTIVES

1. To maintain water quality standards that adequately protect estuarine resources from agricultural source pollutants.

DESCRIPTION

This action will follow already developed best management practices (BMPs) as recommended in the Louisiana Department of Environmental Quality's (LDEQ) statewide nonpoint program. These BMPs meet, enhance, or exceed state/federal guidelines and are consistent with continued agricultural production in the area. Employing these management practices will ensure that the BTES waters shall have a good ecological balance of nutrients and be free of harmful concentrations of toxic contaminants. These management practices were developed from user group and coalition input, and based on the direct involvement of such groups.

BACKGROUND/MAJOR ISSUES

In the BTES the runoff from agricultural areas contributes pollutants affecting the water quality of the basin. The pollutants include nutrients, sediment loading, animal waste, salts (leached from soil), and pesticides (including herbicides, fungicides, insecticides, etc.). These sources result in eutrophication, decreases in production, and/or plant and animal mortality. Wetland vegetation may be lost due to the detrimental effects of [the sediment load,] salts, and/or herbicides, leading to erosion and loss of affected wetlands.

In the Terrebonne and Barataria basins agriculture is a major land use. Sugarcane production totals over 295,000 acres, soybeans over 12,000 acres, wheat and feed grains over 7,000 acres, and pasture/rangeland over 46,000 acres. Water quality data from LDEQ's 1994 Water Quality Inventory indicate that nonpoint agricultural sources in the Barataria Basin contribute to the degradation of twelve of the twenty-seven waterbody subsegments either not meeting or only partially meeting their designated use. In the Terrebonne Basin thirty-four of fifty-five subsegments are not fully or only partially meeting their designated use, and agriculture is identified as a major contributors. Sources of nonpoint agricultural pollution in these basins include feedlots, rangeland, pastureland, non-irrigated crop production, removal of riparian vegetation, and domestic wastewater lagoons. Noncompliance effects from agricultural sources include pH, pathogen indicators, organic enrichment, low dissolved oxygen, salinity, total dissolved solids (TDS), chlorides, nutrients, siltation, and flow alteration.

The amount and distribution of the input varies in area and time dependent on rainfall, pesticide application, and season. The reduction or elimination of these pollutants is a vital step in the restoration and maintenance of the estuary system. The impact will be on the user groups that depend wholly or in part on the natural resources of the area. The effect of this action plan will be to improve water quality in the estuary area. Such improvement will benefit the natural resources of the area as well as those who use and benefit from such resources. The resources include the plants and animals, including fish and shellfish, that live and/or depend on the estuary aquatic environment. The area affected by this action plan is any aquatic area of the Barataria-Terrebonne estuary that is presently affected or may be affected by agricultural pollutants. The exact area of concern will be delineated by initial monitoring data.

Action Plan EM-11: Reduction of Agricultural Pollution

This plan is strongly linked with Action Plans *EG-6, New Technology Research and Development*, and *EG-7, Cooperative Incentives*. Each of these plans provides alternative means of managing the estuary's resources in ways that do not depend on regulatory processes. At numerous public meetings sponsored by BTNEP, these types of methods were identified by estuary residents and users as high priorities for the program.

BENEFITS

The primary benefit is the improvement of water quality in the BTES. The secondary benefit is the improved affect on the resources of the area, which includes any economic resources. This action plan provides solutions to the problems and the resulting effects of agricultural pollutants by application /use of management measures designed to reduce the input of such pollutants. The programmatic goals established by the BTNEP Management Conference are the statements that focus upon remediation and protection of the estuary, or upon the identification of obstacles blocking perceived realization of this overall goal. The programmatic goals as related to agricultural pollutant sources have been the focus of this action plan. This action plan has the effect of providing realistic solutions to reducing the pollutants coming from agricultural sources in the BTES. Such reduction will help improve the water quality when applied in conjunction with other action plans designed to address the pollution sources of the area waters.

IMPLEMENTATION SCHEDULE

In order to develop and implement solutions to the problems in the BTES, the proposed short term plans (0-1 year) consist of the formulation of common ground solutions and establishment of a data base program. Specific plans are as follows:

- S 1.00 The implementation of comprehensive education and awareness programs that enhance public involvement is needed in the initial stages of the plan and will include workshops, seminars, etc. This will increase involvement plus the adherence to regulations, and in the case of agriculture will include the awareness and following of best management practices.
- S 2.00 The promotion of regional pride and long-term stewardship of the basin goes hand in hand with the aforementioned education and coalition of government agencies and user groups. In the area of agriculture the involvement of the individual farmers and their families can help promote the quality of the estuary.
- S 3.00 Using input from the user groups and established coalitions, strategies will be developed to ensure that the water quality standards as set forth above will be met and maintained. In the case of agriculture, the appropriate user groups will be directly involved.
- S 4.00 An accessible, comprehensive data base including GIS data, with interpreted information for the public must be created. Such a data base should include all pollution source types, including information on quantification and distribution of agricultural pollutants in the ecological system and hydrologic system. Included is the formulation of indicators of estuarine ecosystem health and balance usage of estuarine resources. The definition of limiting characteristics and indicators of ecosystem well-being must take into account all sources of pollution including agriculture. The overall view of the BTES will insure a better balanced usage of the resources.

The focus of medium-term planning (1-5 years) is to provide the basis for review of the effectiveness of the planned actions. Periodic monitoring and review of the program effectiveness will be conducted, including a review of the overall program as well as individual areas, plans, and/or methods.

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- M 1.00 A three year monitoring phase should be initiated based on the structure of the BMPs. Changes in the BMP's and/or addition of other such measures may be required in order to meet the goal of improving water quality as determined from analysis of monitoring data.
- M 2.00 The monitoring of the amount and distribution of agricultural pollution will be conducted in association with the monitoring of other sources and types of pollutants addressed in the CCMP action plans. Monitoring must include measurements of agricultural pollutants including: nutrients, pesticides (including herbicides, fungicides, insecticides, etc.), sediment loads, salts, and animal wastes.

The long term plan is to develop solutions to the agricultural pollution and sources of the BTES. In order to maintain and/or restore the estuary system biological communities the sources of agricultural pollution must be reduced to acceptable levels in order to realistically support diverse biological communities. This includes the development and maintenance of multi-level, long term planning. Such planning must be conducted using all groups, coalitions, and political jurisdictions. Specific plans include:

- L 1.00 Establish close working relationships with the agricultural user groups to establish a means of determining valuation of the ecological resources.
- L 2.00 In addition, coalitions with other involved state and parish agencies need to be formed to ensure a complete basis for setting resource priorities in the BTES. The appropriate agencies include the Louisiana Department of Natural Resources (LDNR), the Louisiana Department of Environmental Quality (LDEQ), the Louisiana Department of Agriculture and Forestry (LDAF), the Louisiana Cooperative Extension Service (LCES), the U. S. Army Corps of Engineers (USACOE), the U. S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the Natural Resources Conservation Service (NRCS), and local coastal management programs.
- L 3.00 Meeting water quality standards that adequately protect estuarine resources. The water quality programs established under the CCMP should meet all state/federal guidelines. To accomplish this the agricultural sources should be reduced to levels that ensure a good ecological balance of the estuary. Such levels are dependent on the assessments of distribution and quantities of pollutants as determined during initial studies.
- L 4.00 To accomplish the reduction of the agricultural pollutants the plan must promote environmentally responsible economic activities that sustain current agricultural activities and protect estuarine resources. The sustained use of agricultural methods that help maintain the viability of the BTES should be one of the main points of emphasis in the promotion of environmentally responsible activities.
- L 5.00 The preservation of wetlands and barrier islands will be a related focal point of the action plan. The sediments, salts, and herbicides associated with agricultural source pollutants can directly impact wetland vegetation leading to erosion and loss of the affected wetlands. Reduction in the amounts of these substances in the BTES waters will help in preservation of the associated wetlands.
- L 6.00 The action plan must be compatible with natural processes. Flooding can pose problems if fields are flooded and the resulting waters discharge sediment and/or pesticides into the watershed area. This discharge should be taken into account in the planning of future and present agricultural activities in the area.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action plan will be the Louisiana Department of Environmental Quality. The Louisiana Department of Agriculture and Forestry (LDAF), the Natural Resource Conservation Service (NRCS) and the Louisiana Department of Natural Resources (LDNR) will serve as support implementors.

**Action Plan EM-11:
Reduction of
Agricultural Pollution**

COSTS AND ECONOMIC CONSIDERATIONS

Table EM11-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (ShortTerm) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|---|----------------|-------------------|--------------|-------------------------|---------------------------------------|
| EM-11 | | | | | \$55,678 | \$19,247 |
| EM-11S1.00 | <i>education/awareness progs.</i> | | | | \$10,458 | \$0 |
| EM-11S1.01 | <i>education/awareness progs.</i> | LDEQ | E | | \$3,486 | \$0 |
| EM-11S1.02 | <i>education/awareness progs.</i> | LDNR | E | | \$3,486 | \$0 |
| EM-11S1.03 | <i>education/awareness progs.</i> | LDAF | E | | \$3,486 | \$0 |
| EM-11S2.00 | <i>regional pride/stewardship</i> | LDAF | E | | \$10,500 | \$2,625 |
| EM-11S3.00 | <i>water quality standards/regs.</i> | | | | \$10,164 | \$0 |
| EM-11S3.01 | <i>agency review/comparison</i> | LDNR/ LDEQ | E | COMPLET E | \$0 | \$0 |
| EM-11S3.02 | <i>coalition review</i> | LDNR | E | | \$462 | \$0 |
| EM-11S3.03 | <i>coalition review</i> | LDEQ | E | | \$462 | \$0 |
| EM-11S3.04 | <i>coalition review</i> | LDOTD | E | | \$462 | \$0 |
| EM-11S3.05 | <i>coalition review</i> | LDWF | E | | \$462 | \$0 |
| EM-11S3.06 | <i>coalition review</i> | LDHH | E | | \$462 | \$0 |
| EM-11S3.07 | <i>coalition review</i> | LDCRT | E | | \$462 | \$0 |
| EM-11S3.08 | <i>coalition review</i> | LCES | E | | \$462 | \$0 |
| EM-11S3.09 | <i>coalition review</i> | LDAF | E | | \$462 | \$0 |
| EM-11S3.10 | <i>coalition review</i> | LGOV | E | | \$462 | \$0 |
| EM-11S3.11 | <i>coalition review</i> | USACOE- NO | E | | \$462 | \$0 |
| EM-11S3.12 | <i>coalition review</i> | USFWS | E | | \$462 | \$0 |
| EM-11S3.13 | <i>coalition review</i> | USCG | E | | \$462 | \$0 |
| EM-11S3.14 | <i>coalition review</i> | NOAA | E | | \$462 | \$0 |
| EM-11S3.15 | <i>coalition review</i> | USEPA- R6 | E | | \$462 | \$0 |
| EM-11S3.16 | <i>coalition review</i> | USEPA- HQ | E | | \$462 | \$0 |
| EM-11S3.17 | <i>coalition review</i> | USGS | E | | \$462 | \$0 |
| EM-11S3.18 | <i>coalition review</i> | USEPA- GOMP | E | | \$462 | \$0 |
| EM-11S3.19 | <i>coalition review</i> | USNRCS | E | | \$462 | \$0 |
| EM-11S3.20 | <i>coalition review</i> | CFSA | E | | \$462 | \$0 |
| EM-11S3.21 | <i>coalition review</i> | USNMFS | E | | \$462 | \$0 |

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| EM-11S3.22 | <i>coalition review</i> | BTMC | E | | \$462 | \$0 |
|------------|------------------------------------|-------------------|---------------------------|----------------|---------------------------------|--|
| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (ShortTerm) | Y2-5 AVG COSTS/YR (Medium Term) |
| EM-11S3.23 | <i>coalition review</i> | LA Farm Bureau | E | | \$462 | \$0 |
| EM-11S4.00 | <i>Creation of data base</i> | | | | \$24,556 | \$7,000 |
| EM-11S4.01 | <i>review existing data base</i> | LDNR | E | | \$798 | \$0 |
| EM-11S4.02 | <i>review existing data base</i> | LDEQ | E | | \$798 | \$0 |
| EM-11S4.03 | <i>review existing data base</i> | LDOTD | E | | \$798 | \$0 |
| EM-11S4.04 | <i>review existing data base</i> | LDWF | E | | \$798 | \$0 |
| EM-11S4.05 | <i>review existing data base</i> | LDHH | E | | \$798 | \$0 |
| EM-11S4.06 | <i>review existing data base</i> | LDCRT | E | | \$798 | \$0 |
| EM-11S4.07 | <i>review existing data base</i> | LCES | E | | \$798 | \$0 |
| EM-11S4.08 | <i>review existing data base</i> | LDAF | E | | \$798 | \$0 |
| EM-11S4.09 | <i>review existing data base</i> | LGOV | E | | \$798 | \$0 |
| EM-11S4.10 | <i>review existing data base</i> | USACOE- NO | E | | \$798 | \$0 |
| EM-11S4.11 | <i>review existing data base</i> | USFWS | E | | \$798 | \$0 |
| EM-11S4.12 | <i>review existing data base</i> | USCG | E | | \$798 | \$0 |
| EM-11S4.13 | <i>review existing data base</i> | NOAA | E | | \$798 | \$0 |
| EM-11S4.14 | <i>review existing data base</i> | USEPA- R6 | E | | \$798 | \$0 |
| EM-11S4.15 | <i>review existing data base</i> | USEPA- HQ | E | | \$798 | \$0 |
| EM-11S4.16 | <i>review existing data base</i> | USGS | E | | \$798 | \$0 |
| EM-11S4.17 | <i>review existing data base</i> | USEPA- GOMP | E | | \$798 | \$0 |
| EM-11S4.18 | <i>review existing data base</i> | USNRCS | E | | \$798 | \$0 |
| EM-11S4.19 | <i>review existing data base</i> | CFSA | E | | \$798 | \$0 |
| EM-11S4.20 | <i>review existing data base</i> | USNMFS | E | | \$798 | \$0 |
| EM-11S4.21 | <i>review existing data base</i> | BTPO | E | | \$798 | \$0 |
| EM-11S4.22 | <i>review existing data base</i> | LA Farm Bureau | E | | \$798 | \$0 |
| EM-11S4.23 | <i>establish/maintain database</i> | LDEQ | E | | \$7,000 | \$7,000 |
| EM-11M1.00 | <i>BMP monitoring</i> | | | | | \$9,622 |
| EM-11M1.01 | monitoring with BTES areas | LDNR | E | | | \$8,750 |
| EM-11M1.02 | review incorporate base | LDNR | E | | | \$242 |
| EM-11M1.03 | review incorporate base | LDAF | E | | | \$126 |
| EM-11M1.04 | review incorporate base | LDEQ | E | | | \$126 |

**Action Plan EM-11:
Reduction of
Agricultural Pollution**

| | | | | | | |
|------------|--------------------------|-------------|---------------------------|----------------|---------------------------------|--|
| EM-11M1.05 | review incorporate base | LDWF | E | | | \$126 |
| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (ShortTerm) | Y2-5 AVG COSTS/YR (Medium Term) |
| EM-11M1.06 | review incorporate base | LDOTD | E | | | \$126 |
| EM-11M1.07 | review incorporate base | LCES | E | | | \$126 |

Table EM11-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$133,300
 Total Funding Existing (Years 1-5): \$133,300
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

EM-11 proposes to reduce the inputs of agricultural pollutants by application and use of management measures (BMPs) designed to reduce the input of such pollutants. The focus is on realistic solutions. The results are improved water quality and estuarine ecosystem health. Benefitors of the Action Plan are users of the natural resources of BTES.

Interrelationships Among Components

1. BMPs that meet, enhance, or exceed state/federal guidelines and that are consistent with continued agricultural production are currently established in LDEQ’s Nonpoint Source Program and LDNR’s Coastal Nonpoint Pollution Control Program. LDEQ heads a Nonpoint Source Interagency Committee.

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2. Agencies with monitoring programs that could provide data as to the success of the implemented Action Plan are LDEQ, LDHH, LDAF, LDWF, EPA, USGS, and NOAA (more fully detailed in the Ecological Indicators monitoring plan). Other parameters not currently monitored by these agencies are also detailed in the Ecological Indicators monitoring plan.
3. LDEQ is the proposed implementor; however, other agencies with substantial support capabilities are LDNR, LDAF, LCES, NRCS, and parish governments. Funding is not clear.

Documentation of Plan Implementation and Success

Monitoring for this Action Plan includes assessing the timely implementation of the components of the Action Plan, and the eventual success of implementation (i.e., agricultural pollutants reduced and improved water quality). The first component is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring of implementation is designed to determine whether a better informed public resulted and whether BMPs were implemented. Eventual project success can be monitored with an analysis of data that indicates a reduction in agricultural source pollution indicators and improvement in water quality indicators. The success of Action Plans that target reduced sewage pollution, reduced agricultural pollution, and storm water management may all be manifested in similar improvements in water quality and indicators of ecosystem health. If all Action Plans are working in parallel and water quality improves, it will be difficult to determine the cause and effect. Since the scale of implementation will vary among Action Plans, the level of success in improved water quality will also vary. The probability is high that implementation of any single management scenario may have varying effects in different environments. It is also possible that no single indicator may indicate program success, but rather success will be seen in a combination of indicators. The end result of multiple actions to improve water quality, however, will be noticeable in indicators of basinwide ecosystem-level health (see CCMP-Part 4, "Monitoring Plan for Ecological Indicators"). Specific examples of project success are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

Plan implementation

A time line developed jointly by the funding agency and the implementor will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of many agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

1. A lead agency is selected as implementor, source of funding is identified and secured, a project work group is identified and responsibilities outlined, and a detailed time line for the project is established (months 0-1).
2. A coalition of state, local, and federal entities is formed to establish resource priorities in BTES (months 1-2).
3. Common ground solutions are formulated (months 3-12).
4. Resource priorities in BTES are established (months 6-12).
5. BMPs are clearly identified and implementation documented for eventual users (months 6-12).
6. Education and awareness programs to enhance public involvement are developed (months 3-12).
7. Plan for promoting adoption of BMPs is formulated (months 3-12).
8. Education and awareness programs are disseminated (years 2-10).
9. BMPs are implemented (years 2-10).
10. Implementation (overall plan, individual areas, individual projects, specific methods) and public awareness is tracked (years 2-10).

Project success

Long-term success in the implementation of BMPs will be seen in the reduction in agricultural pollutants and a reduction in the number of water subsegments not meeting water quality criteria due to agricultural pollutants. At

Action Plan EM-11: Reduction of Agricultural Pollution

the end of years 5 and 10, a statistical analysis should be conducted of various water quality parameters to determine whether the educational programs and agricultural pollution controls have resulted in improved water quality.

Suggested steps to determine project success are:

1. Identify suitable targeted areas for monitoring of reduction in agricultural pollution (end of year 1), such as:
 - a. Experiments of paired watersheds, one with many implemented BMPs, the other without.
 - b. Comparisons of water subsegments, those with many implemented BMPs, others without.
2. Establish database with baseline data against which to measure change (end of year 1).
3. Identify suitable agricultural source pollution indicators to monitor for change (end of year 1).
4. Conduct statistical analyses for targeted study areas to determine whether selected parameters indicate a reduction in agricultural pollution (end of years 5 and 10).
5. Reassess targeted study areas and modify experimental design (end of years 5 and 10).
6. Assess whether implementation of BMPs is having desired effects (end of years 5 and 10).

Methods

Measurable parameters

Plan Implementation - The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Agency personnel are active in developing educational programs.
2. Agency personnel are active in disseminating information concerning BMPs to appropriate audiences.
3. Educational programs are developed.
4. Schedules for dissemination of educational programs are established.
5. Increased public education programs concerning agricultural pollution and application of BMPs.
6. Increased public awareness of the effects of agricultural pollution on BTES water quality and sustainable living resources.
7. Increased application of BMPs within BTES and watershed.
8. Improvement in indicators that would indicate a reduction in agricultural pollution.

Project Success

1. Format and components of database to determine changes in agricultural pollutants in BTES is established.
2. Baseline data collected.
3. Decreased evidence of agricultural pollutants in targeted study areas.
4. Decreased evidence of agricultural pollutants as cause of impairment of water bodies in targeted study areas.

Data collection methods

Plan Implementation - The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring report.

1. Check-off system according to time line of project as landmark dates are encountered and project objectives are met.
2. Person-months of involvement of various agency personnel are documented by the implementor and collaborating agencies.
3. List and descriptions of educational programs developed.
4. List of recipients of educational programs, including dates, types of programs, and comments made by recipients of educational programs as to usefulness of the program.
5. Lists of land owners who establish BMPs on their agricultural property.
6. Reports of results of BMPs on agricultural lands. Summarized by monitor for incorporation in reports.

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Project Success - The monitor will access appropriate data sets and conduct statistical analyses. Studies will be specifically targeted areas such as listed above. Suitable analyses include:

1. Routine water quality monitoring and agricultural pollutant monitoring as established in state and federal agencies.
2. Statistical analysis of changes over time in variables that indicate a reduction in agricultural pollutants, such as:
 - a. Changes over time in the designations of degraded water quality (i.e., not meeting or partially meeting designated use due to agricultural sources).
 - b. Changes over time in noncompliance effects (including pH, pathogen indicators, organic enrichment, low dissolved oxygen, salinity, total dissolved solids, chlorides, nutrients).
 - c. Indicators, such as water clarity, chlorophyll biomass, noxious algal blooms, nutrient levels, BOD, fish kills due to pesticide runoff, fish kills due to herbicide applications, (see CCMP-Part 4, "Monitoring Plan for Ecological Indicators" for Ecological Indicators monitoring plan).

Much routine baseline information exists, e.g., LDEQ Water Quality Inventory, various data sets analyzed for "Status and Trends of Eutrophication, Pathogen Contamination, and Toxic Substances in the Barataria-Terrebonne Estuarine System" (Rabalais et al. 1995), types of data in the EPA EMAP database, fish kill databases, LDAF agricultural pollutants in BTES water bodies. Routine monitoring that might indicate the amount of agricultural pollution affecting the system includes nutrients, pesticides in water, sediment loads, salts, fecal coliform levels, BOD, dissolved oxygen, insecticide- or herbicide-related fish kills.

Sample design and statistical methods

Plan Implementation - There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Project Success - Suitable baseline data may be available in LDEQ or LDAF databases. If not, a baseline status needs to be developed for studies of specific targeted areas (see above). Identification of any trends needs to be within the context of the variability of the system. Several statistical methods applicable to analysis of trends may be suitable. Data may be normalized and standard linear regression models can be used to detect trends once sufficient data points have been obtained (e.g., 15 years is considered the minimum for similar trend analyses conducted by Rabalais et al. 1995). If data cannot be normalized, nonparametric trend analysis techniques should be employed (e.g., modified Mann-Kendall tau tests and seasonal Kendall slope estimator tests; see Hirsch et al. 1982). Seasonal Kendall tau test is a nonparametric trend test that is appropriate for detecting monotonic trends in "time series" data, i.e., data routinely collected over time (or space). Differences can also be assessed geographically by an analysis of variance on transformed data for site differences. Where sites differ significantly, post-hoc comparisons are run to determine which sites differ from others. Power analysis will estimate the probability of detecting trends of a certain magnitude given a certain number of observations (see Appendix D in Regional Monitoring Program for The Galveston Bay Plan, Lane 1994). N.B. Identification of trends or correlations does not provide cause and effect relationships.

Cost estimates

Estimate one person-month per year for monitoring all the aspects of Action Plan implementation and the cooperative efforts of each agency (approximately one person-week per agency per year). Including salary, fringe, incidental costs, and indirect costs = \$8,000 for each year (no inflation). Costs of statistical analyses are estimated at 4 person-months (\$32,000 in each of years 5 and 10). A statistical consultant should also be used in year 1 to help design the statistical analysis to be employed at the end of years 5 and 10 and to determine the suitability of existing data and what baseline data are needed (\$16,000 in year 1). Modifications in monitoring plan (see below) should result in modifications of cost.

Action Plan EM-11: Reduction of Agricultural Pollution

Implementation of Monitoring

Monitor

A monitor selected by BTMC will prepare reports to be submitted to BTMC. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC. An additional outside monitor (i.e., statistician) should be contracted by the working group in years 1, 5 and 10. The results of the statistical analysis should be provided to the overall monitor of the Action Plan for presentation to the BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc. Statistical analysis of agricultural pollutant data in specific targeted study areas will be conducted at the end of years 5 and 10.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line
 - b. Compilation of agency person-months of involvement in project.
 - c. Description of educational programs.
 - d. Compilation of recipients of educational programs and their comments.
 - e. Compilation of implemented BMPs.
 - f. Assessment of cooperating agency contributions.
 - g. Descriptions of targeted study areas and sample design.
 - h. Statistical analyses.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.
4. Data collected as part of statistical analyses shall be submitted in DIMS compatible format.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

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Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about agricultural pollution issues, BMPs, educational and demonstration projects, water quality monitoring programs and databases.
3. Application of standard formats for quarterly reports.
4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.
6. Standard data collection methods.
 - a. Application of standard quality control for entry of LDEQ and LDAF data into database.
 - b. Verification of data entries.
 - c. Examination of suspect data points.
 - d. Selected examination of concurrence of field data with data entries in database.
 - e. Compatibility with DIMS format.

EM-12 Storm Water Management

OBJECTIVES

1. To reduce the negative impacts on water quality that current storm water disposal practices may produce.
2. To reduce loadings of nutrients, fecal coliform bacteria and pathogens, and other pollutants in waterways.
3. To enhance wetland vegetation with inputs of nutrients, silts, and freshwater.

DESCRIPTION

This action plan will establish alternatives to current storm water pump outfall management. Specifically, this plan will encourage and develop a series of demonstration storm water treatment and wetland enhancement projects in representative areas throughout the BTES, sponsor additional information collection that would assist in local storm water management planning, encourage local governments to adopt ordinances that improve storm water disposal practices, and ensure that to the extent possible, storm water management improvements make use of equipment that is already in place. Storm water disposal alternatives will be planned where they can help reduce flooding, where existing pumps and appropriate alternative disposal sites coexist, and where fecal coliform impacts on oyster beds or other negatives, are unlikely. Most importantly, alternative storm water management will be implemented only where the water quality of the storm water is acceptable for the wetland to assimilate its pollutant load over an adequate residence time.

BACKGROUND/MAJOR ISSUES

Storm water pumps exist throughout the BTES. A report for the BTNEP by the Center for Louisiana Inland Water Studies (CLIWS) states that there are 256 identified pumps within the basins. Storm water pumps account for 215 of these, and 41 are classified as agricultural pumps. The majority of storm water pumps drain residential, commercial or industrial areas. The agricultural pumps drain crop agriculture, pasture land, and cattle operations. The large area of the BTES provides an opportunity to actively manage all or part of storm water runoff, that would not be provided by gravity-based drainage systems alone.

Much of the fastlands for residential, commercial, and agricultural use in the BTES complex are under pump to remove storm water. The storm water pumps move water off the fastlands into receiving water bodies which move water rapidly, too rapidly in fact for adequate detention time to reduce coliform bacteria levels before oyster beds are impacted. The intent of the pumping is to alleviate flooding in developed lands. Per the CLIWS report, most of the water bodies receiving the pumped waters could not be classified by type. However, of the few receiving water bodies that could be classified (48 total), 44% were canals flowing through some type of wetland, 25% were canals through other areas, and 31% were wetlands. The pumped water, including all of the pollutants and nutrients that may be present, enter these water bodies directly.

The existing extensive network of storm water pumps provides an excellent opportunity that should be capitalized on. The existing report by CLIWS can be built upon by completing the classification of existing receiving water

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bodies, and adding a classification of adjacent wetland areas that would be appropriate for alternative discharge locations. This could build on the Geographic Information System (GIS) mapping project that is also being done for the BTNEP. Resource elements that should be protected, such as oyster beds, would also be located. The pollutant loadings and characteristics of the storm water coming from different pumped areas must also be identified, at least for representative areas. A full effort to classify and map sites to divert storm water flows from canals and bayous to more appropriate locations such as wetlands, could garner improvements in water quality, wetland health and flood reduction. Classifying storm water content will help avoid potential negatives like oyster impacts, or introducing into the wetlands pollutants that can not be assimilated, that may bioaccumulate, or may impact sediments.

The storm water pumping system that exists in the BTES complex directly or indirectly impacts all residents of the basins. The direct impact of the existing system is the removal of storm water from developed or agricultural areas to receiving waters that should be able to shunt the storm flows away, thus lowering the incidence and duration of flooding. Indirect impacts of the existing system are the potential and actual impairment of water quality in the receiving water bodies, and the impact this impairment has on drinking water supply, fisheries, and recreation. The Storm Water Action Plan will impact all residents of the BTES complex by reducing negative impacts in several ways: reduce loadings of nutrients, fecal coliform bacteria and pathogens, and other pollutants in waterways; and enhance wetland vegetation with inputs of nutrients and freshwater.

Alternative methods for managing storm water outfalls can and should be flexible and adaptable to provide the greatest possible benefits. For example, a pump draining a residential area where the pollutant load is mostly BOD (organic matter) and TSS (suspended solids) could be managed so that the “first flush” during a storm event would be routed to the wetland site where the wetland could reduce the loadings of coliform bacteria, nutrients and other pollutants. If the storm event was a very large one, the capacity of the wetland to retain the storm flow for a sufficient residence time may be exceeded, therefore after a certain amount of discharge to the wetland, the storm water could be routed to a canal or other water body site. This type of system must be designed so that the receiving wetland will not be damaged by unacceptable erosion. This could provide several advantages: the wetland could “clean-up” the heavily pollutant loaded first flush of the storm, and the canal or other water body could receive the cleaner more dilute water from an intense storm after the first flush.

BENEFITS

This action plan complements several BTNEP programmatic goals. It uses existing infrastructure, with some modifications, to adjust, offset, or be compatible with natural processes. This action plan helps provides a common ground solution to several estuarine problems including water quality, and helps to revitalize wetland areas.

This action plan will provide several benefits to the BTES complex residents. Improved coordination and sharing of information and ideas among local, state, and federal agencies and the public should result. Flexible storm water disposal can help strengthen local governments ability to identify and reduce local problems like flooding, water quality, wetland and resource health through their own initiatives. More long-term benefits will be improved water quality for drinking, agriculture, fisheries, and recreation. Enhanced wetland areas should result; more able to provide the functions of water storage, water quality improvement and ecological values that wetlands impart.

Action Plan EM-12: Storm Water Management

IMPLEMENTATION SCHEDULE

The Center for Louisiana Inland Water Studies did a report on storm water discharge pumps for the BTNEP. This report lays the groundwork for the storm water action plan by locating the identifiable storm water pumps within the basins. A proposal to conduct a demonstration storm water treatment/wetland enhancement project has been made by the Lafourche Coastal Advisory board. The proposal is to be considered for funding by the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) Task Force. The Barataria-Terrebonne Management Conference (BTMC) should strongly support the implementation of this demonstration project for funding by the CWPPRA federal agencies and by the state. Monitoring results from this demonstration project, if implemented, could provide guidance for application of this action plan basin wide.

Short-term plans (0-1 years) are focused on ensuring that a demonstration project is implemented, and additional information is gathered. The objectives of this period are to begin building the groundwork for additional support of the action plan's concepts by disseminating the necessary information to parish residents and officials, and to complete gathering of information that will be essential for determining where re-routing of storm water to wetlands will be appropriate. Specific plans are as follows:

- S 1.00 *Initial Demonstration Project*: Promote the Storm water/wetlands demonstration project for CWPPRA and State matching funding (Sponsoring local agency, Federal Agency, BTMC, LDNR, CWPPRA Task Force).
- S 2.00 *Public Education*: Begin ongoing public education on the benefits that can be achieved by alternative storm water management. Identify "hotspots" where water quality problems exist due to existing storm water management, and where suitable water quality conditions and wetland sites exist to implement the alternative practices. Concentrate education efforts there. Publicize the results from ongoing storm water projects. Coordinate this with other public education efforts on water quality issues and management alternatives in other Action Plans (BTMC, participating local, state, and federal agencies).
- S 3.00 *Collect Additional Information*: Sponsor additional information collecting to supplement the CLIWS report and provide a classification of existing receiving water bodies, classification of adjacent wetland areas that would be appropriate for alternative discharge locations, resource elements that should be protected such as oyster beds, the pollutant loadings and characteristics of the storm water coming from different pumped areas or representative areas, and other basin-wide topics that would assist in local planning and implementation (Local, state and federal agencies, universities, BTMC).

Medium-term plans (1-5 years) include measuring the impacts of the CWPPRA demonstration project, promoting additional demonstration projects in other areas that are representative of hydrological and ecological conditions throughout the basin, and assisting local governments in planning efforts to evaluate the appropriateness for alternative storm water management in their areas - to maximize the positive benefits and minimize any potential negatives. Specific plans are:

- M 1.00 *Monitor Initial Demonstration Project*: Gather monitoring information on the CWPPRA storm water/wetlands demonstration project (CWPPRA project sponsoring agency, LDNR).
- M 2.00 *Initiate Additional Demonstration Projects*: Elicit support for several additional Storm water/wetland demonstration projects, funded by entities other than CWPPRA, in different ecological and hydrological settings such as fresh marsh, brackish marsh, or cypress-tupelo swamp. Publicize the plans for the demonstration project (engineering, construction, and monitoring) to local governments (Local governments, LDNR, other potential federal and state sponsoring agencies, BTMC).
- M 3.00 *Support Local Planning*: Develop and support parish plans to review the current storm water discharge practices and promote the appropriate use of wetlands as discharge sites. These plans would build on

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existing work done in the basin and contain: a classification of existing receiving water bodies, classification of adjacent wetland areas that would be appropriate for alternative discharge locations, resource elements that should be protected such as oyster beds, the pollutant loadings and characteristics of the storm water coming from different pumped areas. These plans would identify where re-routing may be appropriate to provide improvements in water quality, wetland health and flood reduction, while avoiding potential negatives like oyster impacts (Local governments, BTMC, LDEQ).

The long-term plan (5-10 years) include building on results of a series of demonstration projects in representative areas of the basins, the data gathering and characterization efforts, and the local planning efforts, so that the local alternative storm water management plans will be fully implemented. In addition, this phase will focus on helping encourage local governments to adopt ordinances to improve storm water disposal practices, increasing partnership building, and ensuring that we act on the opportunity to improve basin conditions using equipment that is already in place. Specifically, long-term plans include:

- L 1.00 *Local Government Commitment:* Encourage local governments to make a strong commitment to implementing new storm water disposal practices by drafting and approving local ordinances. LDNR Coastal Zone Management office has a collection of non-point sources pollution ordinances that could aid in storm water ordinance drafting (Local governments, LDNR, LDEQ, BTMC, EPA).
- L 2.00 *Build Partnerships:* Assist local governments in establishing partnerships for project implementation. A database could be built identifying storm water project, water quality, and wetland protection funding sources (LDEQ, BTMC, EPA, other partnering agencies).
- L 3.00 *Implement Local Plans:* Local governments and other managers will implement Storm water/wetland projects in appropriate areas thought the BTES (Local governments, state and federal partnership agencies).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor will be the BTMC and the LDEQ. The BTMC will encourage and coordinate grassroots and local government support of the action plan. The LDEQ will provide technical guidance and coordinate assistance from other agencies as appropriate. Local governments, drainage districts and local organizations who manage the pumps, as well as the Louisiana Departments of Environmental Quality, Natural Resources, Wildlife and Fisheries, Health and Hospitals, and Transportation and Development, the Louisiana Cooperative Extension Service, the Environmental Protection Agency, the Natural Resources Conservation Service, the U. S. Army Corps of Engineers, and other agencies should assist in planning, coordination, and implementation.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM12-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

**Action Plan EM-12:
Storm
Water Management**

Table EM12-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|-------------------------------------|---------------------|---------------------------|----------------|----------------------------------|--|
| EM-12 | | | | | \$522,500 | \$32,375 |
| EM-12S1.00 | <i>initial demo project</i> | | | | \$366,000 | \$0 |
| EM-12S1.01 | <i>initial demo project</i> | USACOE | E | | \$3,500 | \$0 |
| EM-12S1.02 | <i>initial demo project</i> | LDNR | E | | \$3,500 | \$0 |
| EM-12S1.03 | <i>initial demo project</i> | Parish Govt. CZM | E | | \$7,000 | \$0 |
| EM-12S1.04 | <i>initial demo project</i> | CWPPRA | N | | \$352,000 | \$0 |
| EM-12S2.00 | <i>public education</i> | | | | \$114,500 | \$0 |
| EM-12S2.01 | <i>material development</i> | BTPO-EPS | E | | \$7,000 | \$0 |
| EM-12S2.02 | <i>material development</i> | LDEQ | E | | \$7,000 | \$0 |
| EM-12S2.03 | <i>material development</i> | LDNR | E | | \$7,000 | \$0 |
| EM-12S2.04 | <i>material development</i> | LSU AG-EX | E | | \$7,000 | \$0 |
| EM-12S2.05 | <i>material production</i> | BTPO-EPS | N | | \$18,333 | \$0 |
| EM-12S2.06 | <i>material production</i> | LDEQ | N | | \$18,333 | \$0 |
| EM-12S2.07 | <i>material production</i> | LDNR | N | | \$18,333 | \$0 |
| EM-12S2.08 | <i>seminars</i> | LDNR | N | | \$10,500 | \$0 |
| EM-12S2.09 | <i>seminars</i> | LSU AG-EX | N | | \$10,500 | \$0 |
| EM-12S2.10 | <i>seminars</i> | Parish Govt. CZM | N | | \$10,500 | \$0 |
| EM-12S3.00 | <i>collect additional info</i> | | | | \$42,000 | \$12,250 |
| EM-12S3.01 | <i>research contracts</i> | LDNR | N | | \$21,000 | \$5,250 |
| EM-12S3.02 | <i>research contracts</i> | LDEQ | N | | \$21,000 | \$5,250 |
| EM-12S3.03 | <i>report</i> | BTMC- Contractor | N | | | \$1,750 |
| EM-12M1.00 | <i>monitor initial demo project</i> | LDNR | N | | | \$5,250 |
| EM-12M2.00 | <i>additional demo projects</i> | | | | | \$7,875 |
| EM-12M2.01 | <i>promotion</i> | LSU AG-EX | E | | | \$2,625 |
| EM-12M2.02 | <i>development</i> | Parish Govt. CZM | E | | | \$5,250 |
| EM-12M3.00 | <i>support local planning</i> | | | | | \$7,000 |
| EM-12M3.01 | <i>education</i> | LSU AG-EX | E | | | \$1,750 |
| EM-12M3.02 | <i>planning efforts</i> | Parish Govt. CZM | E | | | \$5,250 |

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FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$652,000
 Total Funding Existing (Years 1-5): \$101,600
 Total New Funding Necessary (Years 1-5): \$550,400

Table EM12-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|------------------------|---------------------|--------------------|-------------------|-------------------|-------------------|
| CWPPRA | \$352,000 CWPPRA | | | | |
| BTPO/ BTMC | \$18,300 CWPPRA | | \$7,000 CWPPRA | | |
| LDEQ | \$39,300 CWPPRA | \$21,000 CWPPRA | | | |
| LDNR | \$49,800 CWPPRA | \$21,000 CWPPRA | \$7,000 CWPPRA | \$7,000 CWPPRA | \$7,000 CWPPRA |
| Parish Govt/ CZM | \$10,500 CWPPRA | | | | |
| LSU Ag. Ctr. | \$10,500 CWPPRA | | | | |

Summary of new funding strategy: The \$352,000 cost in Year 1 results from a CWPPRA demonstration project and therefore will be supported with CWPPRA funds. Since other costs in this action plan are project-related, they should also be supported with CWPPRA funding.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized

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that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The plan promotes the use of alternative methodologies for disposal of storm waters. BTMC will encourage, facilitate, and coordinate such efforts in BTES, and support studies that will increase the knowledge base of various aspects of alternative storm water disposal. Usefulness of the various programs are anticipated in 1) reduced loadings of nutrients, fecal coliform bacteria, and pollutants to BTES water bodies, 2) improved water quality in BTES in support of enhanced natural resources, and 3) enhanced wetland vegetation.

Interrelationships Among Components

1. A database compiled by CLIWS identifies 556 storm water pumps in Barataria and Terrebonne basins. Various components of a database that will support location of projects for alternative management of storm water disposal are yet to be completed. A proposal by the Lafourche Coastal Advisory board for a storm water treatment/wetland enhancement project is pending for funding under CWPPRA. Other demonstration projects are feasible with assistance from local government, state (LDEQ, LDNR) and federal (EPA, NRCS, USACOE) agencies, and CWPPRA. Monitoring of the results of the demonstration and/or actual projects will be conducted by the implementor(s). BTMC would serve as a coordinator of knowledge gained from project results, a translator and disseminator of the knowledge through public education programs, and a facilitator for additional projects.
2. The lead implementor is BTMC and LDEQ [seems that there should be a single lead with collaborators, or a work group of agencies]. Collaborating organizations are LDNR, local government, drainage districts, LDHH, LCES, EPA, NRCS, USACOE.
3. Costs for the initial project will be borne by the sponsoring parties and CWPPRA. Other demonstration projects will be cost shared by the relevant cooperating agencies. Costs of developing an appropriate database, coordinating results from projects, developing and disseminating education programs, and in coordinating efforts will be shared by BTMC, LDEQ, and collaborating agencies.

Documentation of Plan Implementation and Success

Monitoring for this Action Plan includes assessing the timely implementation of the components of the Action Plan, and the eventual success of implementation (i.e., improved water quality and enhanced wetland vegetation). The first component is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring of implementation is designed to determine whether BTMC facilitated the initiation of alternative storm water discharge management methods and whether a better informed public resulted. Monitoring the actual results of the storm water management projects will be conducted by the implementor(s). The focus of the Action Plan should be on monitoring of the individual projects by the implementors and forwarding of that information to BTMC for their incorporation into educational programs, re-examination of issues, re-formulating plans for further projects.

Eventual success of the Action Plan may not be identifiable in a basin-wide (or subsegment) analysis of water quality or ecological indicators, because the projects are isolated and may be limited in number, thus reducing an overall, identifiable effect. The success of Action Plans that target reduced sewage pollution, reduced agricultural pollution, and storm water management may all be manifested in similar improvements in water quality and indicators of ecosystem health. If all Action Plans are working in parallel and water quality improves, it will be difficult to determine the cause and effect. Since the scale of implementation will vary among Action Plans, the level of success in improved water quality will also vary. The probability is high that implementation of any single management scenario may have varying effects in different environments. It is also possible that no single indicator may indicate program success, but rather success will be seen in a combination of indicators. The end result of

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multiple actions to improve water quality, however, will be noticeable in indicators of basinwide ecosystem-level health (see CCMP-Part 4, "Monitoring Plan for Ecological Indicators").

Specific steps in the Action Plan that can be tracked and/or indicators of success that can be analyzed for change are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

Plan implementation

1. Establish lead and collaborating implementors, secure sources of funding, identify a project work group and respective responsibilities, and develop a detailed time line (months 0-4).
2. Encourage the acceptance of demonstration storm water project by CWPPRA (months 0-12).
3. Identify information needs, formulate studies, secure funding, implement data collection and research projects (months 6-12).
4. Begin development of public education programs (months 6-12).
5. Support studies of:
 - a. storm water discharge constituents,
 - b. characterization of receiving water bodies,
 - c. attributes of wetland areas that are conducive to retention and treatment of pollutant loads without detriment to the wetlands,
 - d. identification of suitable wetland receiving areas, and
 - e. identification of suitable demonstration project sites.
6. Emphasize treatment areas that are known to assimilate dissolved nutrients, e.g., freshwater swamps.
7. Support projects that are designed so as not to lose any more naturally functioning wetland areas.
8. Encourage monitoring for indicators that wetland vegetation and natural processes are not impaired as a result of the project. Any negative effects should also be incorporated into the BTMC educational programs and re-assessment of direction of the Action Plan.
9. Dissemination of educational programs (years 2-10).
10. Coordinate information obtained from various projects (monitoring of success by various implementors) and incorporate into educational programs (years 2-10).
11. Coordinate information obtained from various projects (monitoring of success by various implementors) and incorporate into improved management technologies (years 2-10).
12. Encourage other governmental bodies to develop alternative storm water management practices and projects (years 2-10).
13. Continue encouragement of other demonstration projects (years 2-10).

Project success

1. Individual storm water management projects will be monitored by the implementor(s).
2. Establishment of sample design for specific targeted study areas.
3. Establishment of baseline data for specific targeted study areas.
4. Monitor appropriate parameters that indicate the amount of pollution from storm water discharge that affects the system is reduced.
5. Water in relevant BTES subsegments meets all state/federal guidelines; no impairments due to storm water discharges.
6. Data analysis to determine success of the various projects. Effects are anticipated in
 - a. reduced loadings of nutrients, fecal coliform bacteria, and pollutants to BTES water bodies,
 - b. improved water quality in relevant BTES watersheds or subsegments in support of enhanced natural resources,
 - c. enhanced wetland vegetation, and

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- d. improvement in ecological indicators.

Methods

Measurable parameters

Plan Implementation - The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Lafourche storm water disposal/wetland enhancement project is implemented under CWPPRA.
2. Plan for tracking progress of Lafourche project is developed and implemented.
3. Plan for educational programs and their dissemination is established.
4. Plan for encouraging other storm water management projects is developed.
5. List of data needs and types of studies identified, outlined, and funding secured.
6. Enumeration and description of studies initiated, tracked, and completed.
7. Incorporation of knowledge from completed studies in expanded educational programs and improved management technologies.
8. Increased public education programs concerning storm water discharge pollution problems and alternative management strategies.
9. Increased number of alternative storm water management projects.

Project Success

1. Decreased evidence of storm water pollutants in specific targeted study areas.
2. Decreased evidence of storm water pollutants as cause of impairment of water bodies in specific targeted study areas.
3. Increased evidence of wetland vegetation enhancement at alternative storm water management sites.
4. Improvement in ecological indicators that would indicate a reduction in storm water pollution.

Data collection methods

Plan Implementation - The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring report:

1. Check-off system according to time line of project as landmark dates are encountered and project objectives are met.
2. Person-months of involvement of various agency personnel are documented by the implementor and collaborating agencies.
3. Tracking of time line, implementation, monitoring results of various storm water projects.
4. List and descriptions of educational programs developed.
5. List of recipients of educational programs, including dates, types of programs, and comments made by recipients of educational programs as to usefulness of the program.
6. Lists, descriptions, and results of alternative storm water management projects are maintained for review by cooperating agencies and BTMC.

Project Success

1. Reports of results of alternative storm water management on water quality of adjacent receiving water body. Provided by implementor(s) of project. Summarized by monitor for incorporation in reports.
2. Reports of results of alterations of wetland habitat at receiving end of altered storm water discharge systems. Provided by implementor(s) of project. Summarized by monitor for incorporation in reports.
3. Monitoring of individual projects incorporates
 - a. establishment of baseline data,
 - b. routine water quality monitoring and agricultural pollutant monitoring as established in state and federal agencies,
 - c. designations of degraded water quality (i.e., not meeting or partially meeting designated use due to storm

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- water pollutant sources),
- d. parameters for assessment of storm water pollution effects,
- e. indicators of wetland condition, wetland vegetation enhancement, and
- f. ecological indicators such as chlorophyll biomass, phytoplankton composition, noxious algal blooms, nutrient levels, BOD, fish kills due to pesticide runoff, fish kills due to herbicide applications, water clarity.

Much routine baseline information exists, e.g., LDEQ Water Quality Inventory, various data sets analyzed for “Status and Trends of Eutrophication, Pathogen Contamination, and Toxic Substances in the Barataria-Terrebonne Estuarine System” (Rabalais et al. 1995), “Status and Trends of Hydrologic Modification, Sediment Availability and Habitat Loss/Modification in the Barataria-Terrebonne Estuarine System” (Reed, ed., 1995) and types of data in the EPA EMAP database, EMAP Wetlands database. Routine monitoring that might indicate the amount of storm water pollution affecting the system includes nutrients, pesticides in water, sediment loads, salts, fecal coliform levels, BOD, dissolved oxygen, insecticide- or herbicide-related fish kills. Other baseline information is missing, e.g., system-wide analysis of DO, nutrients, phytoplankton composition and biomass, benthic indicators, storm water discharge-source pollutants in water, sediment and biota, indicators of biotic integrity and ecosystem-level health.

Sample design and statistical methods

Plan Implementation - There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Project Success - Long-term data sets of routine water quality monitoring data that might indicate a change in water quality over time are applicable to nonparametric trend analysis techniques (e.g., modified Mann-Kendall tau tests and seasonal Kendall slope estimator tests; see Hirsch et al. 1982). Tests similar to those used in “Status and Trends of Eutrophication, Pathogen Contamination, and Toxic Substances in the Barataria-Terrebonne Estuarine System” (Rabalais et al. 1995) would be appropriate for the routinely collected water quality monitoring data. Within any single storm water management project, appropriate statistical techniques can be applied to test for differences in receiving water, wetland vegetation, etc. as a result of implementation of the project. Initiation, completion, and subsequent altered storm water disposal techniques will be implemented on a varying time schedule and not distributed uniformly throughout BTES. A system-wide analysis of effects is not appropriate.

Cost estimates

Estimate one-half person-month per year for monitoring all the aspects of Action Plan implementation and the cooperative efforts of each agency. Including salary, fringe, incidental costs, and indirect costs = \$4,000 for each year (no inflation). Modifications in monitoring plan (see below) should result in modifications of cost. Additional costs of monitoring storm water discharge studies will be borne by implementor and collaborating agencies.

Implementation of Monitoring

Monitor

Since BTMC is the proposed implementor for this Action Plan, an outside monitor not selected directly by BTMC is desirable. The combined work group of representatives of the cooperating agencies should agree to an outside monitor who will then be contracted by BTNEP. A monitor will prepare reports to be submitted to BTMC. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC.

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Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Assessment of cooperating agency contributions.
 - c. Description of educational programs.
 - d. Compilation of recipients of educational programs and their comments.
 - e. Compilation of storm water management projects initiated, completed, and in progress.
 - f. Compilation of results from storm water management projects.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about storm water pollution issues, educational and demonstration projects, water quality monitoring programs and databases, wetland ecology.
3. Application of standard formats for quarterly reports.

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4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.

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EM-13 Contaminated Sediment Data Base

OBJECTIVES

1. To create a GIS data layer which identifies the locations of known and probable sediment contamination which can be used as a resource to prevent redistribution of sediment borne contaminants to unimpacted areas within the BTES.

DESCRIPTION

This action will use information obtained from various sources to identify those areas within the BTES which have either been shown to contain contaminated sediments or, because of their proximity to toxin sources, have a high probability of being adversely impacted. It is intended that this data base will be incorporated as an additional layer on existing geographical information systems. Additionally, this data will provide to federal, state, and local agencies a resource which can be used to determine if toxin redistribution concerns are warranted when considering dredging requests. This action plan does not address, nor is it intended to change the various sediment screening procedures currently used by the various agencies responsible for assessing possible impacts.

BACKGROUND/MAJOR ISSUES

Sediment is contaminated with various organic compounds and trace elements at levels that are deleterious to marine ecosystems in several limited areas of the BTES. Sediment screening guidelines can be used to assess the potential for injury to aquatic resources. Effects Range - Low (ER-L) and Effects Range-Medium (ER-M) values can be interpreted as concentrations above which adverse biological effects begin (ER-L) and above which biological effects are most likely (ER-M). Generally, industrialized areas, such as the Harvey Canal and sections of Bayou Rigaud, show accumulations of metals and organic compounds in excess of ER-L and often exceed ER-M.

Proper precautions need to be followed when dredging contaminated sediments, particularly if these sediments are to be discharged into open water or used beneficially. Disturbance of contaminated sediment during dredging operations can result in remobilization of toxins and exacerbation of risks to public and environmental health and welfare. Knowledge of the nature and extent of contamination in industrialized areas is necessary to choose dredging methods and sediment disposal methods that minimize contaminant remobilization.

A particular concern is the build-up of polynuclear aromatic hydrocarbons (PAHs), radionuclides and/or metals in industrialized channels, harbors, and canals and in the vicinity of produced water outfalls. Sediment contamination adjacent to these sources has been detected in several locations within the BTES. Additionally, sediment sampling efforts as part of the Federal Water Pollution Control Act (Clean Water Act) section 404 permitting requirements have detected metals and organics in navigation canals within the estuary. For example, sediment samples recently analyzed from the Harvey Canal were contaminated at greater than three times ER-M levels for several PAHs.

BENEFITS

Ascertaining the severity of contamination and potential risk to the environment and its resources prior to the granting of permits is the most cost effective and environmentally sound approach to balancing the public's interest

Action Plan EM-13: Contaminated Sediment Data Base

in these matters. The intention is to ensure that sound environmental management practices are followed throughout dredging and disposal operations, particularly when associated with beneficial uses of dredged material for wetland creation or restoration.

Chemical analysis of sediment is often conducted pursuant to requirements of the Clean Water Act, Section 404 and the Marine Protection Research and Sanctuaries Act, Sections 102 and 103. Chemical analyses of sediments should be conducted at all locations where the potential for contamination exists. Appropriate coordination among the agencies having the expertise and responsibility to screen sediment contaminant data for potential adverse ecological effects will facilitate appropriate decisions on the placement and use of dredged material.

Important short- and long-term benefits of this action include: reduction of adverse impacts in the area affected by sediment contamination, minimization of contaminant redistribution, restoration of benthic communities in impacted areas, etc. Removal and proper containment of contaminated sediment from impacted areas should begin to restore public health and welfare and the environment in the portions of the BTES affected by sediment contamination. Furthermore, proper classification of sediment prior to dredging or disposal will facilitate beneficial use for marsh and barrier island restoration (see Action Plan *EM-4, Beneficial Use of Dredged and Non-Indigenous Material*), and identify any needs for further studies.

IMPLEMENTATION SCHEDULE

Generally, the agency infrastructure exists to screen sediment contamination data and provide appropriate recommendations for dredging and disposal alternatives. The Barataria-Terrebonne Management Conference (BTMC) can facilitate communication and cooperation among the various agencies almost immediately by creating a central repository for storing existing sediment contamination data which can be accessed (through its efforts as a coordinator) when dredging activities are contemplated.

Short-term plans (0-1 year) for this action include:

- S 1.00 Establish a work group comprised of the BTNEP data base project coordinator, LDEQ, LDNR, LDWF, USFWS, USACOE, EPA, AND NOAA to identify areas of known sediment contamination within the BTES. Existing GIS type data bases which indicate potential areas of significant concern should be utilized in this effort.
- S 2.00 The work group should also develop procedures for including areas which are discovered at later dates to contain sediment contaminants.

Medium-term plans (1-5 years) for this action include:

- M 1.00 Develop a GIS layer which shows the location of contaminated or potentially contaminated sediments.
- M 2.00 Store this data into the BTNEP Data Information System where it will be available for use by agencies, citizens, etc.
- M 3.00 Maintain data base.
- M 4.00 Publicize the existence of this data base resource in BTNEP newsletters, etc.

Long-term plans (5 years and beyond) for this action include:

- L 1.00 Maintain data base.
- L 2.00 Continue to inform the public and all potential users of this resource on access procedures.

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LEAD AND SUPPORT IMPLEMENTORS

The BTMC should assure that these objectives are met through its own coordination efforts with the regulatory and natural resource trustee agencies in this area. These agencies include: LDEQ, LDNR, LDWF, USFWS, USACOE, EPA and NOAA (NMFS and HAZMAT).

COSTS AND ECONOMIC CONSIDERATIONS

Table EM13-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table EM13-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|--|----------|-------------------|-------------------|--------------------------|---------------------------------------|
| EM-13 | | | | | \$3,877 | \$10,022 |
| EM-13S1.00 | <i>Establish work group to id sed. contamination areas</i> | | | | \$3,877 | \$0 |
| EM-13S1.01 | <i>work group</i> | BTPO-EQS | E | | \$485 | \$0 |
| EM-13S1.02 | <i>work group</i> | LDEQ | E | | \$485 | \$0 |
| EM-13S1.03 | <i>work group</i> | LDNR | E | | \$485 | \$0 |
| EM-13S1.04 | <i>work group</i> | LDWF | E | | \$485 | \$0 |
| EM-13S1.05 | <i>work group</i> | USFWS | E | | \$485 | \$0 |
| EM-13S1.06 | <i>work group</i> | USACOE | E | | \$485 | \$0 |
| EM-13S1.07 | <i>work group</i> | USEPA | E | | \$485 | \$0 |
| EM-13S1.08 | <i>work group</i> | NOAA | E | | \$485 | \$0 |
| EM-13S2.00 | <i>Develop procedures for inc. areas discovered later</i> | | E | EM-13S1.00 | | \$0 |
| EM-13M1.00 | <i>Develop GIS layer: location of contaminated sediments</i> | LDEQ | E | | | \$7,875 |
| EM-13M2.00 | <i>Store GIS layer in BTNEP Data Information System</i> | LDEQ | E | | | \$875 |
| EM-13M3.00 | <i>Maintain database</i> | LDEQ | E | | | \$1,212 |
| EM-13M4.00 | <i>Publicize database</i> | BTPO-EPS | E | | | \$61 |

Action Plan EM-13: Contaminated Sediment Data Base

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$45,600
Total Funding Existing (Years 1-5): \$45,600
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

EM-13 establishes a GIS data layer for locations of known and probable contaminated sediments in BTES.

Interrelationships Among Components

1. Locations of contaminated sediments are available in databases of LDEQ, LDNR, EPA, NOAA, USACOE, and academic institutions. Identification of contaminant 'hot spots' was included as part of "Status and Trends of Eutrophication, Pathogen Contamination, and Toxic Substances in the Barataria-Terrebonne Estuarine System" (Rabalais et al. 1995). GIS databases that would be appropriate for inclusion of the data layer are 1) the GIS developed in collaboration by LDNR and NBS/SSC, 2) the GIS for LDEQ water quality monitoring subsegments, and 3) the GIS for characterization of nonpoint source pollution (LSU, Remote Sensing and Image Processing Laboratory).
2. This Action Plan overlaps with the goals of EM-8 to develop a geographic database of nutrient, bacteria, and toxic contaminant sources (point and nonpoint), and EM-18 (Centralized Data Sets). There is a potential linkage with the database of petroleum and petroleum fluids spills to be developed under EM-9.
3. Agencies with needs for the information to be catalogued are LDEQ, LDNR, EPA, and USACOE, and the data base will serve as a resource for CWPPRA.
4. BTMC will 1) create a central repository for the sediment contaminant data, and 2) facilitate communication and cooperation among agencies with data and with needs for database. Funding source is not identified.

Documentation of Plan Implementation and Success

This Action Plan is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking of the timely implementation of the Action Plan and the eventual usefulness of the GIS data layer. As such, the monitoring is designed to determine whether such a database was developed, whether it provides accurate data, and whether it proves useful (i.e., resource managers use it). Specific examples of plan implementation time line landmarks for this Action Plan are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate.

1. Work group of cooperating agencies is formed, source of funding is identified and secured, a project team is

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- identified and responsibilities outlined, and a detailed time line for the project is established (months 0-2).
2. An appropriate existing GIS is identified to be supplemented with the data layer (months 3-4).
 3. Appropriate databases for the data layer are identified (months 5-7).
 4. Sources of information on probable contaminated sites are identified and assessed (months 5-7).
 5. Methods for updating data layer are developed (months 8-10).
 6. Appropriate databases for the geographic system are compiled and incorporated into a GIS (end of year 1).
 7. Reporting components of GIS data layer are developed (end of year 1).
 8. Develop plans for publicizing existence of database (end year 1).
 9. Relevant agencies (e.g., LNDR Coastal Restoration Division, LDEQ, USACOE, and EPA) are able to access and use the geographic database to determine locations and severity of contaminated sediments (years 2-10).
 10. Continue publicizing database (years 2-10).
 11. Continue updating database (years 2-10).
 12. Minimization of contaminant redistribution (i.e., knowledge of contaminated sediments redirected resource management decisions (years 2-10).

Methods

Measurable parameters

The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Personnel commitments to development of database.
2. GIS data layer is operable (after developmental phase).
3. Increased agency awareness of the database.
4. Increased agency usage of the database.
5. GIS data layer accessible to targeted users.
6. GIS data layer is user-friendly for multiple agency personnel.
7. Resource managers cite the use of the database and cite how the data were incorporated into resource management decisions.

Data collection methods

The monitor will contact the various agencies involved in the implementation of the plan and the eventual use of the database to gather data (examples below) that will be incorporated into a monitoring report:

1. Check-off system according to time line of project as landmark dates are encountered and project objectives are met.
2. Person-months of involvement of various agency personnel as documented by the implementor.
3. Tracking of data entry updates and modification.
4. List of users of GIS data layer as maintained by implementor, including:
 - a. computer time,
 - b. examples of output, and
 - c. comments made by users as to applicability of data to their specific needs.
5. Project monitor can access the GIS data layer and determine locations and severity of contaminated sediments.
6. Review of coastal restoration plans to determine whether the database was accessed and used.
7. Review of dredging plans to determine whether the database was accessed and used.

Sample design and statistical methods

There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Cost estimates

Estimate one person-month for year 1 and one-half person-month for years 2-10. Including salary, fringe, incidental costs, and indirect costs = \$8,000 for year 1, and \$4,000 for subsequent years (no inflation). Modifications in

Action Plan EM-13: Contaminated Sediment Data Base

monitoring plan (see below) should result in modifications of cost.

Implementation of Monitoring

Monitor

Since BTMC is the proposed implementor for this Action Plan, an outside monitor not selected directly by BTMC is desirable. The combined work group of representatives of the cooperating agencies should agree to an outside monitor who will then be contracted by BTNEP. A monitor will prepare reports to be submitted to BTMC.

Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Assessment of cooperating agency contributions.
 - c. Compilation of users and comments from users.
 - d. Description of publicity materials.
 - e. Assessment of accessibility, reliability, and usefulness of the GIS data layer.
 - f. Assessment of relevant agency use of data layer in resource management decisions.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of

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cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about contaminated sediment issues, databases, GISs, resource management agency decision processes.
3. Application of standard formats for quarterly reports.
4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.

**Action Plan EM-14:
Assessment of Toxic and Noxious
Phytoplankton Blooms**

EM-14 Assessment of Toxic and Noxious Phytoplankton Blooms

OBJECTIVES

1. To determine whether toxic and noxious phytoplankton in the BTES pose a threat to human health and the economic well-being of shellfish and fish industries.
2. To provide the information necessary for developing a monitoring program, if needed.

DESCRIPTION

This action will determine the need for a monitoring program of toxic and noxious phytoplankton for the purpose of protecting human health and avoiding economic losses in the BTES's shellfish and fishing industries. If it is determined that such a need exists, this action will lay the ground work for the program. Specifically, this plan will:

1. Survey phytoplankton and toxins in phytoplankton and shellfish in areas where blooms are likely to result. Since temporal and spatial variability are likely to be extreme, samples will be collected at a number of stations at frequent intervals for several years. Include among sampling sites areas where freshwater diversions are planned.
2. If harmful algal blooms are found to be a threat, develop a monitoring program. The purpose of a monitoring program would be to provide managers with warning of outbreaks, which they can use to take appropriate actions to prevent human illness and death and minimize economic consequences. Many coastal states with large shellfish industries have such monitoring programs. A monitoring program would also provide data on the environmental factors which trigger harmful algal blooms, leading to increased ability to predict blooms.
3. Identify phytoplankton associated with fish kills. During investigations of fish kills where the cause is not immediately apparent, low oxygen is a suspected cause, or discolored water is present, samples for identification of phytoplankton will be taken.
4. During routine field sampling in the BTES conducted by Louisiana State agencies, if discolored water is encountered, samples will be collected for identification of the causative agent.

BACKGROUND/MAJOR ISSUES

Toxic and noxious phytoplankton can cause human illness and death from consumption of contaminated shellfish or fish with concomitant economic losses to fishermen. They can also cause death, poor growth, or recruitment failures in commercially important fish and shellfish. Finally, they can cause severe water quality problems by discoloring water and/or producing foul odors. Incidences of these blooms are increasing world wide, due to increasing coastal eutrophication. Although there has not been a serious problem with toxic and noxious phytoplankton in the BTES, recent studies have shown, based on a very limited data set, that a variety of toxic and noxious species are present, sometimes in high concentrations. Further, much higher numbers and a greater variety of species are present on the shelf in close proximity to the BTES. The most serious threats are from species causing Amnesic Shellfish Poisoning, Diarrhetic Shellfish Poisoning, and fish kills. Since blooms increase with increasing eutrophication and the area is already highly eutrophic, if nutrient inputs to the BTES are increased the likelihood of toxic and noxious algal blooms may increase. The data from the BTES are too limited to assess the real risk because the sites sampled

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were not ones where blooms would develop because the residence times are low, and also because no toxin analyses have been conducted on either phytoplankton or shellfish.

BENEFITS

The short-term benefit of this action is that it will allow an accurate assessment of the level of threat to human health, fish and shellfish industries, and ecosystem health currently posed by toxic and noxious phytoplankton. In the long-term, this action will provide basis for designing an appropriate monitoring and management program, if needed. It will also provide data leading to the prediction of harmful blooms. Finally, it will provide a basis for assessing the impact of freshwater diversions, which may increase nutrient inputs, and, thus, toxic and noxious algal blooms in the BTES.

IMPLEMENTATION SCHEDULE

Several recent studies have been conducted which relate to this action. The BTNEP recently sponsored a study of the status and trends of eutrophication, pathogen contamination and toxic substances in the BTES. This study, however, was based on very limited data. Scientists at the Louisiana Universities Marine Consortium (LUMCON) and Nicholls State University are continuing to sample for phytoplankton on Bayou Little Caillou and are collaborating with representatives from the Food and Drug Administration and the National Marine Fisheries Service on toxin analysis in phytoplankton and oysters, but the small area sampled is not representative of the BTES.

Short-term plans are:

- S 1.00 The development of funding to conduct surveys of toxic and noxious phytoplankton and toxins in shellfish in areas where problems are likely to develop. Particular attention may need to be devoted to areas likely to be impacted by fresh water diversion.
- S 2.00 Personnel in state agencies conducting routine sampling or investigating fish kills will be trained how to sample and identify toxic and noxious phytoplankton.

Medium-term planning includes:

- S 1.00 Conducting surveys, compiling data from surveys, routine agency sampling, and fish kill investigations in order to assess the need for a monitoring program.
- S 2.00 Developing a monitoring and management program, if needed.

Long-term planning calls for the implementation of monitoring and management programs and the development of models for predicting blooms.

LEAD AND SUPPORT IMPLEMENTORS

The Louisiana Departments of Health and Hospitals, Environmental Quality and Wildlife and Fisheries each have the expertise and facilities to perform as lead implementor. One of these agencies should take the lead on this action, with the others acting in supporting roles. Additional support can be provided by the Environmental Protection Agency, the Food and Drug Administration, and the National Oceanic and Atmospheric Administration.

COSTS AND ECONOMIC CONSIDERATIONS

**Action Plan EM-14:
Assessment of Toxic and Noxious
Phytoplankton Blooms**

Table EM14-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table EM14-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|---|-------------|---------------------------|--------------------|----------------------------------|--|
| EM-14 | | | | | \$20,500 | \$82,875 |
| EM-14S1.00 | <i>Survey Funding Devel.</i> | LDEQ | N | | \$10,500 | \$0 |
| EM-14S2.00 | <i>Training</i> | | | | \$10,000 | \$0 |
| EM-14S2.01 | <i>training</i> | LDEQ | N: no estimate | | | |
| EM-14S2.02 | <i>training</i> | LDWF | N: no estimate | | | |
| EM-14S2.04 | <i>workshop production</i> | LDEQ | N: no estimate | | \$10,000 | \$0 |
| EM-14S2.05 | <i>workshop</i> | LDEQ | N: no estimate | | | |
| EM-14S2.06 | <i>workshop</i> | LDWF | N: no estimate | | | |
| EM-14M1.00 | <i>Surveys, analysis, sampling, investigations, etc.</i> | | | | | \$82,875 |
| EM-14M1.01 | <i>surveys, data compilation</i> | LDEQ | N | | | \$75,000 |
| EM-14M1.02 | <i>sampling</i> | | N | EM-14S 2.00 | | \$0 |
| EM-14M1.03 | <i>investigations</i> | LDEQ | N | | | \$7,875 |
| EM14M2.00 | <i>Develop monitoring and management program, if needed</i> | | N: no estimate | | | |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$352,000
 Total Funding Existing (Years 1-5): \$0
 Total New Funding Necessary (Years 1-5): \$352,000

Table EM14-2. Summary of New Funding Sources.

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| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|--|--|--|--|
| LDEQ | \$20,500 USDA National Research Initiative; license plate revenue | \$96,500 USDA National Research Initiative; license plate revenue | \$78,500 USDA National Research Initiative; license plate revenue | \$78,500 USDA National Research Initiative; license plate revenue | \$78,500 USDA National Research Initiative; license plate revenue |

Summary of new funding strategy: The National Research Initiative provides grants for research directed at underlying processes affecting the sustained productivity and well-being of ecosystems. More specifically, proposals for projects pertaining to plant/water contaminant interaction may be submitted. Any shortfall in funding can be made up with revenue from the environmental license plate issue.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

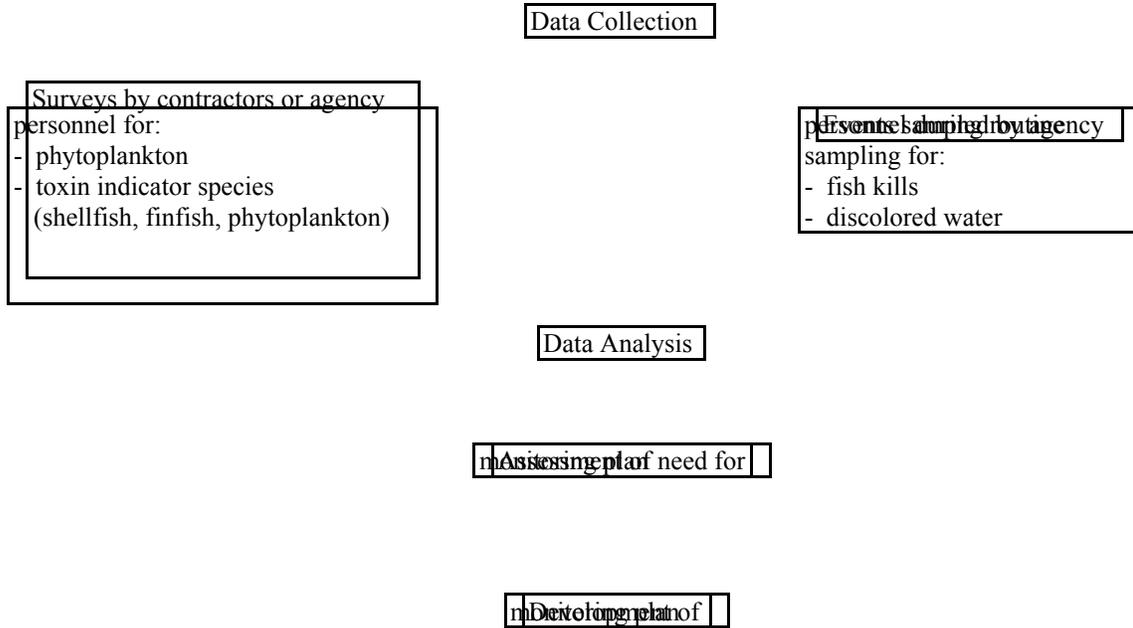
EM-14 will establish the need (or lack of need) for a monitoring program of toxic and noxious phytoplankton. The survey component will determine temporal and spatial distribution of toxic and noxious phytoplankton and toxins in indicator species, at stations throughout BTES where such conditions are likely to occur, as well as sites of planned freshwater diversions. Another aspect of the plan will be to identify phytoplankton associated with events such as fish kills and discolored waters. If harmful algal blooms are found to be a threat, a monitoring program will be developed that incorporates the methodology developed during the data collection phase.

Interrelationships Among Components

1. Information concerning toxic and noxious phytoplankton distributions in BTES were summarized in "Status and Trends of Eutrophication, Pathogen Contamination, and Toxic Substances in the Barataria-Terrebonne Estuarine System" (Rabalais et al. 1995). Scientists at academic institutions have ongoing studies of limited scope to determine distributions of relevant phytoplankton, toxic potentials, and risks to natural resources and human health.
2. Agencies with need for the information generated from the initial survey project and a monitoring program (if developed) are LDHH, LDEQ, FDA, LDWF, NMFS, USACOE, and EPA, and the database will serve as a resource for CWPPRA. Many coastal states with extensive shellfish resources have such monitoring programs. Plans for a centralized database should be formulated and implemented.
3. Agencies with expertise and facilities to serve as lead implementor are LDEQ, LDHH, and LDWF. Funding must be incorporated into existing agency activities to accommodate surveys for toxic phytoplankton and toxins

Action Plan EM-14: Assessment of Toxic and Noxious Phytoplankton Blooms

in indicator species and for data collected in response to fish kills caused by toxic algae or water discoloration events. Costs associated with monitoring freshwater diversion projects should be incorporated into those programs.



Documentation of Plan Implementation and Success

This Action Plan is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking of the timely implementation of the Action Plan, the acquisition of relevant data, and the eventual usefulness of data in determining the need for and the requirements of a monitoring program. As such, the Action Plan monitoring is designed to determine whether a survey project is implemented, whether a component is developed for investigating events, whether the sampling provides accurate data, and whether the accumulated data prove useful (i.e., used to develop a monitoring program). Specific examples of project success are proposed below. They can be expanded or modified, should be reviewed periodically, and should be amended as appropriate. A time line developed jointly by the funding agency and the implementor(s) will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of several agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

1. Implementor is identified (months 0-1).
2. Work group of cooperating agencies is formed, sources of funding are identified and secured, project team is identified and responsibilities outlined, and detailed time line for the project is established (months 0-3).
3. Funding is secured within agencies to accommodate phytoplankton surveys and identifications and events sampling (months 3-4).
4. Survey information needs, basin-wide for BTES, are developed that need to be incorporated into state programs

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(months 5-6).

5. Plans for event sampling are developed for incorporation into state monitoring programs (months 5-6).
6. Plans for a centralized database are formulated (including implementor and cooperating agencies), funding secured, and implemented (end of year 1).
7. Appropriate surveys are incorporated into state agency monitoring programs, including training in collection and identification (end of year 2).
8. Event sampling is incorporated into routine water sampling by relevant agency personnel (end of year 2)
9. Appropriate surveys are incorporated into freshwater diversion project plans, implement (relevant years of those projects).
10. Surveys are conducted, data are collected and synthesized (years 2-10).
11. Data reliability is assessed (years 2-10).
12. Assessment of potential risks to natural resources and human health is conducted (years 2-9).
13. Assessment of need for a permanent monitoring program for harmful algal blooms is made. [Time frame: If properly implemented a 3-5 year time frame is adequate to identify areas of chronic problems. A 10-year time frame would be necessary to identify many sporadic phenomena (e.g. *Gymnodinium sanguineum* bloom off the southwestern Louisiana coast in June 1984 and June 1994)].
14. Long-term phytoplankton monitoring program is developed based on preliminary project results, funding secured, program implemented (time frame: same as above).
15. Models for predicting blooms are developed based on project results (time frame: same as above).

Methods

Measurable parameters

The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Toxic and noxious phytoplankton survey program is operable (after developmental phase).
2. Methodology for monitoring toxins in indicator species is developed and implemented.
3. Centralized database is formulated and implemented.
4. Increased personnel devoted to toxic phytoplankton surveys.
5. Increased personnel devoted to event sampling.
6. Increased personnel knowledgeable of phytoplankton taxonomy and methods for toxin indicators.
7. Centralized database is accessible and usable for determining locations and severity of harmful algal blooms.
8. Results from survey project are useful in determining the need for a long-term monitoring program.

Data collection methods

The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring report:

1. Check-off system according to time line of project as landmark dates are encountered and project objectives are met.
2. Lists of cooperating agencies and their activities.
3. Compilation of cooperating agencies time commitments to monitoring project.
4. Lists of toxic and noxious phytoplankton species encountered in surveys.
5. Enumeration of phytoplankton species associated with fish kill or discolored water events.
6. Enumeration of toxin test results from indicator species.
7. Assessments of data collections made by cooperating agencies.
8. Descriptions of natural resource and health risks associated with reports of toxic and noxious algal blooms.
9. List of users of centralized harmful algae database, including data product and comments made by users as to applicability of data to their specific needs.

Sample design and statistical methods

Action Plan EM-14: Assessment of Toxic and Noxious Phytoplankton Blooms

There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Cost estimates

Estimate one person-month per year. Including salary, fringe, incidental costs, and indirect costs = \$8,000 for year

1. Modifications in monitoring plan (see below) should result in modifications of cost.

Implementation of Monitoring

Monitor

Since implementor is not identified, but likely to be a state agency, a monitor selected by BTMC would be appropriate. Should BTMC become the implementor, an outside monitor not selected directly by BTMC is desirable. The combined work group of representatives of the cooperating agencies should agree to an outside monitor who will then be contracted by BTNEP. Although individuals involved in the implementation of the Action Plan may prefer a team member to monitor the project, usually a Third Party offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Compilation/assessment of cooperating agency time commitments and activities.
 - c. Assessment of data collected during the surveys, toxin studies, and event sampling.
 - d. Summaries of distribution of toxic species and toxin levels in indicator species.
 - e. Descriptions of risks to natural resources and human health.
 - f. Assessment of accessibility, reliability, and usefulness of the data collected.
 - g. Summary of analysis of data for determination of need for long-term phytoplankton survey program.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.

Review of monitoring reports

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The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.
 - a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about toxic and noxious phytoplankton.
3. Application of standard formats for quarterly reports.
4. Maintenance of a quarterly schedule.
5. Consistent and timely review of monitoring reports by BTMC.

**Action Plan EM-15:
Protection of Habitat for Migratory
and Resident Birds**

EM-15 Protection of Habitat for Migratory and Resident Birds

OBJECTIVES

1. To build a framework that encourages landowners to manage their land in a way that maximizes its suitability as habitat for migratory and resident birds.

DESCRIPTION

This action will devise a means for identifying important habitat and for restoring degraded habitat so that it can be available for birds. Once habitats have been identified, a framework for preserving and restoring them will be designed, and a program implemented that allows interagency cooperation among government entities to ensure that public agencies do not work at cross purposes, and that private individuals and corporations can voluntarily contribute to the effort by following the guidelines established. The actions with the broadest application for birds will be accomplished through freshwater and sediment diversions (Action Plan *EM-2*), hydrologic restoration (*EM-5*) and the preservation and restoration of barrier islands (*EM-1*). In addition to those fundamental basin-wide changes, however, smaller, specific actions can be taken which will enhance habitat for migratory and resident birds:

1. *Maintain large, unbroken tracts of forest and scrub communities.* The BTES still possesses large tracts of baldcypress-water tupelo swamp forest, most of it in private ownership. Most of the bottomland hardwood forests which once grew on the natural levees, on the other hand, are now gone, converted for agricultural, industrial or urban development. Threats to the remaining forests include subsidence, saltwater intrusion, and draining and clearing for development or agriculture, and in some cases, logging. More subtle threats include fragmentation by road building, canal dredging, levee building and clearing of pipeline and utility rights-of-way. While wholesale clearing of forests will render them uninhabitable for forest birds, fragmentation can also have a pernicious effect, by introducing avenues for the ingress of nest predators like crows and jays, and nest parasites like cowbirds. Some species of interior forest nesting birds can suffer serious declines in productivity in fragmented forests. Indeed, some forest fragments are so heavily subjected to nest parasitism and predation, that they actually become population sinks, contributing no new birds to the system, and requiring a continual recruitment of new breeding age birds from outside the fragment in order to maintain a population presence.

In addition to the importance of maintaining large unbroken tracts of forest for breeding birds, these forests are also very important staging areas for trans-gulf migrants. Gigantic concentrations of migrants accumulate in these woodlands under certain weather circumstances in the fall. In the spring, again under certain difficult weather conditions, a significant proportion of the daily trans-gulf flight, involving tens of thousands of individual birds, has been shown by radar studies to utilize these forests as a resting and feeding stop after crossing the gulf. But even small remnant woodlands, spoil banks, and narrow strips along natural levees near the coast, can provide critical resting and feeding areas for migrants that encounter adverse weather.

2. *Maintain and enhance barrier islands and beaches for use by migrants.* Nesting colonies of pelicans, terns, skimmers and other species on public land should continue to be posted, and, if necessary in heavy public use areas, fenced. This program should be expanded on public land, and agreements with private landowners should be sought to allow such posting on private property during the nesting season. Vehicular access to beaches should be prohibited or restricted. Where vehicles are allowed, they should be confined to identified "roads," and all vehicles kept off dunes, sandbars, spits and overwash fans. Even where no large nesting

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colonies are visible, Wilson's Plovers and Willets may nest, and Piping and Snowy plovers, as well as other shorebirds, may winter or use these areas during migration. Restricting vehicles will not only protect birds, it will protect the very structure of the barrier beaches and islands themselves.

Existing forest and scrub communities should be rigorously protected on barrier islands. Again, this is necessary not only for Neotropical migrants which depend upon these woodlands before or after the trans-gulf flight, but for maintaining the structural integrity of these crucial barriers that protect the seaward face of the estuaries. The existing chenier woodlands on Grand Isle and west of Chenier Caminada, and swamp and natural levee woods near the coast in lower Plaquemines, Lafourche and Terrebonne parishes, should be preserved through outright purchase, easements, or voluntary measures. Local governments, residents and camp owners in the two communities, and other communities near the coast, should be encouraged to plant trees and shrubs, primarily natives, rather than invasive exotics, by educating them about the benefits not only to trans-gulf migrants, but also to their property and their community in the event of a storm. The former chenier woodland on Grand Terre should be restored by removing or restricting the movements of goats and cows on the island. Barrier island restoration projects planned for the future should include provisions for birds. This should include creation of tidal mudflats, spits, and overwash fans, planting or encouragement of mangroves on the backs of islands for nesting of species requiring woody growth, bare shell flats for species requiring such habitat for nesting, and where practical, the establishment of higher ground behind the beach dune for the establishment of chenier scrub and woodland vegetation. The continued loss of the barrier island beach and intertidal habitat in the BTES would have grave consequences for many migratory shorebirds; islands such as Grand Terre provide stopover habitat for significant numbers of Whimbrels, Semipalmated Plovers, Red Knots, and Dunlin, among other species.

3. *Educate the public, both residents and users, about the ecotourism potential of birds and birders.* The BTES is an area of bird diversity and density comparable to the finest ecotourism destinations in the country, but its potential has been little tapped. Bird-oriented ecotourism has made a major economic impact on the Everglades, the Florida Keys, southeast Arizona, the lower Rio Grande Valley, and the upper Texas coast. The BTES is a natural destination for birders and other ecotourists, and has the advantage of being near a major tourist destination, New Orleans, and of containing other tourist attractions, like world-class fishing, historic plantations and the various cultural attributes of Acadiana. Already, Grand Isle and Fourchon attract hundreds, if not thousands of user days per year by mostly regional birders, but its potential is much greater. However, Grand Isle's greatest attraction, its tiny remnant chenier woods, enjoys no protection, and could be destroyed in a single day by a developer's bulldozer. Another major attraction, not only for birders but for casual nature tourists as well, are the estuary's vast flocks of colorful waders, from the abundant Snowy Egrets to the increasingly common Roseate Spoonbill. With the exception of the managed marshes along Fourchon Road, there are few places where the casual visitor has an opportunity to view this spectacle. Already, hunting of waterfowl and gamebirds provides important economic stimulus to the area's economy, but the continued availability of this resource to residents, and the continued growth of the industry, will require concerted effort.

Some other specific actions could include:

1. Provide tax incentives for landowners to maintain forests.
2. Encourage sustained-yield management practices where logging takes place.
3. Locate future utility and pipeline corridors in or immediately adjacent to existing corridors.
4. Maximize the potential of existing spoil banks to be utilized as stopover habitat. This is especially important in the near coastal areas, and might include planting trees such as Live Oak, Hackberry and Prickly Ash in saline

Action Plan EM-15: Protection of Habitat for Migratory and Resident Birds

- areas and the suppression, especially in freshwater areas, of Chinese Tallowtree monocultures.
5. Protect forested wetlands threatened directly or indirectly by publicly financed flood protection levee projects.
 6. Encourage future oil and gas exploration to take place from existing canals and access roads.
 7. Encourage maintenance of roadsides, levees, and utility corridors in other than a mowed grass condition. Brown-headed Cowbirds, perhaps the most serious threat to the productivity of many nesting Neotropical migrants, require short grass areas to feed, and have used mowed corridors to gain ingress deep into otherwise inhospitable forests, well outside their historic range on the Great Plains. The introduced European Starling, identified as the cause of decline in many cavity nesting species, is similarly dependent upon mowed grass as foraging habitat, and is absent from areas of unbroken native habitat in the BTES.
 8. Post tern, gull, heron, egret, and ibis rookeries and initiate a public education effort emphasizing the importance of these rookeries to the world population of many of these species.
 9. Continue to emphasize the several ongoing initiatives among private, state, and federal entities to protect and enhance habitat for ducks and geese.

BACKGROUND/MAJOR ISSUES

A body of scientific evidence has been accumulated over the last decade which indicates long-term declines in the populations of many species of birds. Species groups affected range from Neotropical migrant songbirds, to forest and marsh dependant residents, to Arctic nesting shorebirds and prairie nesting waterfowl. The causes of these declines are, of course, various, complex, and in many cases not completely understood. However, a common theme linking these various species is that they have suffered serious loss of habitat necessary to sustain them at some stage of the life cycle. Essential habitat for birds in the BTES is provided in three ways:

1. As wintering grounds for residents and species that breed to the north and migrate south along the Mississippi flyway to winter on the northern Gulf Coast. Included are huge concentrations of most species of dabbling duck, many diving ducks, White Pelicans, rails, shorebirds including the endangered Piping Plover, hawks including the endangered Peregrine Falcon, and songbirds including Tree Swallow, Yellow-rumped Warbler, and Swamp Sparrow, species which reach peak overwintering densities in the BTES. Approximately 190 species winter regularly in the estuary, including 130 species which migrate from the north and about 60 resident species.
2. As breeding grounds for residents and for species that winter in the tropics but return to the northern Gulf Coast each spring. The BTES provides important warm season habitat for Neotropical migrants including several species of heron and egret, shorebirds including Wilson's Plover and Black-necked Stilt, marsh birds including Least Bittern and Purple Gallinule, and birds that breed in forested wetlands including Mississippi Kite, Prothonotary Warbler, and Painted Bunting. Another migratory species that utilizes the BTES, Southern Bald Eagle, reverses the process, breeding in winter and dispersing to the north in the summer. The BTES is the most important area on the northern Gulf Coast for this recovering, formerly endangered population. About 100 species, including 40 species of Neotropical migrant, regularly breed in the BTES.
3. As stopover habitat in spring and fall for birds migrating across the Gulf of Mexico on their way between the tropics and North America. Stopover habitats include barrier beaches, tidal mudflats, marsh ponds, and woodlands ranging from coastal cheniers to the swamps and natural levees of the upper estuary. A significant portion of North America's breeding birds winter in the Neotropics. Many fly south each fall funneling along the Mississippi River and staging in the BTES, building up fat reserves to sustain them on the arduous 550-mile flight across the Gulf of Mexico. For birds returning across the Gulf in spring, the BTES can be a critical refueling stop, especially if adverse weather is encountered during the trans-gulf flight. Of the 90 species of Neotropical migrants which regularly utilize the estuary, 40 species remain to breed, while the remaining 50

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species utilize the BTES as transient migrants in fall and spring. The total number of birds moving through the BTES during migration is in the millions, with densities of 25,000-85,000 individual birds per mile of coastline arriving daily during peak spring flights.

Each of the BTES's habitats, natural levees, swamps, freshwater marshes, saline marshes, and barrier islands and beaches hosts characteristic resident species. Among the 60 or so resident species are the Brown Pelican, Louisiana's state bird. Brown Pelicans were virtually extirpated from Louisiana after World War II due to bio-accumulation of pesticides and the resultant reproductive failure of the Louisiana population. The banning of certain pesticides followed by the reintroduction of pelicans from Florida, coupled with aggressive management and protection by the Louisiana Department of Wildlife and Fisheries and the U.S. Fish and Wildlife Service, has led to a tremendous rebound of the Louisiana population. Nevertheless, most, if not all of the genetic diversity of the Louisiana population was lost when the population crashed. The BTES remains a stronghold and a repository of genetic diversity for other species now showing declines in other parts of their range such as White Ibis, Mottled Duck, Royal Tern, Red-shouldered Hawk, Loggerhead Shrike and Seaside Sparrow.

BENEFITS

One of the Programmatic Goals of the BTNEP is to "realistically support diverse, natural biological communities." Actions deriving from this goal are intended to "identify, manage, and preserve vulnerable habitat to sustain biodiversity." A second goal is to "preserve and restore wetlands and barrier islands." A third is to "promote environmentally responsible economic activities that sustain estuarine resources." All of these goals are addressed by this action. The long-term benefits of this plan include the following:

1. Preservation of BTES habitat. This will not only protect migratory and resident birds, but interdependent biological communities as well.
2. Protection of a nationally important resource. Few areas of the continent are as important to migratory and resident birds as the BTES. The continued deterioration of critical habitat could have devastating long-term consequences, especially for wintering waterfowl, pelicans, wading birds, nesting terns and trans-gulf migrants.
3. Protection of an important cultural resource. Part of the region's cultural identity is tied to the maintenance of natural habitats, and the living resources that depend upon them, from the vast flocks of waders that grace the region, to the ducks that are hunted and eaten.
4. Protection of an important economic resource. Ecotourism already plays an important role in the region, especially for hunting, fishing and sightseeing, but the potential exists for much greater utilization by those interested in wildlife viewing, especially of birds.

IMPLEMENTATION SCHEDULE

The Louisiana Department of Wildlife and Fisheries (LDWF) monitors eagle nests, tern colonies and heronries. The Louisiana Nature Conservancy is conducting an ongoing Monitoring Avian Productivity and Survivorship (MAPS) project. It is helping to sponsor a Breeding Bird Atlas project, and BTNEP is funding researchers to complete the atlas program in the more inaccessible areas of the BTES. The National Biological Service (NBS) is conducting research along the Gulf Coast concerning habitat utilization by migrants, as are researchers at LSU, the University of Southern Mississippi and Clemson. Jean Lafitte National Historical Park and Reserve is sponsoring research on habitat utilization by Neotropical migrants in the Barataria Preserve, setting up point count censuses for breeding birds, and landscape studies of habitat fragment utilization in the area of the preserve. The Gulf Coast Bird Observatory (GCBO) Network, an outgrowth of the Gulf Coast Conservation Initiative of the Nature Conservancy, in partnership with local Audubon Societies, the U. S. Fish and Wildlife Service (USFWS), the National Fish and Wildlife Foundation, private companies, state agencies, and Partners in Flight, is spearheading efforts to preserve

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critical coastal stopover habitat in the Chenier Plain and has plans to expand that effort into the delta region. Under separate contract with BTNEP, it is developing a detailed monitoring plan for Neotropical migratory birds in the estuary. The North American Waterfowl Management Plan, Gulf Coast Joint Venture, Mississippi River Coastal Wetlands Initiative, is an effort coordinated by the USFWS to preserve and enhance waterfowl habitat.

Short-term plans (0-1 year) are as follows:

- S 1.00 Facilitate creation of a partnership between estuary user groups (bird clubs, Audubon chapters) and the Gulf Coast Bird Observatory (BTMC; 1995).
- S 2.00 Include migrant bird information as part of the BTMC's education and outreach programs and literature (BTMC, SRCIA; 1995).
- S 3.00 Incorporate planning for habitat improvement in barrier island restoration projects (CWPPRA Task Force; 1995).
- S 4.00 Complete Breeding Bird Atlas and MAPS (Natural Heritage Program, Louisiana Nature Conservancy; 1996).
- S 5.00 Develop a long term monitoring strategy for breeding birds within the BTES. (GCBO, 1996)

Medium-term plans (1-5 years) include the following:

- M 1.00 Prioritize critical stopover chenier and coastal woodlands for suitability as refugia and degree of threat (NHP, LNC, USFWS; complete by December 1996).
- M 2.00 Acquire or enter into voluntary agreements (such as the Wetland Conservation Act Program) with landowners for the protection and enhancement of stopover habitat, especially chenier and coastal woodlands (GCBO, LNC, NHP, USFWS, NRCS; begin in January 1996).
- M 3.00 Continue to build CWPPRA and other coastal restoration projects, especially on barrier islands, with design modifications incorporated for the needs of birds (CWPPRA Task Force, LDNR; ongoing).
- M 4.00 Work with LDOTD, parish governments, local levee districts, and utility companies to modify greenspace maintenance, to de-emphasize short mowing cycles and the use of herbicides and emphasize the use of longer mowing cycles, wildflowers, and other alternative maintenance (BTMC, NHP, LGC; ongoing).
- M 5.00 Conduct public education campaigns, preferably using local volunteers, in coastal communities about the importance of trees and shrubs to migrants, and about the potential for ecotourism (BTMC; 1996, ongoing).
- M 6.00 Work with regulatory agencies so that they will modify permits in such a way as to reduce the continued fragmentation of existing forests (BTMC, USFWS, USACOE, EPA, LDNR; ongoing).
- M 7.00 Design an ecotourism package outlining destinations for birders, utilizing Grand Isle and Bayou Segnette State Parks, the Barataria Preserve of Jean Lafitte National Historical Park and Preserve, Fourchon pond and beach, Wisner Wildlife Management Area, private areas such as Elmer's Island, etc., that are made available for tourists. Coordinate these efforts with the state sponsored effort to join the Watchable Wildlife Program (LDCRT, LDWF; 1997).
- M 8.00 Post nesting colonies of colonial seabirds and wading birds (NHP, volunteers; 1996).

Long-term plans (5-10 years) are as follows:

- L 1.00 Once habitat has been secured and protected in coastal communities such as Grand Isle, implement a national awareness campaign for birders, encouraging tourism (LDCRT; 2000).
- L 2.00 Protect and monitor the long-term health of nesting colonies (LDWF; ongoing).
- L 3.00 Encourage the continued development of ecotourism in the BTES, and educate landowners about the income potential of managing their land for ecotourists (LDCRT; ongoing).
- L 4.00 Repeat Breeding Bird Atlas project and other one-time monitoring efforts to determine the success of the

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action plan (NHP; every ten years).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action will be the Louisiana Department of Wildlife and Fisheries (LDWF), including the Refuge Division and the Natural Heritage Program. Support implementors will include the Barataria-Terrebonne Management Conference (BTMC), the U.S. Fish and Wildlife Service (USFWS), the National Biological Service (NBS), the Louisiana Department of Natural Resources (LDNR), the U.S. Army Corps of Engineers (USACOE), the Natural Resources Conservation Service (NRCS), the CWPPRA Task Force, local and parish governments, levee districts, the Louisiana Department of Transportation and Development (LDOTD), the Louisiana Department of Culture, Recreation and Tourism (LDCRT), the Louisiana Nature Conservancy, the Louisiana Forestry Association, private and corporate landowners, Partners in Flight, the Gulf Coast Bird Observatory (GCBO), the Louisiana Ornithological Society (LOS), the Terrebonne Bird Club, the Crescent Bird Club, public landowning agencies such as Louisiana State Parks, the National Park Service (USNPS), the Audubon Institute, the Wisner Foundation, universities, port commissions, and oil, pipeline and utility companies.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM15-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------|---|----------|----------------|-----------------|-----------------------|---------------------------------|
| EM-15 | | | | | \$11,038 | \$5,385 |
| EM-15S1.00 | <i>partnership creation: estuary user groups and GCBO</i> | BTPO-EQS | E | | \$323 | \$0 |
| EM-15S2.00 | <i>education/outreach</i> | BTPO-EQS | E | | \$485 | \$0 |
| EM-15S3.00 | <i>habitat improvement plans</i> | CWPPRA | E | | \$1,615 | \$0 |
| EM-15S4.00 | <i>Breeding Bird Atlas & MAPS</i> | private | E | | | \$0 |
| EM-15S5.00 | <i>monitoring strategy</i> | GCBO | E | | \$7,000 | \$0 |
| EM-15M1.00 | <i>prioritize critical habitat</i> | BTMC | E | | \$1,615 | \$0 |
| EM15-M2.00 | <i>protection of critical habitat</i> | private | N | | | \$0 |
| EM-15M3.00 | <i>continue CWPPRA projects</i> | | | EM-5 | | \$0 |
| EM-15M4.00 | <i>greenspace maintenance</i> | | | | | \$1,010 |
| EM-15M4.01 | <i>research; recommendations</i> | BTPO-EQS | E | | | \$202 |
| EM-15M4.02 | <i>workshop</i> | BTPO-EQS | E | | | \$81 |
| EM-15M4.03 | <i>workshop</i> | LDOTD | E | | | \$81 |
| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
| EM-15M4.04 | <i>workshop</i> | Parish | E | Cost PER Parish | \$81 | |

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| | | Govt. | | | | |
|------------|-----------------------------------|---------------------|---|--|--|---------|
| EM-15M4.05 | <i>workshop</i> | Levee Districts (7) | E | | | \$565 |
| EM-15M5.00 | <i>public education</i> | BTPO- EPS | E | | | \$81 |
| EM-15M6.00 | <i>permit modification</i> | | | | | \$606 |
| EM-15M6.01 | <i>meeting to modify permits</i> | BTPO- EPS | E | | | \$121 |
| EM-15M6.02 | <i>meeting to modify permits</i> | USACOE- NO | E | | | \$121 |
| EM-15M6.03 | <i>meeting to modify permits</i> | LDNR | E | | | \$121 |
| EM-15M6.04 | <i>meeting to modify permits</i> | LDEQ | E | | | \$121 |
| EM-15M6.05 | <i>meeting to modify permits</i> | USEPA | E | | | \$121 |
| EM-15M7.00 | <i>design ecotourism package</i> | | | | | \$3,688 |
| EM-15M7.01 | <i>Design ecotourism package</i> | LDCRT | E | | | \$1,750 |
| EM-15M7.02 | <i>Design ecotourism package</i> | BTPO- EPS | E | | | \$1,938 |
| EM-15M8.00 | <i>post bird nesting colonies</i> | volunteers | | | | \$0 |

Table EM15-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$32,600
 Total Funding Existing (Years 1-5): \$32,600
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace

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project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Maintain large, unbroken tracts of forest and scrub communities.
2. Maintain and enhance barrier islands and beaches for use by migrants.
 - a. Restrict access.
 - b. Purchase important tracts.
3. Educate the public about ecotourism potential of birds and birders.

N.B. The development of Monitoring Strategies for Neotropical Migrants and Shorebirds is being handled by a separate BTNEP contract. This monitoring strategy will not address the status of these groups specifically.

Interrelationships Among Components

Habitat enhancement can benefit from implementation of Action Plans for Hydrologic Restoration (EM-1), Freshwater and Sediment Diversion (EM-2) and Preservation and Restoration of Barrier Islands (EM-5). Public education and landowner co-operation is critical for effectiveness of all components.

Documentation of Plan Implementation and Effectiveness

Plan implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. BTMC acts to create partnership between user groups and GCBO.
2. BTMC produces outreach literature concerning migratory and resident birds.
3. CWPPRA sponsored barrier island projects include consideration of bird habitat.
4. LNC completes Breeding Bird Atlas and MAPS.
5. GCBO develops long term monitoring strategy for breeding birds.
6. LNC and USFWS develop priority list of critical stopover habitat in chenier and coastal woodlands.
7. GCBO, LNC, USFWS and NRCS enter into voluntary agreements with landowners to protect and enhance critical stopover, nesting and wintering habitat.
8. CWPPRA projects are implemented with design modifications to incorporate needs of birds.
9. Green space maintenance programs of LDOTD, utility companies and local government agencies are modified to reduce short mowing cycles in favor of alternative strategies more favorable to nesting Neotropical Migrants.
10. Use volunteers to educate public about migratory bird habitat and ecotourism.
11. Regulatory agencies request modifications to reduce fragmentation of existing forests.
12. LDCRT and LDWF develop ecotourism package.
13. Nesting colonies of colonial seabirds and wading birds are posted annually.

Project effectiveness

For monitoring purposes, efforts will focus on the following groups of birds: Neotropical Migrants (developed under separate contract), Shorebirds (developed under separate contract), colonial nesting birds, wading birds and migratory waterfowl. The following criteria will be used to evaluate the effectiveness of the plan in protecting bird habitat. Specific criteria may vary depending upon the characteristics of individual projects.

1. Maintenance or increase in the number of colonies of colonial nesting birds and wading birds.
2. Maintenance or increase in the number of species present in colonies of colonial nesting birds and wading birds.
3. Maintenance or increase in the number of individuals per species in colonies of colonial nesting birds and wading birds
4. Maintenance or increase in the size of winter waterfowl habitat.
5. Maintenance or increase in the population of any Threatened and Endangered species present within BTES (i.e., Brown Pelican and Bald Eagle).

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Methods

Measurable parameters

Plan Implementation - The activities of the BTMC as outlined in the above criteria will be monitored by an independent Third Party. The measurable parameters are those outlined in the effectiveness criteria.

Project Effectiveness - The parameters to be measured to assess the criteria for effectiveness are:

1. The number of colonies of colonial nesting birds.
2. The number of colonies of wading birds.
3. The number of species present in these colonies.
4. The size of waterfowl populations.
5. The population of Threatened and Endangered species present in BTES.
6. The area of habitat for wintering waterfowl.

Data collection methods

Plan Implementation - The monitor will:

1. Attend relevant meetings of BTMC to document its actions.
2. Attend relevant meetings of CWPPRA Task Force and Technical Committee to monitor their actions.
3. Review relevant CWPPRA project descriptions to ensure bird habitat is considered in project design.
4. Contact GCBO, LNC, USFWS, NRCS, LDOTD regarding the development of voluntary agreements with landowners, prioritization of habitat and modification of greenspace management.
5. Review ecotourism package developed by LDCRT and LDWF.
6. Contact LDNR and USACOE regarding the issuance of permits and fragmentation of forest resources.
7. Visit road accessible nesting colonies of seabirds to inspect postings.

Colonies of Colonial Nesting Birds - LDWF currently conducts surveys of colonial nesting birds (Martin and Lester, 1990). Either LDWF procedures or those described here should be followed. Lane (1994) suggests the use of methods described by Slack et al. (1992) whereby surveys are conducted annually during a two-week period beginning in the last week of May as this corresponds to the incubation period of most colonial nesting birds. Surveys should be conducted from the ground using 2-4 people viewing the colony on foot or from a boat. The species composition of the birds in the colony is recorded along with an estimate of the size of the colony.

Colonies of Wading Birds - LDWF currently conducts surveys of wading birds (Martin and Lester, 1990). Either LDWF procedures or those described here should be followed. Loesch et al. (1994) indicate that the development of population survey methods is required before assessments can be made of wading bird utilization of wetland habitat. Similar methods employed for colonial nesting birds should be adopted for the CCMP. Aerial surveys may also be employed in remote areas. This may employ a stratified random sampling design (Dubovsky et al., 1988) if colonies are thought to be clustered.

Area of Waterfowl Habitat - As considerable effort is devoted to habitat mapping and monitoring in other Ecological Management Action Plans, this issue is not addressed directly here. Lane (1994) provides guidance on monitoring protocols for the assessment of colonial nesting waterbird habitat.

Threatened and Endangered Species - The population of Brown Pelicans will be assessed using the procedures for colonial nesting birds, described above. Aerial surveys and ground inspections will be used to assess the population of Bald Eagles, following the procedures of LDWF.

Sampling design and statistical methods

Plan Implementation - There are no relevant sampling design issues or statistical analyses for the evaluation of plan implementation.

Project Effectiveness - Slack et al. (1992) discuss the use of statistical techniques to describe the relationship

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between counts and years while accounting for as much unwanted variation as possible. Class variables were treated as blocks (e.g., transects) in their design and although individual regression lines were developed for each class, 'average' regression lines for all classes can be presented. Slack et al. (1992) describe the identification and removal of significant interaction terms from the models. An example of how these data may be applied to aerial transect data allows for the assumption of constant effort per transect among years (negating the need to include measure of effort in the statistical model), transects can be treated as blocks, and the number of individuals per year can be used as the response variable. The critical level of significance for all tests should be $p=0.05$.

Cost estimates

Plan Implementation - The cost estimate is based upon attendance at approximately 6 meetings per year, contacting agencies, review of documents, and appropriate reporting. The level of effort is estimated at 120 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$6,000.

Project Effectiveness - It is estimated that ground surveys of colonial nesting birds would require at least two teams of two trained observers each and would take approximately two weeks per year. Estimated costs for this effort including salary, fringe benefits, boat costs and reporting are \$25,000 per year. Aerial waterfowl surveys are assumed to consist of transects approximately 5 km apart, flown at approximately 100 km/hr and would be completed within 4 flying days. Estimated annual costs including two trained personnel, flight time and reporting are \$15-18,000.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation will be undertaken by an independent Third Party who will prepare semi-annual reports describing actions of the relevant agencies in relation to bird habitat issues. Evaluation of monitoring reports concerning project effectiveness will be conducted by qualified individuals representing organizations independent of any agencies or institutions funding the project implementation (such as the NBS). Semi-annual reports will be prepared. The monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the parties responsible for monitoring will appear at the meeting to discuss the report. Monitoring reports concerning project effectiveness will also be provided to the agencies or institutions involved in project implementation, co-operating landowners, utility companies, etc.

Quality Assurance/Quality Control

Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on implementing agency activities (as outlined above).

Project effectiveness

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by monitor in association with relevant implementing agency).

Data Quality Objectives - For the measurable parameters recommended in this monitoring strategy, the main constraint on data quality is observer training and performance. It is recommended that anyone participating in bird surveys participate in taxonomic identification workshops before surveys.

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Sampling Procedures - The data collection methods are as described above. The sampling design for aerial transects will be determined for each bird group by a committee composed of BTMC representatives, the lead implementor, and the monitor.

Data Review, Validation and Verification - Data will be entered into a DIMS compatible database and statistical analysis will follow procedures agreed to by the BTMC, lead implementor and the monitor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be reported to the BTMC and lead implementor before the next regularly scheduled report is due.

Reporting - Semi-annual reports will be prepared. The monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the parties responsible for monitoring will appear at the meeting to discuss the report. Monitoring reports will also be provided to the agencies or institutions involved in project implementation, co-operating landowners, utility companies, etc.

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EM-16 Reduction of Impacts from Exotic Vegetation

OBJECTIVES

1. To reduce negative impacts caused by the proliferation of exotic plant species

DESCRIPTION

This action will develop and coordinate policies for addressing the proliferation of exotic plant species in the BTES. Specifically, this plan will regulate the introduction of exotic species by legislation; educate the public about impacts from exotic species and discourage people from using invasive exotic species in landscaping, aquariums and ponds; separate management of exotic plant species from native plant species, (i.e. develop a noxious plant list for the BTES and for the entire state); and use integrated pest management strategies such as mechanical and biological control for management of exotic species to reduce herbicide use in the basins.

BACKGROUND/MAJOR ISSUES

Noxious weeds are plants of foreign origin and that disrupt natural communities. When these plants are imported into the U.S. they leave their natural competitors and predators behind. Without these stressors exotic plants can become established in natural areas and out-compete native vegetation. They can replace native plants and form monocultures in previously diverse habitats. Exotic vegetation can decrease forage value and displace wildlife habitat. Noxious weeds are very difficult to eradicate and millions of dollars are spent in the U.S. every year to control them. Noxious weeds occur on all types of land, public and private. In addition to species richness, noxious weeds affect farming, recreation, and navigation. Noxious weeds can be imported either accidentally, such as in agricultural crops brought into the U.S. or on purpose, like the infamous water hyacinth give-away at the 1884 Cotton Exposition in New Orleans. To prevent new noxious weeds from establishing in the BTES, there must be controls on both methods of entry.

Some people perceive that exotic species are pleasant to have in their yards and ponds. It is important that species that are used in landscaping are not those that can invade and disrupt native plant communities. Controlling exotic species will require educating people about their potential impacts and about the availability of attractive and suitable native species instead of exotics.

Exotic plant species impact thousands of acres of wetlands and waterways in the BTES. Aquatic, exotic plants are a particular problem for the BTES, with aquatic weeds invading previously unvegetated water and impeding water flow and navigation. Exotics can change submerged aquatic vegetation community structure and aquatic species composition by impacting food availability, photo zone, dissolved oxygen and other physical qualities of water. Dozens of exotic plant species are established in the Barataria and Terrebonne basins. Among the most serious pests are: water hyacinth (*Echhornia crassipes*), water spangle (*Salvinia minima*), Eurasian watermilfoil (*Myriophyllum spicatum*), hydrilla (*Hydrilla verticillata*), Alligatorweed (*Alternanthera philoxeroides*) and Chinese Tallow tree (*Sapium sebiferum*).

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Controlling exotic species is an on-going battle. Once a species becomes established it is very difficult, if not impossible to eradicate it. Management cannot be a localized effort; exotics will continue to invade from areas

outside the management boundaries. Control efforts will require regional cooperation and planning to prevent new exotic species from becoming established and to control existing weed species.

BENEFITS

Exotic vegetation have become established in natural areas through human activity. Exotic weeds can result in habitat loss and decrease of species diversity in natural biological communities. Managing exotic pest plants will help maintain native submerged aquatic plant communities and presumably associated fish and invertebrate species. It will reduce the expense and quantity of chemicals used to continually remove aquatic weeds from waterbodies, and increase waterways available for navigation and recreation. Managing terrestrial aquatics will keep productive, diverse communities from being degraded by exotic species and conserve habitat for game and non-game wildlife.

IMPLEMENTATION SCHEDULE

There are numerous ongoing federal, state and local agencies programs to manage exotic species. These include:

1. The U.S. Department of Agriculture (USDA) has a nation-wide Noxious Weed List. Species on that list cannot be imported into the U.S. except for some limited scientific research exemptions. They do not regulate plant imports into Louisiana from other states.
2. The Bureau of Land Management, National Biological Service (NBS), National Park Service (NPS), USDA Agricultural Research Service, USDA Forest Service, USDA Natural Resource Conservation Service (NRCS), and the U.S. Fish and Wildlife Service (USFWS) have entered into a Memorandum of Understanding for Federal Native Plant Conservation. The agreement sets up a committee to work with state and non-federal cooperators on native plant conservation on federal lands, including exotic species management.
3. The U.S. Army Corps of Engineers (USACOE) has been the leader in research and control of aquatic exotic plants. Continuation of their program, especially biological control research, is critical to the long term management of exotic plants in the BTES. The USACOE Aquatic Growth Control Unit works on biological, mechanical and chemical control of aquatic weeds in navigable waterways. In the past, they have participated in a 50/50 cost share program with the state to manage aquatic weeds in other water bodies. They have worked on selection and release of biocontrol agents in the region including the Alligator Weed Flea Beetle and the Water Hyacinth Weevil.
4. The Plant Materials Center, part of the USDA's Natural Resources Conservation Service, collects seeds of indigenous plants and propagates them for native revegetation projects and for research on their ability for controlling erosion. Appropriate varieties are then made available to local vendors.
5. The White House issued a Memorandum for the Heads of Executive Departments and Agencies for Environmentally and Economically Beneficial Practices on Federal Landscapes in April 1994. It directs federal agencies to use regionally native plants at federal facilities and for federally funded projects.
6. Louisiana Department of Agriculture and Forestry (LDAF) enforces seed certification laws. It lists noxious weeds for different crops that cannot be present or only present in small amounts when the seeds are shipped.
7. The Louisiana Department of Wildlife and Fisheries (LDWF) maintains a noxious aquatic plant list. Plants on the list are cannot be imported into Louisiana. The list is in the fishing regulations pamphlet which is distributed to fishing license applicants.
8. LDWF has developed brochures to educate citizens about the impacts of exotic plants and to encourage the use of native species when possible.
9. The LSU Cooperative Extension Service has some weed scientists who are available to help land owners with

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noxious weed problems.

The main objectives of the short-term plans (0-1 years) are to prevent establishment of new exotic species and reduce the introduction of individuals of established noxious plants in the BTES. The majority of short term plans can be implemented within existing agencies. LDAF has a Horticultural Commission that permits nurseries and other plant grows for other agency program. This could be expanded to include certifying growers and retailers are not selling Chinese Tallow or other noxious weeds. LDWF's Natural Heritage Program maintains a list of Louisiana species of concern. That office could keep be responsible for updating and distributing the noxious plant list. The LSU Cooperative Extension Service currently produces publications for citizens. They also have field representatives that go on-site with land mangers to discuss concerns. They could utilize this expertise and access to develop and distribute information about exotic species and recommend native species replacements. This should be the first step of a larger education program to promote the use of native species by the general public. Agencies should be responsible for knowing and enforcing their regulations about exotic species introduction and propagation. Just by emphasizing the importance of these regulations to inspectors and other law enforcement officials we may be able to decrease introductions of exotic species in the BTES. In the past, USDA has funded public information materials for exotic plant species. They also could give technical support in developing the state noxious plant list.

Specific short-term plans are as follows:

- S 1.00 Ban the sale of Chinese tallow trees in Louisiana (LDAF; within the first 60 days).
- S 2.00 Identify legislation that regulates introduction of exotic species and enforce those regulations (USFWS for endangered species protection; USDA and LDAF for terrestrial spaces; LDWF for aquatic spaces. Coordination between agencies should begin within the first 180 days).
- S 3.00 Produce a brochure for home/land owners explaining impacts from exotic species; provide a list of alternative native species for use in landscaping, aquariums and ponds. Emphasize the impacts from non-native species and the benefits of natives, such as opportunities to view more bird and butterfly species (LSU Cooperative Extension Service and USDA; design should begin immediately, distribution within the first year).
- S 4.00 Develop a noxious weeds law for LA that includes a noxious weed list making interstate import or transplant of invasive exotic species illegal within the state (LDWF responsible for compiling list; LDAF lead agency for listing terrestrial species; begin development immediately - start with the USDA's national list. Additional species will be added over time).
- S 5.00 Study noxious plant control program in Florida (LDWF begin coordination immediately).
- S 6.00 Set up a contact point where users can report infestations of new exotic weeds and new management techniques (LDWF and USDA; within the first six months).

The primary objective of the medium-term plans (1-5 years) is to control established exotic weeds. Emphasis is on developing controls and disseminating management information to land managers. Developing suitable biocontrol agents is expensive. It requires coordination between USDA quarantine, university experts, state agencies and land managers. Agencies such as the USACOE and the USDA have funded biocontrol research in the past. The LSU

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Cooperative Extension Service works with its in-house experts as well as other specialists to develop integrated pest management bulletins for individual species. USDA has funded these publications in other parts of the country. Exotic Pest Plant Councils are made up of federal, state, and local governments as well as land owners/managers and private citizens. These groups set up species specific working groups and educational groups to find solutions to regional exotic plant management concerns. They compile reference databases, send out warnings describing M encroaching noxious weeds, and hold meeting for information exchange. BTNEP could start a local council that could be responsible for exotic species in these two basins.

Specific medium-term plans are as follows:

- M 1.00 Develop biocontrol for *Salvinia* (USACOE and LDWF; begin testing potential controls as soon as possible).
- M 2.00 Contact Exotic Pest Plant Councils in Florida, California and the Pacific Northwest to see if similar activities could work in Louisiana (USFWS, LDWF and NPS; within first 2 years).
- M 3.00 Develop species specific information sheets for the public that explain plant biology and least toxic management (LSU Cooperative Extension Service, USDA; distribute during the first three years).
- M 4.00 Study hydrilla biocontrol program in Florida to determine it will work in Louisiana (USACOE, LDWF; within the first three years).
- M 5.00 Designate areas of exotic infestation to use for demonstration of successful exotic species removal and native species replanting projects (USFWS, NRCS, NPS, USACOE, LDWF, LDAF; during the first five years).
- M 6.00 Research a second biocontrol organism for water hyacinth (USACOE and LDWF; ongoing during the first five years).
- M 7.00 Study biocontrol for Chinese Tallow Trees (USDA and LDAF; ongoing during the first five years).
- M 8.00 Encourage nursery to grow native species for private landscaping; designate businesses that grow and sell native plants as Louisiana Heritage Nurseries (LDAF; develop criteria for heritage nursery and designation in the first three years).
- M 9.00 Keep Louisiana noxious plant list updated (LDWF, USDA and LDAF; continually).
- M10.00 As part of education and interpretation, USFWS, NPS, and state parks can use exotic species programs, including tree pullings and replanting with native species to inform the public, school and scout groups about impacts from exotic species (USFWS, NPS; continually).

Long-term plans (5-10 years) are as follows:

- L 1.00 Develop biocontrol for other invasive exotic species (USACOE, USDA, LDWF, LDAF; ongoing).
- L 2.00 Maintain updated noxious plant list and enforcement of noxious plant law (LDWF, LDAF, USDA; ongoing).
- L 3.00 Work with Natural Resources Conservation Service and land managers to revegetate areas of exotic invasion (public and private land owners, NRCS; ongoing - begin as soon as possible).
- L 4.00 Require all aquatic plants for sale to be native species; provide information about the impacts of aquatic exotic plants at pond and aquarium shops (LDAF, LDWF, LSU Cooperative Extension Service; 5th year of the program).
- L 5.00 Continue developing integrated pest management practices including mechanical controls, to reduce chemical herbicide use in the BTES (LDWF, USACOE, LDAF; ongoing).

LEAD AND SUPPORT IMPLEMENTORS

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The actions in this plan require diverse organizations to cooperate and share authority, expertise, and enforcement. The Louisiana Department of Wildlife and Fisheries (LDWF) will be the lead implementor with regards to aquatic exotic vegetation and exotic infestations in natural areas, and the Louisiana Department of Agriculture and Forestry (LDAF) will be lead implementor regarding horticultural and agricultural exotic pest control. Private land owners and a variety of government agencies have roles to play in successfully combating exotic species. Some of these support implementors are:

1. The U.S. Army Corps of Engineers (USACOE) has expertise in control of exotic aquatic plants and is currently responsible for vegetation control in navigable waterways.
2. The U.S. Fish and Wildlife Service (USFWS) operates a cost share program for aquatic weed removal with the LDWF.
3. Louisiana State University's (LSU) Cooperative Extension Service has the expertise and opportunity to educate land owners/mangers about exotic species to use native species . The U.S. Department of Agriculture (USDA) has experience in exotic plant management and has funded exotic plant management in the past. A multi-agency Memorandum of Understanding should be developed with USDA promoting the use of native plants.
4. The Plant Materials Center, part of the USDA's Natural Resources Conservation Service, has expertise in native revegetation projects and can be tapped to assist with native species revegetation.
5. All public land managers should be responsible for aggressively managing exotic species on their property.

Agencies such as the National Park Service (NPS), USFWS, and Louisiana State Parks, LDWF, will implement plans to manage exotic vegetation on their property to prevent its expansion to adjacent property

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6. Private landowners, who incur many of the impacts for non-native species, are a key component in exotic vegetation management.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM16-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|---------------------------------------|---------------|---------------------------|----------------|----------------------------------|--|
| EM-16 | | | | | \$ 44,796 | \$173,809 |
| EM-16S1.00 | <i>Chinese tallow tree ban</i> | LDAF | E | | \$7,000 | \$0 |
| EM-16S2.00 | <i>Id legislation: exotic species</i> | | | | \$9,072 | \$0 |
| EM-16S2.01 | <i>id legislation: exotic species</i> | USFWS | E | | \$2,268 | \$0 |
| EM-16S2.02 | <i>id legislation: exotic species</i> | USDA | E | | \$2,268 | \$0 |
| EM-16S2.03 | <i>id legislation: exotic species</i> | LDAF | E | | \$2,268 | \$0 |
| EM-16S2.04 | <i>id legislation: exotic species</i> | LDWF | E | | \$2,268 | \$0 |
| EM-16S2.05 | <i>enforce regulations</i> | | E: no estimate | | | |
| EM-16S3.00 | <i>Brochure production</i> | LCES | N | | \$6,500 | \$0 |
| EM-16S4.00 | <i>Noxious weeds law</i> | | | | \$3,192 | \$0 |
| EM-16S4.01 | <i>development</i> | LDWF | E | | \$1,596 | \$0 |
| EM-16S4.02 | <i>development</i> | LDAF | E | | \$1,596 | \$0 |
| EM-16S5.00 | <i>Study FL plant program</i> | LDWF | E | | \$2,436 | \$0 |
| EM-16S6.00 | <i>Reporting contact point</i> | LDWF | E | | \$1,596 | \$1,596 |
| EM-16M1.00 | <i>Salvinia biocontrol</i> | USACOE | E | | | \$85,000 |
| EM-16M2.00 | <i>Contact exotic councils</i> | LDWF | E | | | \$872 |
| EM-16M3.00 | <i>Develop info sheets</i> | LCES | E | | | \$4,379 |
| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
| EM-16M5.00 | <i>Designate demo sites</i> | LDWF | E | | \$5,000 | \$5,000 |
| EM-16M6.00 | <i>Research for h2o hyacinth</i> | USACOE | N | | | \$62,500 |
| EM-16M7.00 | <i>Study biocontrol: tallow trees</i> | USDA | N | | \$10,000 | \$10,000 |
| | | | | | | |

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| | | | | | | |
|-------------|----------------------------------|--------------------------------|---|--|--|-------|
| EM-16M8.00 | <i>Encourage native species</i> | LDWF | E | | | \$872 |
| EM-16M9.00 | <i>Update noxious plant list</i> | LDWF | E | | | \$966 |
| EM-16M10.00 | <i>Public education</i> | USFWS; NPS & State Parks | E | | | \$0 |

Table EM16-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$740,000

Total Funding Existing (Years 1-5): \$434,000

Total New Funding Necessary (Years 1-5): \$306,500

Table EM16-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| LCES | \$6,500 CWPPRA | | | | |
| USACOE | | \$62,500 CWPPRA | \$62,500 CWPPRA | \$62,500 CWPPRA | \$62,500 CWPPRA |
| USDA | \$10,000 CWPPRA | \$10,000 CWPPRA | \$10,000 CWPPRA | \$10,000 CWPPRA | \$10,000 CWPPRA |

Summary of new funding strategy: CWPPRA funding should be used to support this action plan which will have a direct, positive impact on vegetated wetlands.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be

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expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Regulate the introduction of exotic species by legislation.
2. Educate the public about impacts from exotic species and discourage the use of invasive exotics in landscaping, aquariums and ponds.
3. Develop a noxious plant list for the BTES and the entire state.
4. Use integrated pest management strategies, such as mechanical and biological control, for management of exotic species to reduce herbicide use in the basins.

Interrelationships Among Components

Control efforts require regional cooperation and planning. USDA has a nation-wide Noxious Weed List. Various agencies participate in MOU for federal Native Plant Conservation. USACOE Aquatic Growth Control Unit has had a 50:50 cost share program with states. LDAF enforces seed certification laws. LDWF maintains a noxious aquatic plant list.

Documentation of Plan Implementation and Effectiveness

Plan implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Sale of Chinese tallow trees has been banned in Louisiana (LDAF, accomplished within 60 days).
2. Legislation that regulates introduction of exotic species has been identified and enforced (USFWS for endangered species protection; USDA and LDAF for terrestrial spaces; LDWF for aquatic spaces. Coordination between agencies should begin within 180 days).
3. An education program has been initiated to promote the use of native species by the general public (LCES and USDA; design begins immediately, and distribution occurred in the first year). Components to include:
 - a. A brochure for home/land owners explaining impacts from exotic species.
 - b. A list of alternative native species for use in landscaping, aquariums and ponds for home/land owners.
 - c. Publications for home/land owner use emphasizing the impacts from non-native species and the benefits of natives, such as opportunities to view more bird and butterfly species.
4. These educational materials have been distributed.
5. A noxious weeds law, supported by BTMC, has been developed for Louisiana making interstate import or transplant of invasive exotic species illegal within the state (development begins immediately).
 - a. A noxious weed list has been developed (LDWF responsible for compiling list; LDAF lead agency for listing terrestrial species; started with the USDA's national list, with additional species being added over time).
6. Noxious plant control program in Florida has been studied (LDWF begins coordination immediately).
7. A contact point where users can report infestations of new exotic weeds and new management techniques has been established (LDWF and USDA; established within the first six months).
8. A biocontrol for *Salvinia* has been developed (USACOE and LDWF; testing of potential controls begins within 1 year).
9. Exotic Pest Plant Councils in Florida, California and the Pacific Northwest have been contacted to see if similar activities could work in Louisiana (USFWS, LDWF and NPS; accomplished within first 2 years).
10. Species specific information sheets that explain plant biology and least toxic management have been developed for the public (LCES, USDA; distributed during the first three years).

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11. Hydrilla biocontrol program in Florida has been studied, determination has been made as to whether or not it will work in Louisiana (USACOE, LDWF; accomplished within the first three years).
12. Areas of exotic infestation to use for demonstration of successful exotic species removal and native species replanting projects have been designated (USFWS, NRCS, NPS, USACOE, LDWF, LDAF; accomplished during the first five years).
13. A second biocontrol organism for water hyacinth has been researched (USACOE, LDWF; ongoing during the first five years).
14. A biocontrol for Chinese tallow trees has been studied (USDA, LDAF; ongoing during the first five years).
15. Nurseries have been encouraged to grow native species for private landscaping (LDAF; criteria for heritage nursery and designation completed in the first three years).
 - a. Businesses that grow and sell native plants have been designated as Louisiana Heritage Nurseries.
16. Louisiana noxious plant list has been kept updated (LDWF, USDA, LDAF; updated at least annually).
17. As part of education and interpretation, USFWS, NPS, and state parks have used exotic species programs, including tree pulling and replanting with native species, to inform the public, school and scout groups about impacts from exotic species (USFWS, NPS; ongoing).

Project effectiveness

The following criteria will be used to evaluate the effectiveness of the Action Plan in reducing the proliferation of exotic plant species. Specific criteria may vary depending upon the characteristics of individual projects.

1. Reduction in coverage of water hyacinth (*Eichornia crassipes*) in BTES waterways.
2. Reduction in coverage of water spangle (*Salvinia minima*) in BTES waterways.
3. Reduction in coverage of Eurasian water milfoil (*Myriophyllum spicatum*) in BT waterways.
4. Reduction in coverage of hydrilla (*Hydrilla verticillata*) in BTES waterways.
5. Reduction in coverage of alligator weed (*Alternanthera philoxeroides*) in BTES waterways.
6. Reduction in coverage of Chinese tallow tree (*Sapium sebiferum*) on BTES uplands and levees.

Methods

Measurable parameters

Plan Implementation - The activities of the various agencies outlined above in implementing the plan in accordance with the above criteria will be monitored by an independent Third Party.

Project Effectiveness - Any reduction in proliferation of the target exotic species will be assessed using the following measurements:

1. Species composition of floating and SAV.
2. Frequency of occurrence of water hyacinth, water spangle, Eurasian milfoil, hydrilla and alligator weed in sampled water bodies.
3. Species composition of woodlands.
4. Frequency of occurrence of Chinese tallow tree in woodlands.

Data collection methods

Plan Implementation - The criteria for plan implementation will be assessed by an independent Third Party who will contact the various agencies described in implementation steps, and document 1) whether the criteria have been met, and 2) the time frame for completion of the implementation step.

Species Composition - For SAV, species composition can be obtained by transect sampling (EPA, 1993) using an airboat-rake method (Chabreck and Hoffpauir, 1962) to collect the samples. Similar procedures can be adopted for floating vegetation. For trees, the belt transect method (CCRS, 1995) should be used with a belt width of 10 m. Trees will be defined as over 3 m in height and 4 cm or greater in diameter. Species composition will be recorded.

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Frequency of Occurrence of Exotic Vegetation - The frequency of occurrence of individual exotic species should be recorded during the transect sampling for the vegetation types described above. In addition, aerial imagery may be used to identify the presence of some floating vegetation, especially water hyacinth, and possibly for tallow trees which show distinctive coloration in fall.

Sampling design and statistical methods

Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

Project Effectiveness - It is impossible to select a suitable reference area for this monitoring as the actions should impact the entire BTES. In this case, pre-project monitoring or baseline monitoring (Steyer et al., 1995) should be adopted as an alternative. Data collection should be completed within a one month period during the period of peak vegetative biomass (e.g., August-September). Data collection should then proceed on an annual basis and trend analysis techniques used to identify a reduction or increase in the frequency of occurrence of exotic species. Standard linear regression models can be used to detect trends once sufficient annual data points have been obtained (fifteen years is considered the minimum for such trend analysis by Rabalais et al., 1995). Models having probability values of > 0.05 should be rejected, allowing determination of a trend significantly different from zero (i.e., change through time as opposed to no change through time).

The number of habitats to be included in the monitoring (e.g., whether monitoring is conducted for all exotic SAVs, or just individual species), and heterogeneity of those habitats determine the number of samples which need to be taken and the validity of the statistical analyses. It is recommended that sampling of water bodies include those of both natural (i.e., shallow ponds, lakes, bayous and bays) and anthropogenic origin (i.e., pipeline canals, navigation canals, drainage ditches). Given the large area to be assessed by monitoring, it is recommended that an independent Third Party monitor utilize citizens or volunteers in the monitoring efforts. The procedures for involving citizens or volunteers in vegetative monitoring efforts are described in EPA (1993) and CCRS (1995).

Cost estimates

Plan Implementation - The cost estimate is based upon attendance at approximately 2 BTMC meeting per year, contacting implementing agencies, assessment of agency products and appropriate reporting. The level of effort is estimated at 160 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$8,000.

Project Effectiveness - Given the large area to be assessed by monitoring, it is recommended that an independent Third Party monitor utilize citizens or volunteers in the monitoring efforts. The procedures for involving citizen's or volunteers in vegetative monitoring efforts are described in USEPA (1993) and CCRS (1995). Consequently, costs have been estimated based upon the time of a professional monitor conducting oversight and training of volunteers, and supplies and some expenses (e.g., boat fuel) for the volunteers. The estimated costs for annual surveys of a sample of BTES water bodies and woodlands is \$25,000. It is not recommended that aerial surveys be conducted specifically for the purpose of monitoring this project. However, aerial photography of the coastal zone is conducted by state and federal agencies for other purposes and NBS habitat mapping of the coastal zone has recently been completed at approximately 5 year intervals. These sources should be reviewed, as availability

permits, by the monitor. The level of effort is estimated at 40 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$2,000.

Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation will be undertaken by an independent Third Party who will prepare semi-annual reports describing actions of the BTMC and the implementing agencies (as identified in the effectiveness criteria) in relation to exotic vegetation reduction projects. Evaluation of monitoring reports concerning project effectiveness will be overseen by qualified individuals representing organizations independent of any agencies or institutions

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funding the implementation of the Action Plan, and the use of citizens/volunteers. Semi-annual reports will be prepared. The monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the parties responsible for monitoring will appear at the scheduled meeting of the BTMC to discuss the report. Monitoring reports concerning project effectiveness will also be provided to the agencies or institutions funding project implementation.

Quality Assurance/Quality Control

Plan implementation

The Quality Assurance Plan involves the following components:

1. Clear identification of effectiveness criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC and other agency activities (as outlined above).

Project effectiveness

The Quality Assurance Plan involves the following components:

Project Description - (as provided in Action Plan).

Project Organization and Responsibility - (to be prepared by monitor in association with BTMC technical Committee).

Data Quality Objectives - For some of the measurable parameters recommended in this monitoring strategy, Table EM16-3 presents these objectives for vegetative parameters as determined by Steyer et al. (1995). Training will be provided to citizens and volunteers participating in the monitoring to ensure these data quality objectives can be achieved. This will consist of a one-day workshop held annually before monitoring begins.

Table EM16-3. Data Quality Objectives for identified measurable parameters (Steyer et al., 1995).

| Type of Measurement | Units | Accuracy Goal | Precision Goal | Completeness Goal | Expected Range |
|---------------------|---------|---------------|----------------|-------------------|----------------|
| Taxonomic ID | species | 10% | NA | 85% | NA |
| Percent Cover | % | 10% | 10% | 85% | 0-100 |

Sampling Procedures - The data collection methods are as described above. The sampling design will be determined by a committee composed of BTMC representatives, representatives of the implementing agencies, and the monitor.

Sample Custody - Collected samples will be in the custody of the citizens/volunteers and/or monitor from collection to sample processing. Sample handling procedures described by USEPA (1993) should be followed by citizen/volunteer monitors.

Data Review, Validation and Verification - The general procedures described by Steyer et al. (1995) and references therein will be followed. Data will be entered into a DIMS compatible database by the monitor responsible for project effectiveness components, and statistical analysis will follow procedures agreed to by the BTMC and the monitor.

Problem Identification - Any significant problems identified during the monitoring period, either with monitoring procedures or project effectiveness, will be reported to the BTMC before the next regularly scheduled report is due.

Reporting - Semi-annual reports will be prepared. The monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the parties responsible for monitoring will appear at the meeting to discuss the report. Monitoring reports will also be provided to the agencies or institutions funding project

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implementation.

**Action Plan EM-17:
Zebra Mussel
Monitoring and Control**

EM-17 Zebra Mussel Monitoring and Control

OBJECTIVES

1. To initiate a zebra mussel monitoring program in the BTES to discern the possibility/probability of settlement and determine potential locations of settlement.
2. To disseminate information on proven control techniques directed toward minimizing the destructive habits of the zebra mussel as the population of this non-indigenous mollusk increases in the BTES, and to develop new technologies on zebra mussel control.
3. To strengthen existing networks of scientists working to minimize the negative impact of zebra mussels and to ensure prompt transfer of technical data.

DESCRIPTION

This action plan will expand the scope of work of the Lower Mississippi River Zebra Mussel Task Force, which consists of representatives from the U.S. Fish and Wildlife Service, the Louisiana Sea Grant College Program, scientists, other agencies and industry. One of the primary missions of the task force, which was formed in 1994, is to monitor the influx of zebra mussels into the lower Mississippi River. This action will monitor conditions in the BTES as a way of identifying potential threats, and work to develop control strategies appropriate to the environmental conditions of the estuary.

BACKGROUND/MAJOR ISSUES

The zebra mussel has the potential to biofoul water intakes in municipal, industrial and electric power generation facilities; to displace native species, disrupt food webs and ecosystem balances; and to interfere with navigation, agricultural irrigation, sport and commercial fishing, recreational boating and beach use.

The zebra mussel, a native of the Black, Caspian and Aral Seas, was introduced into North America in ballast water discharged to Lake St. Clair, Michigan in 1986. By September 1991, it had spread into the Great Lakes, the St. Lawrence River, and the Lower Ohio, Tennessee and Cumberland Rivers. In 1993, zebra mussels were found in the Lower Mississippi River in Ascension, St. James and Plaquemines Parishes. Based on monitoring data of zebra mussel infestations in the lower Mississippi River, researchers predicted a ten-fold increase in mussels for 1994. By May of that year, they had exceeded that estimate. They have now been found in the Mississippi River as far south as Venice, and have been recorded in the Atchafalaya Basin.

One factor responsible for the rapid spread of the zebra mussel is its reproductive biology. This small (3-7 cm) mussel can reach sexual maturity within a year, far quicker than our native freshwater species. Females can produce up to one million eggs per year, which, when fertilized become planktonic larvae (veligers). The planktonic stage, not found in native freshwater mussels, allows the zebra mussel to rapidly spread throughout a waterbody. In addition, the zebra mussel will attach to hard substrates in extremely high densities. Monitoring at a facility in Plaquemines Parish in 1994 showed veliger settlement rates at 1,000-10,000/m² every 10-14 days. Densities of settled animals were approximately 100,000/m².

Zebra mussels are filter feeders and can effectively remove from the water particles less than 1 μ m, while most

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bivalves cannot filter objects less than 3 μm . Thus, zebra mussels can feed on planktonic bacteria unavailable to native mussels. Furthermore, a zebra mussel can filter up to 10-100 ml of water per hour. Their high filtration rates, rapid reproduction and high densities can affect the ecosystem in several ways. The zebra mussel can interfere with native biota by rapidly colonizing their habitat and the organisms (e.g., crawfish and mussels) themselves. It can also greatly increase local water clarity and possibly increase sedimentation. However, excessive filtering of phytoplankton and detritus from the water column can reduce or eliminate food sources for other species (e.g., mollusks, fishes, etc.)

Within the BTES, environmental conditions may largely control zebra mussel distribution. The mussels occur in areas of high dissolved oxygen (90 percent), and is stressed by levels below 40 to 50 percent saturation. There is total mortality at zero percent dissolved oxygen. In addition, zebra mussels require calcium to form shells and are not found in water with less than 10 mg/L dissolved calcium. Although zebra mussels can adapt to brackish salinities (0.2 to 2.5 parts per thousand), they are most common in fresh water.

Originally, high water temperatures were expected to limit the southern spread of zebra mussels into the Lower Mississippi River. However, whether the zebra mussel will reproduce at a particular water temperature is irrelevant to the situation in the BTES. The Mississippi River, with definite zebra mussel settlement and colonization and with tributaries with similar settlement, flows continuously into this region and into the BTES. Therefore, the region, and probably the estuary, will always receive veligers even if no spawn occurs locally. The question that remains is whether the veligers will settle, colonize, and reproduce or whether they will pass through or die in the estuary. Studies on temperatures below which and above which zebra mussels die are more important. Some recently published work at the University of Texas at Arlington on temperature and mortality suggests that zebra mussels are able to adapt to higher temperatures. This work shows that zebra mussels from southern waters can live indefinitely at 30 degrees C (86 degrees F), and that 31 degrees C (88 degrees F) is lethal. Zebra mussels in the Great Lakes generally survive better at lower temperatures. Even with adaptation, the seasonal fluctuation in water temperature reduces the importance of a particular water temperature as a boundary to zebra mussel settlement, colonization or reproduction.

At present, there is no scientifically based, systematic veliger monitoring program throughout the BTES, or even in particular sections of the estuary. Veliger monitoring is essential for early detection, and for protecting the estuary if settlement occurs. Adult monitoring is much less helpful until several years after the mussels first inhabit an area. In order to be prepared for zebra mussels if they settle in the estuary, one must be aware of changes that occur in water clarity, water chemistry and/or the competition among plants and animals within the food chain, from early on. These changes can only be carefully monitored if change is documented from the time it begins and data is available to compare to pre-zebra mussel conditions. Such a monitoring process could also provide assistance to any industries, communities, or navigation installations which might, in the future, feel the effects of zebra mussel colonization.

In other areas, (i.e., Europe and the Great Lakes) where the zebra mussel has spread, densities are decreasing. This may be due to natural predators and diseases acting as biological controls. Many North American species have been documented preying on zebra mussels. They are eaten by freshwater drum, catfish, most sunfish and certain species of crawfish. Mussels are also eaten by diving ducks. Although these predators may partially limit zebra mussel numbers in natural systems, they will have little effect on mussel densities in man-made systems (e.g., water intake pipes, navigation structures, etc.).

There are a number of methods proven to control zebra mussels at a specific facility or structure. These include the use of antifoulant paints and biocides (e.g., chlorine, chlorine dioxide, quaternary amine compounds, heavy metals, etc.); physical barriers to access (e.g., screens) and mechanical removal; thermal treatment, and the use of disposable

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parts (e.g., pipes, valves, etc.). Each method requires repeated treatments, and some can become costly or prove inappropriate to an estuary environment.

BENEFITS

Zebra mussels can disrupt municipal, industrial and utility facilities that rely on water intakes or other water control structures. Operation of navigational structures (e.g., locks) can also be compromised. The Federal Government estimates that the cumulative economic impact of zebra mussel in the Great Lakes alone may reach \$5 billion by the year 2000. Although there have been no estimates on the economic impact of zebra mussels in the BTES, it likely will be far less than that.

Benefits of this plan will fall into three categories: diverse biologic communities, compatibility with nature and sustainable economic pursuits. The zebra mussel potentially may affect many aquatic resources in the fresher areas of the BTES. Competition from zebra mussels could alter the diversity, abundance and distribution of native species within the basins. Zebra mussels could also disrupt freshwater intake facilities and locks, as well as municipal and industrial firefighting facilities. That, in turn, would affect people, both within and beyond the basins, who rely on those resources including navigation interests, industries, recreational and commercial fishermen, municipalities and agriculture. On the positive side, zebra mussels can clarify water, removing sediments from the water column and possibly increasing sedimentation locally, although it should be noted that increased water clarity can mean an increase in algal blooms the following year, as has been documented in Lake Erie. As filterers par excellence, they can be used as indicators of water quality. In addition, they may have potential as a fertilizer or animal feed. On the negative side, many basin interests could face financial hardship trying to deal with the mussel impacts to the natural resources and to their facilities. There could be shutdowns because of inefficient mussel control methods or possibly more serious problems from misapplication of chemical treatments. In addition, decaying mollusks can be extremely noxious, limiting recreational use of beaches or shorelines. By building on existing control methods and widely distributing proven techniques, this network would help us to better coordinate our response to the zebra mussel, our most recent transplant.

IMPLEMENTATION SCHEDULE

Numerous activities have already been implemented, given the serious nature of the problem. The Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990 requires the Secretary of the Army to develop a program of research and technology development for the environmentally sound control of zebra mussels at public facilities, including locks, dams, docks, reservoirs, water-pumping stations, water intakes, hydroelectric power stations, and drainage structures. The USACOE's Waterways Experiment Station began a research and development program in 1991. The Corps is also monitoring its facilities nationwide for zebra mussel infestations.

Sea Grant has developed a national clearinghouse in New York for zebra mussel information. Housed at the Cornell Cooperative Extension, its resources are available to the public. In addition, the Louisiana Sea Grant College Program at LSU has been involved in zebra mussel research, education and outreach for several years.

In Louisiana, the Louisiana Sea Grant College Program and the U.S. Fish and Wildlife Service are joint sponsors of the *Southern Region Zebra Mussel Newsletter*. Those agencies, together with a group of scientists, other agencies and industry representatives, comprise the Lower Mississippi River Zebra Mussel Task Force. The task force was formed in 1994 and continues to monitor the influx of zebra mussels into the lower Mississippi River.

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For the short term (0-1 years) the plan suggests:

- S 1.00 Establish a BTES Zebra Mussel Task Force to provide leadership for zebra mussel activity within the BTES (All Implementors).
- S 2.00 Initiate a zebra mussel monitoring program in the BTES .
 - S 2.01 Begin with a presence/absence monitoring program for veligers at a regular frequency and at specific stations, coupled with inspections for adults at structures such as navigation buoys and pilings.
 - S 2.02 If settlement is identified, initiate density monitoring program and explore control possibilities.
 - S 2.03 Coordinate with water quality and aquatic wildlife monitoring efforts in the BTES to assess potential for zebra mussel colonization.
- S 3.00 Continue production of the *Southern Region Zebra Mussel Newsletter* (USFWS, Louisiana Sea Grant)
- S 4.00 Participate in the 1997 International Zebra Mussel and Other Aquatic Nuisance Species Conference in New Orleans. This conference could provide a forum for an initial BTES zebra mussel workshop.

Medium-term plans (1-5 years) include:

- M 1.00 Assess potential locations for zebra mussel settlement in the BTES.
- M 2.00 Examine various control measures that would meet the needs of the BTES. Begin a research and development program for zebra mussel control (see Action Plan *EG-6, New Technology Research and Development*) and developing beneficial uses.
- M 3.00 Hold periodic zebra mussel workshops and technology transfer meetings.

Long-term plans (5-10 years) include:

- L 1.00 Incorporating control technology in facility construction and operations.
- L 2.00 Marketing beneficial use technology both within and outside the basin.

LEAD AND SUPPORT IMPLEMENTORS

The state would be the lead implementor of the project. It has the local expertise and contacts to ensure that basin users have access to the information they need. It also can enter into partnerships with the federal agencies and industry to jointly implement many of the control techniques. Once established, the BTES Zebra Mussel Task Force would assume leadership for this action.

Various federal agencies (e.g., USACOE - navigation, EPA - water quality, Sea Grant, USFWS and NOAA - natural resources) could assist in the state in plan implementation.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM17-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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Zebra Mussel
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Table EM17-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------|--------------------------------|-------|-------------------|------------|--------------------------|---------------------------------------|
| EM-17 | | | | | \$19,900 | \$19,900 |
| EM-17S1.00 | <i>Continue monitoring</i> | LDWF | E | | \$8,400 | \$8,400 |
| EM-17S2.00 | <i>newsletter</i> | USFWS | E | | \$11,500 | \$11,500 |
| EM-17S3.00 | <i>annual workshop</i> | | N: no estimate | | | |
| EM-17M1.00 | <i>mussel control R&D</i> | | N: no estimate | | | |
| EM-17M2.00 | <i>technology transfer</i> | | E | EM-17S3.00 | | \$0 |
| EM-17M3.00 | <i>beneficial uses R&D</i> | | E: no estimate | | | |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$99,500
 Total Funding Existing (Years 1-5): \$99,500
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects,

Components of Plan

EM-17 proposes a zebra mussel task force and monitoring program specific to BTES as well as a fostering and expansion of existing zebra mussel programs.

Interrelationships Among Components

1. The Lower Mississippi River Zebra Mussel Task Force has as its primary mission the monitoring of the spread of the zebra mussel (Louisiana Sea Grant College Program, USFWS, other agencies, scientists, industry representatives). The USACOE is responsible for research and technology development concerning the

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environmentally sound control of zebra mussels at public facilities, and monitors their facilities for zebra mussel infestations. The National Sea Grant College Program has a centralized information repository for zebra mussel information at Cornell University Cooperative Extension Service, and the National and Louisiana Sea Grant College Programs sponsor multiple research programs on the mussel. The Louisiana Sea Grant College Program and the USFWS jointly sponsor the lower Mississippi River Newsletter.

2. No lead implementor (other than 'state') identified. Various state and federal agencies could assist in plan implementation. The BTES Zebra Mussel Task Force, once established, will assume leadership for this action plan implementation. Cooperative funding should be sought from USACOE, USFWS, NOAA, LCES, LDWF, EPA, and industry.

Documentation of Plan Implementation and Success

Monitoring for this AP includes assessing the timely implementation of the components of the AP, and the eventual success of implementation (i.e., task force formed, monitoring established, and zebra mussel programs fostered). The first component is not conducive to monitoring in the traditional sense of data collection and analysis (e.g., water quality monitoring), but rather a tracking. The monitoring of implementation is designed to determine whether a functional task force is formulated, and whether a monitoring program for zebra mussels is developed specifically for the BTES and estuarine conditions. Eventual project success can be monitored with an analysis of data such as presence/absence of zebra mussels and the environmental conditions under which they were encountered. Eventually, given the presence of zebra mussels, a more frequent collection of data will be established. The Action Plan monitoring is also designed to determine whether the BTES zebra mussel task force enhances and expands upon existing zebra mussel programs, and whether it results in useful knowledge concerning control technologies and beneficial uses. A time line developed jointly by the funding agency and the implementor(s) will provide the basis for the monitor to assess plan implementation. Because of the multiple components, interactions of components, and involvement of several agencies, a more detailed time line should be developed to track the progress of the development of the plan. Examples of time landmarks are:

1. Implementor is identified (months 0-1).
2. Work group of cooperating agencies is formed, project team is identified and responsibilities outlined, and detailed time line for the project is established (months 0-2).
3. Funding is secured within agencies (months 3-4).
4. BTES Zebra Mussel Task Force is established (months 5-6).
5. Lead implementor for the BTES zebra mussel task force is identified (end of year 1).
6. Existing network of scientists is strengthened to ensure prompt transfer of technical data within the BTES (end of year 1).
7. A monitoring plan for zebra mussels within BTES is established (months 7-8).
8. Relevant state agencies incorporate veliger monitoring into routine sampling protocols, as well as inspections for adults on hard substrates (months 7-8).
9. BTES and its zebra mussel task force is an active participant in the 1997 international meeting (end of year 1).
10. Newsletter is continued (years 1-10).
11. Annual zebra mussel workshop, including technology transfer, is held (years 2-10).
12. Veliger and adult zebra mussel monitoring is continued (years 2-10).
13. Information is disseminated on control technologies (years 2-10).
14. New control technologies are developed through mussel control research and development program (years 2-10).
15. New control technologies are incorporated in facility construction and operation (years 4-10).
16. Beneficial uses research and development is initiated, funded, implemented (years 4-10).
17. Beneficial use technology is marketed (years 6-10).

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Methods

Measurable parameters

The activities of various agencies outlined above in implementing the plan will be monitored for indicators such as:

1. Zebra mussel task force is operable (after developmental phase).
2. Veliger and adult monitoring components are part of state agency sampling protocols.
3. Increased personnel (several agencies) devoted to participation in task force and in monitoring programs.
4. Research programs and communication avenues are expanded.
5. Centralized information repository.
6. Distribution maps of veligers and adults.
7. Compilation of ancillary environmental data for known incidences of veligers and adults.
8. Research and monitoring results are incorporated into communications.
9. Research results are incorporated into actual management of zebra mussels.

Data collection methods

The monitor will contact the various agencies involved in the implementation to gather data (examples below) that will be incorporated into a monitoring report:

1. Check-off system according to time line of project as landmark dates are encountered and project objectives are met.
2. Lists of cooperating agencies, their activities.
3. Compilation of cooperating agencies time commitments to monitoring project.
4. Publication schedule of newsletter, table of contents.
5. Agendas from annual workshops and technology transfer meetings.
6. Descriptions of new and/or expanded communication avenues.
7. Data compilations from veliger and adult monitoring programs, including distribution maps.
8. Assessment of environmental conditions under which veligers and adults were collected.
9. Diagrams of information networks, with names, agencies, addresses, electronic mail addresses.
10. Summaries of control technology research results.
11. Summaries of beneficial use research results.
12. List of users of research results and comments made by users as to applicability of data to their specific needs.
13. Project monitor can access the centralized information repository and use the data.

Sample design and statistical methods

There are no relevant sample designs or statistical analyses for the evaluation of plan implementation.

Cost estimates

Estimate one-half person-month per year. Including salary, fringe, incidental costs, and indirect costs = \$4,000 per year (no inflation). Modifications in monitoring plan (see below) should result in modifications of cost. Costs of veliger and adult monitoring programs to be incorporated in the budgets of the relevant state agencies.

Implementation of Monitoring

Monitor

Since implementor is not identified, but likely to be an agency, a monitor selected by BTMC would be appropriate. Should BTMC become the implementor (as may be the case for the BTES zebra mussel task force), an outside monitor not selected directly by BTMC is desirable. The combined work group of representatives of the cooperating agencies should agree to an outside monitor who will then be contracted by BTNEP. Although individuals involved in the implementation of the action plan may prefer a team member to monitor the project, usually a third party

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offers the best option as the responsible individual for the monitoring. Independent reviewers should be free of vested interests, historic commitments, unrestrained by mission statements, and free from personnel or budgetary actions. The implementor and cooperating agencies will provide the project monitor with data products listed above for subsequent assessment of accuracy and incorporation into reports. The monitor should interact directly with each cooperating agency to determine their level of commitment and activities for the various reports. Success of the monitoring strategy depends on the commitment of participating agencies and individuals to make monitoring an integral part of the CCMP and to provide the Action Plan monitor with the data required to develop reports to BTMC.

Reporting schedule

The monitor will prepare quarterly reports. Reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC. The party responsible for the monitoring should be available to discuss the report at the meeting if requested to do so by the BTMC. Monitoring reports will also be provided to the agencies or institutions participating in implementation. Interim reports can be prepared by the monitor at any time to draw BTMC attention to significant problems, delays, etc.

Guidance for monitoring reports

1. Quarterly reports to BTMC shall provide suitable components, such as:
 - a. Check-off of project landmarks according to the project time line.
 - b. Compilation/assessment of cooperating agency time commitments and activities.
 - c. Assessment of accessibility, reliability, and usefulness of the information in the centralized repository.
 - d. Assessment of status of implementation.
2. Technical details may be included in the report, in a presentation suitable for the Scientific Technical Committee and/or BTMC. A summary of the report shall be less than one page and be suitable for presentation to and understanding by the general public.
3. In addition to the evaluation of the technical accomplishments of the project, the monitor shall:
 - a. identify problems observed during the reporting period and their potential causes;
 - b. predict the short- and long-term consequences of the problems;
 - c. recommend actions to address the problems, as well as a potential implementor(s);
 - d. identify a time frame for accomplishment of the recommendations.

Review of monitoring reports

The BTMC shall receive the quarterly reports. The BTMC shall discuss the monitoring document and take actions it feels appropriate with regard to the implementation of the Action Plan.

Modification of monitoring plan

BTMC may at the end of any annual cycle change the periodicity or components of the monitoring reports if it feels the frequency or components of reports are inappropriate to keep abreast of the project. Changes in the independent reviewer can be made after any annual cycle, but only with the knowledge and participation of the work group of cooperating agencies, the independent reviewer, and BTMC.

Quality Assurance/Quality Control

Quality assurance/quality control in the usual sense of precision and reliability of data collection does not apply to most of the monitoring plan for this Action Plan, since the monitor is tracking the development and implementation of a series of programs and regulations. Certain features of quality assurance, however, can be applied to aspects of the monitoring plan:

1. Collection of information in an objective and systematic manner.
2. Use of qualified and experienced personnel.

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Zebra Mussel
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- a. Independent Third Party with no vested interest, not a BTNEP employee.
 - b. Chosen by work group of cooperating agencies in collaboration with BTMC.
 - c. Knowledgeable about zebra mussels, relevant educational efforts, and various programs concerning their control.
3. Application of standard formats for quarterly reports.
 4. Maintenance of a quarterly schedule.
 5. Consistent and timely review of monitoring reports by BTMC.

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EM-18 Centralized Data Sets

OBJECTIVES

1. The objective of this action plan is to provide a centralized data directory of information related to measuring success of implemented action plans. In addition, this action plan will require access through the Internet of the BTNEP=s Data Information Management System.

DESCRIPTION

This plan calls for the continued development of a Data Information Management System for the Barataria-Terrebonne basins that would ensure data preservation and accessibility. In addition, the Data Information and Management System will be designed to integrate any new information/data that becomes available and any data collected as part of any monitoring plan implemented as part of any CCMP action plan.

BACKGROUND/MAJOR ISSUES

Data Information and Management System

As part of a comprehensive estuarine characterization program for the Barataria-Terrebonne basin in south Louisiana, the Barataria-Terrebonne National Estuary Program (BTNEP) has been assigned the task of developing a Data and Information Management System (DIMS) to organize and maintain information generated and used by program-sponsored research and to ensure data usability. This Data Information and Management System is being developed jointly between the National Biological Service's Southern Science Center, the Louisiana Department of Environmental Quality (LDEQ) and the Louisiana Department of Natural Resources (LDNR). This Data Information and Management System is being developed within LDEQ. The DIMS accommodates a wide range of data types and serves a broad user community. The goal of data management is to develop and implement a system which will become a central data directory for the Barataria-Terrebonne estuarine complex. In addition, one feature of the BTNEP DIMS will include an interface with other existing automated natural resource data bases such as EMAP, GAP, LDEQ, and CWPPRA. Therefore it does not constitute a duplication of effort. The BTNEP DIMS is being developed using OracleTM software and Arc InfoTM software.

This data management system should be designed to meet two primary objectives. First, it enhances research efforts by providing extensive data storage and analytical capabilities. It is designed to make information available to the greatest number of people (industry, public, government agencies, researchers, and related programs). Second, it serves as a long-term archive that can be continuously updated. The data management system will be expanded with information from sampling and monitoring efforts to determine whether the abatement and control programs implemented by the BTNEP improve habitat, water quality, and living resources. Much time and money have been spent in building this system. It is important to continue its development and utility into the future. As the Barataria-Terrebonne Management Conference (BTMC) periodically meets to review progress of implemented action plans, the data management system will play an important role in providing critical information to assess the effectiveness of CCMP action plans.

Data and Information Access

As mentioned earlier, the Data Information Management System should be designed to make information available to the greatest number of people. The most appropriate avenue to presently share information is exchange through

Action Plan EM-18: Centralized Data Sets

the Internet. The BTNEP currently has an existing home page that was developed through an effort initiated by the Gulf of Mexico Program. The Gulf of Mexico Program, the National Biological Service, and the BTNEP Program Office have worked together to make this a reality. The BTNEP home page exists as an hyper-text transfer protocol (HTTP) site. The existing home page only provides information about the BTNEP. However, the BTNEP will develop a file transfer protocol (FTP) site so that access to the Data Information Management System will be available through the Internet.

In addition to on-line access, the BTNEP will periodically develop and distribute reports regarding the various BTNEP action plans. These documents shall include clear and concise information about action plan intents or objectives, geographic coverage if applicable, progress made to date, and information about future plans. Also, in conjunction with State and Federal agencies, the BTNEP will convene annual symposiums similar in format to the Data Inventory Workshop sponsored by the BTNEP in 1991. Currently, annual symposiums are sponsored for the Pontchartrain Basin. These symposiums provide an excellent and sometimes the only opportunity to listen and discuss current or recent research or programmatic efforts.

Standards

Currently as well as in the past, many efforts to obtain data to further our knowledge regarding environmental issues have been accomplished in isolation. While for all practical purposes this may not change, it is becoming more imperative that all research and monitoring projects adhere to stringent Quality Assurance/Quality Control requirements. An important initiative at the federal level is the development of metadata standards. The Federal Geographic Data Committee recently adopted standards for metadata and on April 11, 1994, all federal agencies were responsible for initiating the use of metadata standards. Metadata is simply "data about data" or can be described as descriptive information about a data set (National Biological Service, 1994). These standards provide a consistent approach and format for the cataloging of data. Two years were spent by many professionals at all levels of government in the development of these standards. These standards provide valuable information including: those data that are available; where to find the data; and how to access the data. After reviewing the information about a particular data set, one would know whether the data meets their specific needs.

The great advantage about metadata is that it helps people find data that they need and provides important information on how the data was collected, how it was used, how best to use it, and many other data related issues. In addition, it helps the organization which collected the data. Changes in personnel may limit the knowledge and understanding of the organization when dealing with particular projects. Metadata will benefit the creator or user of that data by maintaining its value and continued use over many years (National Biological Service, 1994). Louisiana's Environmental and Natural Resource Agencies should adopt the federal metadata standards and require their completion as part of any project, contract, etc. that is undertaken.

BENEFITS

This catalytic action is directly related to the BTNEP goal, *Create an Accessible, Comprehensive Data Base with Interpreted Information for the Public*. This goal requires that a data directory be assembled on system ecology and hydrology, to organize that data, and make that information readily accessible to policy-makers and the public to support ecologically sound decision-making and to identify data gaps. This catalytic action is also indirectly related to other BTNEP goals including but not limited to *Realistically Support Diverse Biological Communities* and *Preserve and Restore Wetlands and Barrier Islands*. Each of these goals should promote some action. All actions taken in support of CCMP action plans should be monitored to assess effectiveness in reaching the desired outcome. Monitoring information related to CCMP action plans should be gathered and quality controlled in a centralized location and made accessible to policy-makers for the purpose of evaluating effectiveness and to the public to build continued support of a particular action and/or promote the use of that action elsewhere. Development of a Data

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Information and Management System will provide for increased coordination between federal, state, and local agencies/programs. In addition, implementation of this action plan will increase the accessibility of data and ensure that ongoing and future research and monitoring activities produce compatible data that are useful for management decision making.

IMPLEMENTATION SCHEDULE

As mentioned earlier, the BTNEP is currently contracting with the National Biological Service's Southern Science Center to develop the BTNEP DIMS. Their responsibilities include archiving data collected and/or used as part of any BTNEP sponsored project. The contract will extend until September 1996.

Short-term plans (0-1 years) are as follows:

- S 1.00 Consider agencies that would be responsible for managing this centralized data information management system.
- S 2.00 Consider continuing the existence of the current data management structure employed by the BTNEP (BTNEP).
- S 3.00 If continuing the current data management structure is not appropriate, a determination must be made concerning centralizing data sets and which agency(ies) will be responsible (BTNEP).
- S 4.00 Identify funding sources to provide for the development of a centralized data information and management system.
- S 5.00 Utilize the funding source inventory to locate possible funding sources (BTNEP).
- S 6.00 Management Conference support agency(ies) attempts to acquire funding for the continued development of the BTNEP DIMS.
- S 7.00 Develop cost sharing agreements and memorandums of agreement between agencies responsible for the management of the BTNEP DIMS.
- S 8.00 Consider information that is not generated by and or used currently by the BTNEP that should be included within the DIMS.
- S 9.00 Identify what information is pertinent to or provides baseline conditions regarding a BTNEP action plan.
- S 10.00 Convene a Workshop to discuss metadata standards and their potential acceptance by State Environmental and Natural Resource Agencies.
- S 11.00 Convene meetings of a subcommittee identified by the Management Conference to review various monitoring strategies by action plan, develop and implement monitoring plans and begin preparation of the DIMS for these types of data.
- S 12.00 Review the BTNEP Needs Assessment and modify if necessary.

Medium-term plans (2-5 years) include the following:

- M 1.00 Provide access to the DIMS over the Internet.
- M 2.00 Begin archiving information identified earlier that was necessary to support some implemented action plan.
- M 3.00 Begin archiving CCMP action plan monitoring data, provide analysis, and report back to the Management Conference on the results.

Long-term plans (5-10 years) include the following two components: continuing to archive data, provide analysis, and report back to the BTMC; and, continuing to build the DIMS and provide the greatest possible access of information to the Internet.

LEAD AND SUPPORT IMPLEMENTORS

**Action Plan EM-18:
Centralized Data
Sets**

The lead implementor of this action plan will be LDEQ. Support Implementors include the BTMC.

COSTS AND ECONOMIC CONSIDERATIONS

Table EM18-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5AVG COSTS/YR (Medium Term) |
|--------------------|---------------------------------|----------------|---------------------------|--------------------|--------------------------------------|---|
| EM-18 | | | | | \$66,285 | \$21,000 |
| EM-18S1.00 | <i>Consider DIMS Management</i> | BTMC | E | PI-2 | | \$0 |
| EM-18S2.00 | <i>Consider DIMS Management</i> | BTMC | E | PI-2 | | \$0 |
| EM-18S3.00 | <i>Consider DIMS Management</i> | BTMC | E | PI-2 | | \$0 |
| EM-18S4.00 | <i>Identify funding sources</i> | CONSULT | E | COMPLETE | \$0 | |
| EM-18S5.00 | <i>Identify funding sources</i> | CONSULT | E | COMPLETE | \$0 | |
| EM-18S6.00 | <i>Identify funding sources</i> | BTMC | E | PI-2 | | \$0 |
| EM-18S7.00 | <i>cost sharing & MOAs</i> | | | | \$12,115 | \$0 |
| EM-18S7.01 | <i>cost sharing & MOAs</i> | BTPO-PD | E | | \$808 | \$0 |
| EM-18S7.02 | <i>cost sharing & MOAs</i> | LDEQ | E | | \$808 | \$0 |
| EM-18S7.03 | <i>cost sharing & MOAs</i> | LDOTD | E | | \$808 | \$0 |
| EM-18S7.04 | <i>cost sharing & MOAs</i> | LDWF | E | | \$808 | \$0 |
| EM-18S7.05 | <i>cost sharing & MOAs</i> | LDED | E | | \$808 | \$0 |
| EM-18S7.06 | <i>cost sharing & MOAs</i> | LDCRT | E | | \$808 | \$0 |
| EM-18S7.07 | <i>cost sharing & MOAs</i> | LDNR | E | | \$808 | \$0 |
| EM-18S7.08 | <i>cost sharing & MOAs</i> | USEPA-R6 | E | | \$808 | \$0 |
| EM-18S7.09 | <i>cost sharing & MOAs</i> | USACOE | E | | \$808 | \$0 |
| EM-18S7.10 | <i>cost sharing & MOAs</i> | USFWS | E | | \$808 | \$0 |
| EM-18S7.11 | <i>cost sharing & MOAs</i> | USNMFS | E | | \$808 | \$0 |
| EM-18S7.12 | <i>cost sharing & MOAs</i> | USNRCS | E | | \$808 | \$0 |
| EM-18S7.13 | <i>cost sharing & MOAs</i> | LCES | E | | \$808 | \$0 |
| EM-18S7.14 | <i>cost sharing & MOAs</i> | LDHH | E | | \$808 | \$0 |
| EM-18S7.15 | <i>cost sharing & MOAs</i> | USNOAA | E | | \$808 | \$0 |
| EM-18S8.00 | <i>Inclusion of add'l data</i> | | E | EM-18S10.00 | \$0 | |
| EM-18S9.00 | <i>Identify pertinent data</i> | | E | EM-18S10.00 | \$0 | |
| EM-18S10.00 | <i>Workshop: metadata stds</i> | | | | \$2,423 | \$0 |
| EM-18S10.01 | <i>committee participation</i> | BTPO-EQS | E | | \$162 | \$0 |
| EM-18S10.02 | <i>committee participation</i> | LDEQ | E | | \$162 | \$0 |
| EM-18S10.03 | <i>committee participation</i> | LDOTD | E | | \$162 | \$0 |

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| | | | | | | |
|-------------|--|------------------|---------------------------|----------------|--------------------------------------|---|
| EM-18S10.04 | <i>committee participation</i> | LDWF | E | | \$162 | \$0 |
| | ACTION DESCRIPTOR | LEAD | EXISTING / NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5AVG COSTS/YR (Medium Term) |
| EM-18S10.06 | <i>committee participation</i> | LDCRT | E | | \$162 | \$0 |
| EM-18S10.07 | <i>committee participation</i> | LDNR | E | | \$162 | \$0 |
| EM-18S10.08 | <i>committee participation</i> | USEPA-R6 | E | | \$162 | \$0 |
| EM-18S10.09 | <i>committee participation</i> | USACOE | E | | \$162 | \$0 |
| EM-18S10.10 | <i>committee participation</i> | USFWS | E | | \$162 | \$0 |
| EM-18S10.11 | <i>committee participation</i> | USNMFS | E | | \$162 | \$0 |
| EM-18S10.12 | <i>committee participation</i> | USNRCS | E | | \$162 | \$0 |
| EM-18S10.13 | <i>committee participation</i> | LCES | E | | \$162 | \$0 |
| EM-18S10.14 | <i>committee participation</i> | LDHH | E | | \$162 | \$0 |
| EM-18S10.15 | <i>committee participation</i> | USNOAA | E | | \$162 | \$0 |
| EM-18S11.00 | <i>Subcommittee review</i> | | | EM-18S10.00 | \$0 | \$0 |
| EM-18S12.00 | <i>BTNEP needs assess Review</i> | | | | \$2,423 | \$0 |
| EM-18S12.01 | <i>committee participation</i> | BTPO- EQS | E | | \$162 | \$0 |
| EM-18S12.02 | <i>committee participation</i> | LDEQ | E | | \$162 | \$0 |
| EM-18S12.03 | <i>committee participation</i> | LDOTD | E | | \$162 | \$0 |
| EM-18S12.04 | <i>committee participation</i> | LDWF | E | | \$162 | \$0 |
| EM-18S12.05 | <i>committee participation</i> | LDED | E | | \$162 | \$0 |
| EM-18S12.06 | <i>committee participation</i> | LDCRT | E | | \$162 | \$0 |
| EM-18S12.07 | <i>committee participation</i> | LDNR | E | | \$162 | \$0 |
| EM-18S12.08 | <i>committee participation</i> | USEPA-R6 | E | | \$162 | \$0 |
| EM-18S12.09 | <i>committee participation</i> | USACOE | E | | \$162 | \$0 |
| EM-18S12.10 | <i>committee participation</i> | USFWS | E | | \$162 | \$0 |
| EM-18S12.11 | <i>committee participation</i> | USNMFS | E | | \$162 | \$0 |
| EM-18S12.12 | <i>committee participation</i> | USNRCS | E | | \$162 | \$0 |
| EM-18S12.13 | <i>committee participation</i> | LCES | E | | \$162 | \$0 |
| EM-18S12.14 | <i>committee participation</i> | LDHH | E | | \$162 | \$0 |
| EM-18S12.15 | <i>committee participation</i> | USNOAA | E | | \$162 | \$0 |
| EM-18M1.00 | <i>Access to DIMS over internet</i> | | E | | \$7,323 | \$0 |
| EM-18M1.01 | <i>internet access</i> | USNBS | N | | \$7,000 | \$0 |
| EM-18M1.02 | <i>internet access</i> | BTPO- EQS | E | | \$323 | \$0 |
| EM-18M2.00 | <i>Archive "Action Plan Implementation" data</i> | BTMC designee | E | | \$21,000 | \$10,500 |

**Action Plan EM-18:
Centralized Data
Sets**

| | | | | | | |
|-------------------|--|----------------------|----------|--|-----------------|-----------------|
| EM-18M3.00 | <i>Archive monitoring data, analyze & report</i> | BTMC designee | E | | \$21,000 | \$10,500 |
|-------------------|--|----------------------|----------|--|-----------------|-----------------|

Table EM18-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered Anew≡ (a direct product of CCMP recommendations) and Aexisting≡ (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$178,300
 Total Funding Existing (Years 1-5): \$143,300
 Total New Funding Necessary (Years 1-5): \$35,000

Table EM18-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------|--|--|--|--|--|
| USNBS | \$7,000 DEQ Operational Funds | \$7,000 DEQ Operational Funds | \$7,000 DEQ Operational Funds | \$7,000 DEQ Operational Funds | \$7,000 DEQ Operational Funds |

Summary of new funding strategy: The annual \$7,000 costs are incurred while providing users Internet access to the DIMS. The primary source of funding should be DEQ operational funds. Reliance on these funds could be offset by negotiating reduced costs for access and/or support services from an Internet access provider. Finally, funds could be solicited from the foundations listed in the *Funding Source Inventory for the Implementation of the CCMP* or taken from environmental license plate revenue to make up for any shortfall.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Continued development of a DIMS as a central data source for the BTES to ensure data preservation and

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accessibility.

- a. Will be designed to integrate new data collected as part of any monitoring plan implemented as part of any CCMP Action Plan.
- b. Development of FTP site so that access to DIMS is available through the Internet.
- c. Dissemination of information via reports and annual symposia.
- d. Resource agencies should adopt federal metadata standards.

Interrelationships Among Components

DIMS currently being developed by NBS, LDEQ and LDNR. Interface with other existing automated natural resource data bases such as EMAP, GAP, LDEQ, and CWPPRA means that effort is not duplicative of existing efforts.

Documentation of Plan Implementation and Success

Plan implementation

The following criteria will be used to determine if plan implementation steps were accomplished:

1. Agencies that would be responsible for managing this DIMS have been selected.
2. Continuation of the existence of the current data management structure employed by the BTNEP has been considered by BTMC.
 - a. If continuing the current data management structure has been deemed inappropriate, a determination has been made concerning centralizing data sets and which agency(ies) are responsible.
3. Funding for the development of the DIMS have been actively pursued by BTMC.
 - a. Funding sources to provide for the development of a DIMS have been identified.
 - b. The funding source inventory has been utilized to locate possible funding sources.
 - c. BTMC has supported agency(ies) attempts to acquire funding for the continued development of the DIMS.
4. Cost sharing agreements and MOA between agencies responsible for the management of the DIMS have been developed.
5. Data that is not generated by and/or used currently by the BTNEP has been considered for inclusion within the DIMS.
6. Data that is pertinent to or provides baseline conditions regarding a CCMP Action Plan has been identified.
7. A Workshop to discuss metadata standards and their potential acceptance by State Environmental and Natural Resource Agencies has been convened by BTMC.
8. Meetings of a subcommittee identified by the BTMC to review various monitoring strategies by Action Plan has been convened.
 - a. Monitoring plans have been developed and implemented, and preparation of the DIMS for these types of data have begun.
9. Access to the DIMS over the Internet has been provided.
10. Training packages that can be distributed, particularly to libraries in the basin, have been developed.
11. Training packages have been distributed.
12. Data collection/compatibility has been standardized.
13. Metadata requirements that must be followed by all federal agencies have been reviewed and modified where necessary.
14. BTNEP Needs Assessment has been reviewed and modified as necessary.
15. Archiving of data identified earlier, deemed necessary to support some implemented Action Plan, has begun.
16. Archiving of CCMP action plan monitoring data has begun, analysis has been provided, and reports on the results have been made to the BTMC.

Project success

The main measure of project success for this Action Plan is the development of a functioning DIMS which is user-

friendly and through which data is readily accessible. The following criteria will be used to judge project success:

1. Data are accessible via the Internet.
2. Data can be accessed by users with no additional training other than that provided in informational materials.
3. The DIMS is regularly updated with data generated within BTES which forms part of Action Plan monitoring or ecological indicators assessment.

Methods

Measurable parameters

CCMP Action Plan Implementation - The activities of the BTMC and agencies responsible for continued DIMS development and maintenance, as outlined in the above criteria, will be monitored by an independent Third Party.

CCMP Project Success - The independent Third Party, who shall not represent any of the agencies responsible for DIMS development or maintenance, will attempt to access data in the DIMS on a semi-annual basis and check for the following measures of success:

1. The DIMS is operational.
2. The DIMS is accessible via the Internet.
3. New data have been added to the DIMS and are accessible.
4. Metadata provides necessary information concerning the databases included in the DIMS.

Data collection methods

CCMP Action Plan Implementation - The activities of the BTMC and the various agencies outlined above in implementing the plan in accordance with the above criteria will be monitored by an independent Third Party. The monitor will review informational and educational products, contact agency personnel for updates on DIMS development, review training packages, attend meetings of BTMC and organized symposia to review actions/decisions and the nature of the discussion.

CCMP Project Success - The monitor will collect the following types of data:

1. Attempt access to DIMS on at least 6 occasions, including 3 outside normal business hours, and document:
 - a. is the DIMS operational;
 - b. time to access three example databases;
 - c. time to download data from three example databases.

Semi-annually the independent Third Party monitor will access the DIMS and record:

1. The number of new databases included since the last recorded review.
2. The number of databases which have been updated.

Sampling design and statistical methods

CCMP Action Plan Implementation - There are no relevant sampling design or statistical analyses for the evaluation of plan implementation.

CCMP Project Success - There are no relevant sampling design or statistical analyses for the evaluation of project success.

Cost estimates

CCMP Action Plan Implementation - The cost estimate is based upon attendance at approximately 4 BTMC meetings per year, review of materials, contacting implementing agencies and appropriate reporting. The level of effort is estimated at 100 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$5,000.

CCMP Project Success - The cost estimate is based upon 1-2 days accessing DIMS every six months and reporting. The level of effort is estimated at 40 person-hours and costs including salary, fringe benefits, overhead and associated expenses are approximately \$2,000.

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Recommendations and Feedback to Program/Implementor

Monitoring of plan implementation will be undertaken by an independent Third Party who will prepare semi-annual reports describing actions of the BTMC and implementing agencies in relation to the establishment of a DIMS. Semi-annual reports will be prepared. The monitoring reports will be submitted not less than 15 days prior to a regularly scheduled meeting of the BTMC and the independent Third Party will appear at the meeting to discuss the report. Monitoring reports concerning project success will also be provided to the agencies or institutions implementing the DIMS.

Quality Assurance/Quality Control

The Quality Assurance Plan for both Plan Implementation and Project Success involves the following components:

1. Clear identification of success criteria (as outlined above).
2. Use of qualified and experienced personnel to collect and report data (to be determined and assessed annually by BTMC).
3. Review of monitoring data and reports by BTMC (as outlined above).
4. Reporting of significant problems identified during the monitoring period to the BTMC before the next report is due.
5. Maintaining a semi-annual schedule for reporting on BTMC and implementing agency activities (as outlined above).

**Action Plan PI-1:
Barataria-Terrebonne
Management Conference**

**COORDINATED PLANNING AND IMPLEMENTATION
ACTION PLANS**

With the completion of the CCMP, the Barataria-Terrebonne National Estuary Program changes from a program of plan development to one of plan implementation. One of the key components of this change is the establishment of a **Program Implementation Structure** which will facilitate the transfer of program authority from the Environmental Protection Agency, which funded the CCMP development, to the State of Louisiana, which will be responsible for CCMP implementation. The Program Implementation action plans are thus the most critical plans to the successful implementation of the CCMP: without them, there would be no program. The centerpiece of this set of plans is the continuation of the Barataria-Terrebonne Management Conference (BTMC). The BTMC will be the entity through which the CCMP is implemented, monitored, coordinated and evaluated. Through its diverse membership of all stakeholder groups, the BTMC will be the main avenue for stakeholder involvement in the estuary's management efforts. Finally, through its organizational structure, management agreements and decision-making policies, the BTMC represents a meaningful commitment of its membership to ensure that the CCMP is implemented. Thus, the BTMC truly epitomizes the BTNEP goal, *Maintain multi-level, long-term, comprehensive watershed planning*.

From the beginning of the BTNEP planning process, Management Conference members realized that **Coordinated Planning** would be a critical and integral part of the CCMP. This document reflects this idea in many ways. Clearly, the most important action in this regard is the continuation of the BTMC as described above. By bringing all stakeholder groups together in a single management entity, a coordinated planning effort is ensured. Supporting this idea is the BTMC's adoption of a decision-making and conflict-resolution methodology, expressed in the BTNEP goal, *Forge common ground solutions to estuarine problems*, that is inclusive, objective and reflective of the diverse interests which exist in the BTES and depend upon its resources.

In an effort to support the idea of coordinated planning, BTNEP has sponsored a study, *Inventory of Programs and Projects and Base Programs Action Plan*, which identified and described all historical, ongoing and proposed programs affecting the estuary. The purpose of the study was not only to identify the programs that needed to be considered by the CCMP, but also to identify the gaps and duplications which exist. Another focus was the permitting process, a crucial tool in estuary management. A Task Force was created to assess the current permitting process and recommend ways in which it could be made more responsive and effective.

As a result of these efforts, as well as the collective input of the BTMC and the Coordinated Planning Alliance, several plans have been developed which will serve to ensure a more coordinated, comprehensive and effective management of the BTES. These plans work to establish a mechanism for coordination among government agencies, address the need for a more effective and streamlined permitting process, devise a strategy for more public involvement in the development of regulations, and create a stronger framework for comprehensive planning within the estuary.

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PI-1 Barataria-Terrebonne Management Conference

OBJECTIVES

1. To continue the present management structure at a somewhat reduced level in order to provide oversight of CCMP implementation.
2. To ensure that all stakeholders continue to have the opportunity to have input as the CCMP is implemented.
3. To facilitate coordinated and balanced management of the BTES.

DESCRIPTION

The Barataria-Terrebonne Management Conference (BTMC), originally convened in 1990 to develop the CCMP, has been the catalyst for producing open and frank discussions about some of the most critical coastal management issues in the nation. During the past five years, the BTMC has made a commitment to fairness and has fostered a spirit of trust and cooperation among its members and the communities it serves. A founding principle of the Conference has been a consensus-based form of decision-making which has gained the respect and commitment of the members.

The CCMP was created through this structure. Developing the plan, however, is only half the job. As we move into the CCMP implementation phase, that same coalition has seen the merits of continuing the productive relationship of the BTMC. Therefore, this proposal is to use a somewhat streamlined version of the existing BTMC as the partnership which will coordinate and oversee implementation of the CCMP, once it is approved by the State and EPA.

In this role, the Management Conference will have several functions. The primary function will be to encourage and oversee the implementation of the CCMP by coordinating and integrating the CCMP actions among agencies and stakeholders. In addition, the BTMC will maintain an interchange with other similar federal, state and local planning efforts, and review and modify the implementation of the CCMP as conditions change over time. Finally, the BTMC will foster and expand the use of participatory, voluntary and incentive-based approaches to decision-making in the estuary.

The BTMC is not intended to replace or duplicate existing State government. It is not a new agency or authority and it is not a regulatory body. It is, however, an opportunity to maintain the ongoing dialogue on issues of mutual concern based on the proven structure of the BTMC. The makeup of the BTMC would be similar to its current make-up including diverse representation of estuary interests. Initially the BTMC will be made up of between 40 and 45 members, selected to represent the interest of the major stakeholders in the estuary.

The make-up of the new BTMC would be very similar to the current BTNEP Management Conference. Some of the major stakeholders to be represented include industry, business and economic development, Federal, State and local governments, academia, environmental organizations, and the general public.

The organizational structure of the BTMC could be refined as it deems necessary. Because of the large size of the BTMC, it is likely that several committees will be formed to address specific issues. In order to maintain a broad-based decision-making process as well as encourage widespread involvement, for the initial year a three-tiered meeting structure is recommended which will include quarterly meetings of the full BTMC, more frequent meetings

Action Plan PI-1: Barataria-Terrebonne Management Conference

of various committees and subcommittees if necessary, and an annual "State of the Estuary" symposium which will include the full BTMC as well as all interested stakeholders and representatives. All interested stakeholders and the general public are welcome and encouraged to attend any of these meetings.

To facilitate the administrative and fiscal responsibilities associated with CCMP implementation, the LDEQ has agreed to maintain the Program Office and to provide additional support services in the same manner as they have previously supported the conference. For additional details about this office, please refer to Action Plan *PI-3*.

The process of broad-based decision-making was instrumental in the development of the CCMP. Therefore, the BTMC will continue to use this process as CCMP implementation begins. It is further proposed that the BTMC adopt the guidelines for Common Ground Solutions (identified in Action Plan *CP-1, Common Ground Solutions and Decision Making*) as a means to facilitate group decision-making and conflict resolution.

BACKGROUND/MAJOR ISSUES

The BTNEP successfully brought together a diverse group of stakeholders to draft a CCMP for the estuary. In this process, decisions were made using the expertise and experience of interdisciplinary groups and multiple stakeholders. As the CCMP is implemented, it is critical that a similar mechanism be developed, which requires that all interests are represented and that coordinated, integrated decision-making can continue. This process faces several challenges:

1. Estuarine resources are in demand by many different groups, resulting in multiple-user conflicts. It will always be a challenge to set and follow priorities for the estuary that protect not only natural resources, but also the rights of resource users and the lifestyles of the estuary.
2. The "reaction and cure" approach to planning and management has proven to be economically, socially and environmentally expensive. A new philosophy, forwarded by this CCMP, is to anticipate and prevent degradation in the planning stages of development to avoid problematic situations in the future. However, it will be a challenge to change an approach that has existed for so long and has been accepted by many as "the way to do it."
3. Because of the connections between the BTMC and various government agencies, economic interests, and the public, there may be resistance from those who have experienced frustration in dealing with agencies in the past.
4. At present, there are several large scale planning efforts underway at the federal, state and local levels which will affect the overall hydrology of the Barataria-Terrebonne estuarine system. The BTMC will continue to coordinate with these efforts to ensure that all ongoing activities support the goals of the CCMP. The Conference does not have the authority to overrule other Federal or State restoration efforts, such as CWPPRA or any other plans.

In summary, implementation and coordination of the CCMP should include the interests of stakeholder groups including public and private interests groups. While the formulation of this CCMP has resulted in a high level of agreement on a vision and proposed actions, the more difficult tasks ahead focus on taking action together to implement the CCMP and facilitating informed public decision-making.

BENEFITS

This BTMC will bring together a diverse group of stakeholders to ensure continual affirmation and implementation of the "Shared Vision" as described in the CCMP. As such, the BTMC will enable a coordinated, estuary-wide approach to funding, planning and ongoing monitoring of estuary management, providing an important mechanism

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for making sound, balanced decisions and appropriate revisions to the CCMP actions as need arises. In addition, the BTMC provides a forum for ongoing formal communication, dialogue and common ground solution-making among private and public interests. Finally, the BTMC will make available the diverse expertise and resources of Conference members and their constituencies in moving the CCMP implementation forward.

IMPLEMENTATION SCHEDULE

Short-term plans for this action (1995-1996) focus on the continuation of the BTMC and refining its organizational structure, the continuation of BTMC meetings, and the establishment of protocols for reviewing and revising the CCMP. Specific plans are:

- S 1.00 A transitional Task Force will be identified and will be responsible for developing a BTMC charter, outlining the basic structure, member composition, and operating philosophy of the BTMC. In addition, the Task Force will confirm the initial members of the BTMC (BTNEP/Task Force; Spring 1996).
- S 2.00 The extension of formal invitations to prospective BTMC members will be coordinated and commitments to serve will be obtained (Program Office; Summer 1996).
- S 3.00 Initial topics of concern for the BTMC will be an orientation for members, establishing an organizational structure, setting a schedule for further meetings, and initiating an internal evaluation mechanism. It is also recommended that the BTMC develop a mechanism for the ongoing review and revision of the CCMP during this period. Towards this end, the BTMC would set up revision protocols with the U.S. Environmental Protection Agency, establish internal guidelines for CCMP review and revision, create a special subcommittee to administer the process, and establish public outreach guidelines for involving stakeholders in the process (BTMC; early fall 1996).

Beyond this initial stage, the mid-term and long-term objectives of this action (1997-2020) are for the BTMC to continue its role in maintaining participatory planning, coordinating estuary activities and implementing the CCMP. This includes annual reviews of BTMC effectiveness, conducting reviews and revisions of its structure and procedures as necessary, and conducting reviews and revisions of the CCMP as necessary. In addition, the BTMC will annually sponsor a "State of the Estuary" symposium to bring the stakeholders together on a periodic basis.

LEAD AND SUPPORT IMPLEMENTORS

Prior to the establishment of the BTMC, the lead implementors of this action will be the existing BTNEP Management Conference, which will establish the transitional BTMC Task Force; and the Task Force itself, which will lay the groundwork for the continuation of the Conference. Obviously, the existing BTNEP Management Conference will be the lead implementor of this action. Support implementors will include all of the stakeholders and representative groups which will lend their diverse expertise and perspective to the BTMC.

COSTS AND ECONOMIC CONSIDERATIONS

Table PI1-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered "new" (a direct product of CCMP recommendations) and "existing" (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

**Action Plan PI-1:
Barataria-Terrebonne
Management Conference**

Table PI1-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG _COSTS/YR (Medium Term) |
|-----------|------------------------------------|----------------------------------|-------------------|---------|--------------------------|--|
| PI-1 | | | | | \$67,846 | \$33,923 |
| PI-1S1.00 | <i>identify task force</i> | | Pre 10/96 | | \$0 | \$0 |
| PI-1S2.00 | <i>invitations and commitments</i> | | Pre 10/96 | | \$0 | \$0 |
| PI-1S3.00 | <i>establish mgt. conference</i> | | E | | \$67,846 | \$33,923 |
| PI-1S3.01 | <i>establish mgt. conference</i> | LDEQ | E | | \$1,615 | \$808 |
| PI-1S3.02 | <i>establish mgt. conference</i> | LDOTD | E | | \$1,615 | \$808 |
| PI-1S3.03 | <i>establish mgt. conference</i> | LDWF | E | | \$1,615 | \$808 |
| PI-1S3.04 | <i>establish mgt. conference</i> | LDED | E | | \$1,615 | \$808 |
| PI-1S3.05 | <i>establish mgt. conference</i> | LDCRT | E | | \$1,615 | \$808 |
| PI-1S3.06 | <i>establish mgt. conference</i> | LDNR | E | | \$1,615 | \$808 |
| PI-1S3.07 | <i>establish mgt. conference</i> | USEPA-R6 | E | | \$1,615 | \$808 |
| PI-1S3.08 | <i>establish mgt. conference</i> | USACOE | E | | \$1,615 | \$808 |
| PI-1S3.09 | <i>establish mgt. conference</i> | USFWS | E | | \$1,615 | \$808 |
| PI-1S3.10 | <i>establish mgt. conference</i> | USNMFS | E | | \$1,615 | \$808 |
| PI-1S3.11 | <i>establish mgt. conference</i> | USNRCs | E | | \$1,615 | \$808 |
| PI-1S3.12 | <i>establish mgt. conference</i> | Others To Be Named (# =31) | E | | \$50,077 | \$25,038 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$203,700
 Total Funding Existing (Years 1-5): \$203,700
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan has been identified for Years 1-5. Funding will be made available through future budgets and/or existing grants. Therefore, no new funding will be necessary.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

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1. The BTMC consists of 42 to 45 members representing the diverse interests in the BTES, just as the current BTMC does.
2. Some of the major stakeholders to be represented include industry, business, economic development, federal, state, and local governments, academia, environmental organizations, and the general public.
3. The BTMC will rely on the Program Office staff to conduct the day-to-day program activities.

Interrelationships Among Components

The BTMC has several functions:

1. to encourage and oversee the implementation of the CCMP by coordinating and integrating the CCMP actions among agencies and stakeholders;
2. to maintain an interchange with similar federal, state, and local planning efforts;
3. to review and modify the implementation of the CCMP as conditions change through time; and
4. to foster and expand the use of participatory, voluntary and incentive-based approaches to decision-making in the estuary.

Initially, the BTMC will be chaired by the LGO. For the initial year, a three-tiered meeting structure is recommended. The BTMC will meet quarterly. Committees and subcommittees will meet more frequently if necessary. An annual symposium, "State of the Estuary", will include the BTMC, all interested stakeholders, and the general public. The BTMC will continue to use the established decision making process to implement the CCMP. The LDEQ will maintain the Program Office and provide additional support services in the same manner as they have previously supported the conference, provided adequate funding is available.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To continue the present management structure at a somewhat reduced level in order to provide oversight of CCMP implementation.
 - a. This element has been accepted as part the CCMP.
 - b. The BTMC holds an orientation for new members before the first BTMC meeting.
 - c. The BTMC establishes an organizational structure.
 - d. The BTMC schedules further meetings.
 - e. The BTMC initiates an internal evaluation mechanism.
 - f. The BTMC establishes revision protocols for the CCMP with the EPA.
 - g. The BTMC establishes internal guidelines for CCMP review and revisions, creates a special subcommittee to administer the process, and establishes public outreach guidelines for involving stakeholders in the process.
 - h. The BTMC committees and subcommittees are formed within two months of EPA approval of the CCMP.
 - I. Committees and subcommittees establish schedules for meetings.
 - j. Committees and subcommittees develop a plan for their activities and reporting to the BTMC.
 - k. The BTMC coordinates the CCMP actions among agencies and stakeholders.
 - l. The BTMC maintains an interchange of ideas and integrates CCMP actions into similar federal, state, and local planning efforts.
 - m. The BTMC reviews and modifies the implementation of the CCMP as conditions change over time.
 - n. The BTMC fosters the expanded use of participatory, voluntary, and incentive-based approaches to decision-making in the estuary.
 - o. The BTMC has a clear and consistent structure that allows for accountability.
 - p. The BTMC organizes itself to effectively address the overlapping of responsibilities among its members.
 - q. The BTMC addresses gaps in legislation when these gaps adversely impact the BTMC actions.
 - r. The BTMC has oversight for implementation of the CCMP.
 - s. The BTMC derives its authority for oversight from cooperative agreement by the participants (the MOAs).
 - t. The BTMC is allowed latitude to use professional judgment in implementing their mandates.

Action Plan PI-1: Barataria-Terrebonne Management Conference

- u. Public education is a high priority.
 - v. The operation and management of the BTMC encourages coordination of public and private interests to resolve long-standing controversies over how to address BTES problems.
 - w. The BTMC establishes a schedule for implementing its actions. The BTMC adheres to the schedule. The schedules are realistic.
 - x. The BTMC receives technical and scientific input before making decisions and taking actions.
 - y. The BTMC has accounted for the unplanned, such as special reports, data gaps, or conflicts, that may delay implementation.
2. To ensure that all stakeholders continue to have the opportunity to have input as the CCMP is implemented.
 - a. The composition of the BTMC is as proposed in the CCMP.
 - b. All 42 to 45 members are enlisted and actively participating.
 - c. Anyone or group can participate.
 - d. The general public can participate in the BTMC meetings and decision making process by submitting written and oral statements.
 3. To facilitate coordinated and balanced management of the BTES.
 - a. The BTMC actively and effectively facilitates a coordinated and balanced management of the BTES.
 - b. The BTMC is accepted by stakeholders as a facilitator for solving basin problems and conflicts.
 - c. The BTMC proposes a process for coordinating management within the BTES.
 - d. The BTMC members approved the coordination process.
 - e. Decision makers are oriented to problem solving, not personal or organizational gain.
 - f. The BTMC participants have authority to act on behalf of their agency and to commit them to activities.
 - g. Stakeholders have the support of their organization.
 - h. Stakeholders commit to making decisions that bind them to an activity within an agreed to period.
 - I. Stakeholders make decisions in a timely manner.
 - j. The BTMC members have become a team or are not still competitive to the detriment of the program.
 - k. The BTMC defined "balanced management" to the satisfaction of the stakeholders.
 - l. The process is considered balanced by the stakeholders.
 - m. Reviewers have not criticized the BTMC in professional journals, newspaper articles, etc.
 4. Stakeholders on the BTMC agree that this is a fair and equitable method of monitoring their actions.
 5. A Third Party with no vested interest is accepted for conducting the monitoring and evaluation.
 6. A public awareness program has been organized and begun work.
 7. The monitoring reports and results should be submitted to the BTMC quarterly with an annual summary unless requested on a more frequent basis by the BTMC.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Program Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing participants, observing organization and activities of the BTMC; examining quantifiable data, such as number and regularity of meetings, attendance of participants, and actions taken during and between meetings; and reviewing existing records, such as minutes from previous meetings and assignments accomplished.

Sampling design and statistical methods

The monitor will report on establishment of the BTMC. Once the BTMC meets and agrees on its organization, structure, and administration, the monitor will no longer consider the set-up process. A significant part of the monitor's effort will focus on the operations of the BTMC, such as the activities of the committees and subcommittees and the annual symposium. The monitor will not use statistical methods in preparing the quarterly or

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annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, interviews and meetings with BTMC members, attendance at selected subcommittee meetings, and monitoring preparation for and implementation of the annual symposium). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 328 person hours for the year. The estimated cost for the first year is \$18,700 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor activities of the BTMC. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The individual monitoring the BTMC shall prepare a written quarterly report summarizing BTMC activities, accomplishments, problems, issues of concern, and recommended solutions concerning the operations and administration of the BTMC. The report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party will appear at the BTMC meeting to discuss the monitoring report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its purpose of providing a documentation of activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve BTMC performance. The basic outline of a Quality Assurance Plan follows.

Objective of monitoring

1. To record the activities of the BTMC.
2. To document how the BTMC implements its objectives.
3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

A Third Party with no vested interest, but who is knowledgeable about the basin and organizing and facilitating meetings and administrating programs.

1. Describe existing practices and identify issues of concern and problems.
2. Interviews (onsite, telephone, mail surveys) with stakeholders and the general public.
3. Observing meetings.
 - a. The meeting begins on time.
 - b. A mechanism is accepted for selecting a chairperson, making decisions, distributing news releases, speaking for the BTMC, approving reports, managing staff and money, and convening regular meetings.
 - c. There is an Agenda and the BTMC uses it.
 - d. Representatives attend the BTMC and actively participate.
 - e. Reports and materials are distributed at least two weeks before the meeting, giving participants time for review and consideration.
 - f. Presentations are clear, concise, informative, and applicable to the issues under discussion.
 - g. Decisions are made in a timely manner.
 - h. The meeting are orderly and conducted in a professional manner.
 - I. All parties are allowed to speak and present their position.
 - j. Some participants are not allowed to dominate the proceedings.

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- k. Participants are working as a team and trying for accommodation.
 - l. Agencies or individuals seem more interested in the benefits of the BTES as a whole than their special interests.
 - m. The meeting ends on schedule.
4. There is virtually no difference between proposals and actions.
 5. Examination of statistics, for example meetings held; attendance; accomplishments indicated the plan is being implemented.
 6. The BTMC defines what is meant by effective in order that the monitoring strategy focus on relevant data.

Data evaluation

The BTMC shall work with its selected monitor to develop a procedure for collecting data that will provide the BTMC with the information it needs. The BTMC may wish to compare a model that describes the workings of an ideal organization and to the observed results.

Review of monitoring documents

The BTMC shall receive the draft monitoring document at least 15 days before the regularly scheduled BTMC meeting. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

**Action Plan PI-2:
Establish Points of Contact for the
State of Louisiana**

PI-2 Establish Points-of-Contact for the State of Louisiana

OBJECTIVES

1. To establish Points-of-Contact for the State of Louisiana with respect to implementation of the CCMP.
2. To establish a mechanism for the transition from CCMP development to CCMP implementation.

DESCRIPTION

As CCMP implementation begins, it is important that the Louisiana Governor's Office (LGO) be designated as Point-of-Contact for the State of Louisiana. It would also seem appropriate that the Louisiana Department of Environmental Quality (LDEQ) continue its role as the State representative in matters related to fiscal and administrative support. LDEQ would continue to provide necessary Program Office support functions and would continue to receive any additional EPA grant funds.

BACKGROUND/MAJOR ISSUES

It should be the Governor's Office that assumes a leadership role with respect to securing the support necessary to implement the CCMP. It was the Governor of Louisiana that nominated the Barataria-Terrebonne Estuarine Complex for inclusion in the National Estuary Program in 1990. The resulting Conference Agreement was a commitment between the Governor and the EPA to convene a Management Conference with the expressed mission of developing a CCMP. It will be the Governor of Louisiana that will submit the final CCMP to EPA for final approval.

LDEQ has been the EPA grant recipient throughout the CCMP development phase. LDEQ already has staff positions dedicated to the Program Office and has dutifully provided all of the support services necessary to execute projects and exercise administrative oversight and support of the Program. It is proposed here that it continue in that same role as CCMP implementation is initiated.

BENEFITS

It is extremely beneficial to have the participation and assistance of the Governor in ensuring that the CCMP is implemented in a timely manner. The Governor has the authority and the influence to ensure that the CCMP is implemented in a timely manner and in the manner it was intended to be implemented. Having the Governor's ongoing support would also help ensure that the CCMP can be modified when necessary.

Having LDEQ continue as the lead with respect to administrative and fiscal support is very important to maintaining consistency within the Program. Personnel at LDEQ, having administered the Program since its beginning, have a good understanding of the goals of the CCMP.

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IMPLEMENTATION SCHEDULE

Short-term plans call for the transition of BTNEP from CCMP development to CCMP implementation:

- S 1.00 Task Force initiated by BTNEP:
 - a. Develop recommendations for members.
 - b. Develop recommendations for procedures/bylaws, etc.
- S 2.00 Secure Funding for continuation of program:
 - a. Formal request to EPA for initial funding.
 - b. Formal request to Governor/Legislature for long-range commitment.
- S 3.00 Secure MOAs with federal, state and local agencies, as well as other involved organizations.
- S 4.00 Acceptance of CCMP by EPA.
- S 5.00 Establishment of Barataria-Terrebonne Management Conference (BTMC).

Medium- and Long-term plans are:

- M 1.00 Oversight of CCMP implementation and related expenditures.
- M 2.00 Ensure continued funding.
- M 3.00 Monitor adherence to MOAs.

LEAD AND SUPPORT IMPLEMENTORS

Lead Implementors for this effort are the LGO, LDEQ, EPA, and the Program Office.

COSTS AND ECONOMIC CONSIDERATIONS

Table PI2-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short_ Term) | Y2-5 AVG_ COSTS/YR (Medium Term) |
|------------------|--|---------|-------------------|-----------|------------------------------|--|
| PI-2 | | | | | \$0 | \$0 |
| PI-2S1.00 | <i>task force and initial conference</i> | | Pre 10/96 | | \$0 | \$0 |
| PI-2S2.00 | <i>secure funding</i> | | Pre 10/96 | | \$0 | \$0 |
| PI-2S3.00 | <i>secure MOA on implementation</i> | BTPO-PD | | PI-3S1.00 | \$0 | \$0 |

Table PI2-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Action Plan PI-2: Establish Points of Contact for the State of Louisiana

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): None
Total Funding Existing (Years 1-5): N/A
Total New Funding Necessary (Years 1-5): None

Summary of new funding strategy: There is no cost associated with this action plan. No costs are anticipated in the next five years.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. The LGO will serve as the Point-of-Contact for all policy related issues or activities.
2. The LGO will seek funding for the CCMP implementation and secure and monitor MOAs with various state, federal and local agencies, as well as other involved organizations, regarding the CCMP implementation.
3. The LDEQ will continue providing fiscal and administrative support, provided funding is available.

Interrelationships Among Components

In addition to serving as the office that coordinates all policy related issues or activities, the LGO will seek funding for the CCMP implementation and secure and monitor MOAs with various state, federal and local agencies, as well as other organizations regarding the CCMP implementation. The LGO depends on the Program Office (PI-3) for assistance in preparing and enacting MOAs. The LDEQ will continue to furnish fiscal and administrative support similar to present actions, provide for staff positions dedicated to the Program Office, and receive additional EPA grant funds, provided adequate funding is available.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. The EPA accepts the LGO as the point-of-contact for all policy related issues or activities.
2. The Governor designates the LGO as the point-of-contact for all policy related issues or activities.
3. The LGO assigns an experienced person to oversee its responsibilities.
4. The EPA approves the LDEQ as the agency that will receive additional grant funds for this program.
5. The Governor designates the LDEQ as the agency that will receive additional grants funds for this program, the agency that will provide staff positions dedicated to the Program Office, and the agency that will execute projects and exercise administrative oversight and support of the Program.
6. The LDEQ provides for staff at the Program Office.
7. The LDEQ processes contracts in an efficient and timely manner.
8. Contractors who comply with reporting requirements are paid on time.
9. The LDEQ agrees to receive EPA grant funds.
10. EPA accepts the CCMP.

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11. The Governor authorizes the LDEQ to continue as the lead with respect to administrative and fiscal support of the program.
12. Within one month of an EPA approved CCMP, the BTNEP, in consultation with the BTMC, recommends members for a Task Force that will oversee the transition of the CCMP from development to implementation.
13. Within three months of convening, the Task Force develops and approves operating procedures, bylaws, and formal mechanisms for conducting business and implementing the CCMP in a timely fashion.
14. The LGO in consultation with the Task Force develops a formal request for EPA funding to continue the program. The request is sent to EPA within two months of the Task Force establishing procedures for conducting business.
15. The LGO, in coordination with the Task Force, formally requests that the state commit for long-term support of the program. The LGO and the Task Force are available to meet with the Governor's designated representative and to testify before appropriate Legislative committees.
16. The LGO working with the Program Office and in consultation with federal, state and local agency personnel, as well as personnel from other organizations, develops MOAs regarding CCMP implementation. The MOAs extend beyond a restatement of existing job descriptions. Meetings with these parties begins within one month of EPA approval of the CCMP.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing participants, observing activities of the LGO, examining quantifiable data, such as number of contracts or invoices processed during a time period, attendance at meetings, and reviewing existing records from the LGO and the LDEQ, such as staff assignments.

Sampling design and statistical methods

The LGO will be reviewed each year to determine if they actively seek funds for CCMP implementation. If the BTMC assumes this function after the first year, they will then determine how monitoring should proceed. At least once a year, the monitor will review the status of the MOAs and report changes to the BTMC. Finally, the monitor will report how the LGO coordinates policy related issues or activities. The monitor will continue to review the activities of the LDEQ and report to the BTMC quarterly. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimates

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, and interviews and meetings with the LGO and the LDEQ). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 200 person hours for the year. The estimated cost for the first year is \$11,300 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor activities of the LGO and the LDEQ. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." In addition, the LGO and the LDEQ will be asked to prepare quarterly written reports for the BTMC summarizing their activities. The independent Third Party will prepare a quarterly report describing agency activities, action plan accomplishments, problems, issues of

Action Plan PI-2: Establish Points of Contact for the State of Louisiana

concern, and recommended solutions concerning the development of the MOAs, funding requests, BTMC operating procedures, bylaws, and formal mechanisms for conducting business and implementing the CCMP in a timely fashion. The monitoring report shall be submitted at least 15 days prior to a regularly scheduled meeting of the BTMC. The independent Third Party will appear at the BTMC meeting to discuss the monitoring report.

Quality Assurance /Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its actions and activities in an objective and systematic manner that provides the BTMC with useful information and recommendations. The basic outline of a Quality Assurance Plan follows.

Objective of monitoring

1. To observe if the LGO serves as the point-of-contact for all policy related issues or activities.
2. To determine if the LGO is aggressively seeking funding for CCMP implementation.
3. To document the preparation and acceptance of MOAs between the LGO and state, federal and local agencies, as well as other involved organizations.
4. To review the LDEQ administrative procedures.
5. To identify problems and issues of concern when implementing the CCMP.
6. To recommend solutions to problems and issues of concern.

Data collection

1. Has the LGO submitted written quarterly reports and appeared before the BTMC to describe and discuss its actions?
2. Has LDEQ provided written quarterly reports to the BTMC describing and discussing its activities?
3. Attend regular meetings of the participants.
4. Interview stakeholders and contractors.
5. Basic data:
 - a. The proposed procedure allows for programmatic changes in a timely manner.
 - b. Agency staff seriously work to accomplish implementation of the CCMP.

Data evaluation

The BTMC will review the information presented by the LGO and the LDEQ.

Review of monitoring documents

The BTMC shall receive the draft monitoring document quarterly. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared by the LGO and the LDEQ for review by the BTMC. These documents will accompany the separate quarterly monitoring report prepared by the independent Third Party. The independent Third Party will prepare an annual monitoring document summarizing the previous calendar year and submit it to the BTMC no later than January 30 of the following year.

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PI-3 Barataria-Terrebonne Program Office

OBJECTIVES:

1. To provide administrative and logistical support to the Barataria-Terrebonne Management Conference (BTMC) by maintaining a Program Office with a small staff.

DESCRIPTION:

This action would continue the operation of the Barataria-Terrebonne Program Office similar to the existing one, except with a smaller staff. The office would be tasked with a number of responsibilities, all of which would directly relate to CCMP implementation. The first group of responsibilities would be the administrative duties necessary to conduct conference meetings. Included would be the development of detailed agendas, notification of participants, preparation of meeting minutes, and follow-up on activities and duties assigned at the meetings. Other major responsibilities would be to assume the lead role in the development of Memoranda of Agreement (MOA's) with various governmental agencies and others to implement CCMP actions and to assist the various responsible agencies with respect to implementation of specific Action Plans. The Program Office would be accountable to the BTMC for CCMP implementation matters, but to LDEQ for Program administration and personnel concerns.

BACKGROUND/MAJOR ISSUES

The current configuration of the BTNEP Program Office has worked well during the CCMP development phase of the Program. For the CCMP to be implemented it is recognized that there must be personnel assigned to accomplish the administrative and logistical work necessary to actually begin and continue the implementation process and to support the ongoing BTMC. Besides being responsible for similar tasks, the current Program Office is responsible for the development and execution of numerous projects to gather scientific information, to educate the public about various issues, and to foster support from stakeholders. Because these projects will be completed along with the finalization of the CCMP, the ongoing Program Office could operate with a smaller staff than the current Program Office. As Program Office responsibilities change over time, the size and configuration of the office could be changed to meet those responsibilities.

BENEFITS

The benefits of having a Program Office is that there would be personnel dedicated to working specifically on CCMP implementation. Without having this specifically dedicated staff, the likelihood of the BTMC continuing to function as it currently does and having the momentum to implement the CCMP could be jeopardized. By having staff in a Program Office, all of the stakeholders and the agencies responsible for CCMP would be assured that personnel would be available to assist with Action Plans and monitor progress with respect to CCMP implementation.

IMPLEMENTATION SCHEDULE

The Program Office would continue to operate with existing LDEQ State civil service positions and/or detailed personnel from other agencies for as long as deemed necessary by the BTMC. As staffing and funding needs change in the future, the Program Office configuration proposed here could be altered.

**Action Plan PI-3:
Barataria-
Terrebonne Program Office**

LEAD AND SUPPORT IMPLEMENTORS

The LDEQ would be responsible for the necessary administrative support to continue the operations of the Program Office including providing staff positions and assuring State matching funds for any Federal grants which might be received to help fund the office.

COSTS AND ECONOMIC CONSIDERATIONS

Table PI3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|----------------------------------|-------------|---------------------------|------------------|--------------------------------------|--|
| PI-3 | | | | | \$269,078 | \$269,078 |
| PI-3S1.00 | <i>salary costs</i> | BTPO | N | \$ PER MO | \$166,078 | \$166,078 |
| PI-3S1.01 | <i>program director</i> | BTPO-PD | N | \$3,437 | \$41,244 | \$41,244 |
| PI-3S1.02 | <i>env. quality specialist 1</i> | BTPO-EQS1 | N | \$2,290 | \$27,480 | \$27,480 |
| PI-3S1.03 | <i>env. project specialist 1</i> | BTPO-EPS1 | N | \$2,000 | \$24,000 | \$24,000 |
| PI-3S1.04 | <i>env. project specialist 2</i> | BTPO-EPS2 | N | \$2,290 | \$27,480 | \$27,480 |
| PI-3S1.05 | <i>secretary 2</i> | BTPO-S2 | N | \$1,527 | \$18,324 | \$18,324 |
| PI-3S1.06 | <i>student worker</i> | BTPO-STU | N | \$333 | \$4,000 | \$4,000 |
| PI-3S1.07 | <i>fringe</i> | BTPO | N | 17% | \$23,550 | \$23,550 |
| PI-3S2.00 | <i>other operating costs</i> | BTPO | N | | \$103,000 | \$103,000 |
| PI-3S2.01 | <i>travel</i> | BTPO | N | | \$8,000 | \$8,000 |
| PI-3S2.02 | <i>printing</i> | BTPO | N | | \$30,000 | \$30,000 |
| PI-3S2.03 | <i>office space rental</i> | BTPO | N | | \$22,000 | \$22,000 |
| PI-3S2.04 | <i>other equipment rental</i> | BTPO | N | | \$9,000 | \$9,000 |
| PI-3S2.05 | <i>postage</i> | BTPO | N | | \$5,000 | \$5,000 |
| PI-3S2.06 | <i>telephone</i> | BTPO | N | | \$14,000 | \$14,000 |
| PI-3S2.07 | <i>office supplies</i> | BTPO | N | | \$15,000 | \$15,000 |

Table PI3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

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FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$1,345,400
Total Funding Existing (Years 1-5): \$1,345,000
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Potential funding for this action plan has been identified for Years 1-5. Funding will be made available through future budgets, State agency resources, and/or existing grants. This funding relies in part on State support and there may be a need for other agencies to detail employees.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Continues the operation of the Barataria-Terrebonne Program Office similar to the existing one.

Interrelationships Among Components

The staff will conduct conference meetings. Staff duties include development of detailed agendas, notification of participants, preparation of meeting minutes, and follow-up on activities and duties assigned at the meetings. Second, the staff, in coordination with the LGOCA, will develop the MOAs with various governmental agencies and others to implement CCMP actions. Third, the Program Office will assist the various responsible agencies and others with respect to the implementation of specific Action Plans. Finally, the Program Office is accountable to the BTMC for implementation of the CCMP and to the LDEQ for administrative and personnel matters.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. The EPA provides \$300,000 for Federal Fiscal Years 1997 through 2000.
2. The LDEQ provides \$100,000 for Federal Fiscal Years 1997 through 2000.
3. The combined funds are sufficient to maintain staff at a level appropriate to their duties and responsibilities.
4. Patterns of staff participation (inexperience, transient personnel, transfers, leaves) that affect Program Office operations are avoided.
5. The staff conducts its work in a professional manner by:
 - a. developing detailed agendas for conference meetings;
 - b. notifying participants;
 - c. preparing meeting minutes; and
 - d. following-up on activities assigned at the meetings.
6. The staff works with the LGOCA in developing MOAs.
7. The staff within personnel and budget constraints assists other agencies with respect to implementation of specific Action Plans.

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Barataria-
Terrebonne Program Office**

8. The staff reports to the BTMC for program activities. The BTMC is satisfied with staff activities.
9. The BTMC gives clear, concise directions to staff and operates through the established chain-of-command.
10. The staff reports to the LDEQ on administrative and personnel issues.
11. The LDEQ responds to the Program Office in a timely and professional manner.

Methods

Measurable parameters

The measurable parameters include the criteria identified in the section: Documentation of Plan Implementation and Success.

Data collection methods

An independent Third Party will collect data by interviewing the office staff, BTMC members, and the general public; observing activities of the staff, for example follow-up on activities and duties assigned at the BTMC; examining quantifiable data, such as information provided to the BTMC and/or the general public during a time period; attendance at meetings; and reviewing existing records of involvement with the general public.

Sampling design and statistical methods

The monitor will meet monthly with selected individuals representing the office staff, BTMC members, and general public. In addition, the monitor will attend meetings and review activities related to public involvement. The monitor will not use statistical methods in preparing the quarterly or annual reports.

Cost estimate

The level of effort projects the costs (in 1996 dollars) for an independent Third Party to accomplish the above described activities (quarterly BTMC meetings and reports, an annual report, and interviews and meetings with BTMC members and office staff). After the first year, the BTMC should assess the value of the monitoring process and adjust the scope of services and contractual arrangements to provide for the desired information. The scope-of-services for the 12 months estimates 208 person hours for the year. The estimated cost for the first year is \$12,200 which includes salary, fringe benefits, overhead, and associated expenses.

Recommendations and Feedback to Program/Implementor

An independent Third Party will monitor activities of the Barataria-Terrebonne Program Office Action Plan. Monitoring will utilize the criteria presented in the section "Documentation of Plan Implementation and Success." The independent Third Party shall prepare a written quarterly report for the BTMC summarizing staff activities, accomplishments, problems, issues of concern, and recommended solutions concerning the operations and administration of the Program Office. The report shall be submitted at least 15 days prior to a regularly scheduled BTMC meeting. The independent Third Party will be available at the BTMC meeting for discussion of his/her report.

Quality Assurance/Quality Control

A Quality Assurance Plan shall be developed by the BTMC to assure the Monitoring Strategy accomplishes its purpose of providing a documentation of activities in an objective and systematic manner that provides the BTMC with information and recommendations it can use to improve Program Office performance. The basic outline of a Quality Assurance Plan follows. Some sections have been expanded to illustrate possible approaches.

Objective of monitoring

1. To observe the activities of the Program Office.
2. To document how the Program Office accomplishes its responsibilities.

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3. To identify problems and issues of concern.
4. To recommend solutions to problems and issues of concern.

Data collection

1. A Third Party with no vested interest, but who is knowledgeable about the basin and organizing and facilitating meetings and administrating programs.
2. Describe existing practices and identify issues of concern and problems.
3. Interviews (onsite, telephone, mail surveys) with stakeholders and the general public.
4. For conducting conference meetings, the staff:
 - a. arrange for meeting appropriate facilities (sufficient free parking, adequate meeting rooms, easily located, functional heating and air conditioning;
 - b. developed a detailed meeting agenda;
 - c. mailed the agenda at least ten days before the meeting;
 - d. telephoned BTMC members who have missed at least two consecutive meetings;
 - e. prepares minutes of the meetings;
 - f. satisfactorily follows-up on activities and duties assigned at the meetings;
 - g. reports and materials are distributed at least two weeks before the next meeting, giving participants time for review and consideration; presentations clear, concise, informative, and applicable information on the issues for discussion.

Data evaluation

The BTMC shall work with its selected monitor to develop a procedure for assessing data that will provide the BTMC with the information it needs.

Review of monitoring documents

The BTMC shall receive the draft monitoring document at least 15 days before the regularly scheduled BTMC meeting. The monitoring document shall be presented by the contractor at the BTMC meeting. The BTMC shall discuss the monitoring document and may take actions it feels appropriate.

Problems, recommended actions, and responsible party

The monitoring document shall identify the causes of problems observed during the reporting period, describe the short and long-term consequences of these problems, recommend actions to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A quarterly monitoring report will be prepared for the BTMC. An annual monitoring document summarizing the previous calendar year shall be submitted to the BTMC no later than January 30 of the following year.

SUSTAINED RECOGNITION AND CITIZEN INVOLVEMENT ACTION PLANS

The **Citizen Involvement and Participation** action plans create a strategy to build a public stewardship of the estuary, encourage a strong, informed public involvement in estuarine planning, and motivate the public to action. Towards this end, the Sustained Recognition and Citizen Involvement Alliance of the Management Conference concentrated on issues such as the need for a mechanism for organized public involvement, increasing the opportunities and activities available to the public, and developing methods through which the public can become directly involved in the protection of the estuary. In addition, BTNEP has become increasingly more visible at events throughout the BTES, ensuring that information about the program is available to the public. Finally, BTNEP has sponsored a series of public workshops in identified “community sectors” throughout the BTES in an effort to obtain direct public involvement in the development of the CCMP.

The idea of establishing a private sector non-profit organization to keep the public involved in the creation and implementation of the CCMP and to educate the public regarding estuary issues was developed at initial BTNEP Management Conference workshops. It was anticipated that membership would include representatives from all major stakeholder groups in the estuary and that the organization would become a center for organized public involvement in the implementation of the CCMP. The Barataria-Terrebonne Estuary Foundation has recently been established as a private sector initiative with no expenditure of public funds and no direct involvement from state or federal agency personnel.

The **Public Information and Education** actions make up a strategy to educate the public by providing accurate and current technical information about the importance of the estuary and the threats that it faces. This information will be targeted to the widest audience possible, including policy-makers at the federal, state and local levels, businesses and industries, residents and users. The ultimate aim is that through the distribution of this information, the BTES will have the same level of recognition and urgency as other nationally significant estuaries, such as the Everglades and the Chesapeake Bay. BTNEP’s efforts in this area have thus far been widespread. A video, *Haunted Waters, Fragile Lands: Oh, What Tales to Tell!*, outlines the environmental and cultural importance of the estuary, as well as the threats faced by it, has been aired on television, as well as at numerous public events. A speakers bureau has been started, providing an opportunity for experts in various estuary-related issues to educate the public. Other efforts include information packets, slide presentations, public exhibits and displays and a promotional campaign.

The need for both formal and informal educational programs aimed at the estuary and its problems was identified early in the process of developing this CCMP. To address this need, the **K-16 Curriculum** plans were developed as a framework for involving teachers in developing primary and secondary school wetlands curricula units, as well as a long-term effort to coordinate all environmental education programs at the state and local levels. Informal educational programs will also be developed for estuary residents and users. One of the most innovative aspects of these plans is a proposed college-level curriculum addressing coastal wetlands issues, which will not only benefit the BTES, but other estuaries as well.

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OBJECTIVES

1. To develop local community sectors and teams of local estuary leaders throughout the estuary.
2. To build citizen involvement in the goals of the CCMP and create citizen support for CCMP actions.

DESCRIPTION

This action will establish and support a network of estuary community sectors and local estuary leaders in order to organize and encourage citizen involvement and support in the implementation of the CCMP. Community sectors are groups of local communities within the estuary that share common estuarine-related problems. Grouping estuary communities with the same problems encourages the communities to work on a natural geographic- or ecologic-based level, instead of following the traditional political boundaries. Such grouping creates a common-bond that enhances collaborative working relationships within the estuary.

For the first series of BTNEP public participation workshops in June 1995, the project committee - consisting of Barataria-Terrebonne Management Conference (BTMC) members, Louisiana Cooperative Extension Service agents, BTNEP staff and consultants - identified six areas that could be grouped into the initial set of BTES Community Sectors:

- | | |
|------------------------------------|-----------------------------------|
| 1. Houma/South Terrebonne Parish | 4. Pierre Part/Belle Rose |
| 2. Cut Off/Galliano/Larose | 5. Marrero/Lower Jefferson Parish |
| 3. Port Allen and surrounding area | 6. Vacherie and surrounding area |

Each initial sector encompasses local communities that share a common set of problems. These sectors are prototypes for developing community sectors throughout the BTES and will be the nucleus of the BTES Community Sector Network. Each BTES community sector must have citizens who will work together in Leader Teams to accomplish goals or resolve problems and issues. Public stewardship for issues or areas of direct concern is easier to create when there is a common effort between local communities.

Leader Teams are groups of local community leaders who have agreed to work together as BTES representatives of their individual community sectors. These teams will help disseminate information, arrange and recruit participants for public meetings, and determine appropriate "public involvement" activities and programs for their community sector. Leader Teams developed in the six initial Community Sectors by the BTMC, the Louisiana Cooperative Extension Service, BTNEP staff and consultants are models for future Leader Teams. The success of the Leader Teams/Community Sectors concept in the first public participation workshops demonstrated the value of this approach to future CCMP planning. Relationships with the Louisiana Cooperative Extension Service and other liaison organizations will be actively pursued in this action plan in order to continue developing and expanding Community Sectors and Leader Teams.

BACKGROUND/ MAJOR ISSUES

The estuary is a large and diverse area. Each community has its own personality, its own concerns about estuarine issues, and its own experiences with estuarine problems. To increase citizen involvement in furthering CCMP actions, it is critical that local communities be asked for their input and direct participation. People are more likely to become involved if the CCMP addresses interests and issues that directly affect their lives.

BENEFITS

Action Plan SR-1: Community Sectors and Leader Teams

Community Sectors and Leader Teams will increase the ability of the BTMC to outreach and involve the people from many local communities. These community sectors will have a tremendous impact on advocacy efforts and coalition-building. This strategy will keep people active and increase the likelihood that innovative ideas will emerge for preserving the BTES. It provides the best approach for building a grassroots effort of citizen support. This action plan supports the following BTNEP goals: *Develop and maintain Multi-level, Long-term Planning; Implement Comprehensive Education and Awareness Programs that Enhance Public Involvement; Create Regional Pride and Long-term Stewardship; and Promote Environmentally Responsible Economic Activities that Sustains Estuarine Resources.* When expanded, community sectors will help to involve more estuary citizens in implementing the CCMP.

IMPLEMENTATION SCHEDULE

Short-term planning objectives (September 1995 - December 1996) include the formalization and expansion of sectors and teams; the creation of a working communications and activity system between community sector leader teams and the BTMC for speaking engagements, publicity, educational programs, and other activities. Specific short-term plans and implementors are:

- S 1.00 Review results, evaluations and recommendations from first round of public workshops (BTMC - September 1995).
- S 2.00 Re-confirm and follow-up with local contacts in all community sectors (BTMC -January 1996).
- S 3.00 Develop database of sectors and leader teams (BTMC -December 1996).
- S 4.00 Establish contacts and determine leaders in other local BTES communities (BTMC - December 1995).
- S 5.00 Develop and maintain database of all target audiences, stakeholders and interests (BTMC - December 1995).
- S 6.00 Formalize structure of the Community Sector Network and coordinate with BTES sectors and leader teams (BTMC - March 1996).
- S 7.00 Train all leader teams in BTES issues and participatory methodology (BTMC - April 1996).
- S 8.00 Establish communications system between the BTMC and Teams (BTMC - April 1996).
- S 9.00 Meet quarterly with community sectors and leader teams to discuss issues of concern, specific CCMP actions affecting their respective sector, ways to become more integrated with the community, and strategies to gain support for CCMP (BTMC - December 1996).
- S 10.00 Maintain and expand community sector database/contact list building on existing BTNEP database (BTMC - December 1996).
- S 11.00 Report at the annual State of the Estuary Symposium and Festival (Sector Leaders-December 1996).

Medium-term planning objectives (1997-2000) are:

- M 1.00 Coordinate with Leader Teams on a consistent basis.
- M 2.00 Support original community sectors and leader teams.
- M 3.00 Identify and organize new community sectors and leader teams.
- M 4.00 Develop the expertise of sector leader teams.

Long-term planning objectives (2001-2020) are:

- L 1.00 Build a strong linkage among the community sectors and leader teams so that citizens of the estuary become unified in support of CCMP actions.
- L 2.00 Create more citizen involvement activities in each community sector.
- L 3.00 Establish adequate and appropriate representation of each community sector in the BTMC.
- L 4.00 Demonstrate relationships between community sectors.

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- L 5.00 Formalize and maintain the network between community sectors through periodic meetings, workshops, forums and other involvement activities.
- L 6.00 Create a massive, grassroots effort for CCMP implementation.

LEAD AND SUPPORT IMPLEMENTORS

The initial implementor of this action has been the Program Office through its first public participation workshops project. The Program Office will continue to manage contacts and public review activities which will strengthen these teams. Support implementors will include the Louisiana Cooperative Extension Service, volunteer leader teams, individual members of the BTMC, Leadership Lafourche, Leadership Terrebonne, Council for Better Louisiana, Leadership Louisiana, and civic organizations. The Program Office is developing agreements for involvement and active participation of these groups in meeting the objectives of the CCMP.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR1-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5AVG COSTS/YR (Medium Term) |
|-------------|-------------------------------------|-----------|-------------------|---------|--------------------------|--------------------------------------|
| SR-01 | | | | | \$15,600 | \$2,262 |
| SR-01S01.00 | <i>review first workshops</i> | BTMC | E | | \$0 | \$0 |
| SR-01S02.00 | <i>follow-up</i> | BTMC | E | | \$0 | \$0 |
| SR-01S03.00 | <i>data base of teams</i> | BTPO-EPS2 | E | | \$485 | \$0 |
| SR-01S04.00 | <i>contacts and leaders</i> | BTPO-EPS2 | E | | \$3,500 | \$0 |
| SR-01S05.00 | <i>maintain database</i> | BTPO-S2 | E | | \$0 | \$0 |
| SR-01S06.00 | <i>formalize Comm. Network</i> | BTPO-EPS2 | E | | \$3,500 | \$0 |
| SR-01S07.00 | <i>train leader teams</i> | | | | \$523 | |
| SR-01S07.01 | <i>train leader teams</i> | BTPO-EPS2 | E | | \$323 | \$0 |
| SR-01S07.02 | <i>train leader teams-materials</i> | BTMC | E | | \$200 | \$0 |
| SR-01S08.00 | <i>establish communication sys.</i> | BTMC | E | | \$0 | \$0 |
| SR-01S09.00 | <i>quarterly meetings</i> | | | | \$5,169 | \$0 |
| SR-01S09.01 | <i>quarterly meetings</i> | BTMC | E | | \$2,585 | \$0 |
| SR-01S09.02 | <i>quarterly meetings</i> | LCES | E | | \$2,585 | \$0 |
| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5AVG COSTS/YR (Medium Term) |
| SR-01S11.00 | <i>report at State of Estuary</i> | | | | \$1,615 | \$0 |
| SR-01S11.01 | <i>report at State of Estuary</i> | BTPO-EPS2 | E | | \$808 | \$0 |
| SR-01S11.02 | <i>report at State of Estuary</i> | BTPO-S2 | E | | \$808 | \$0 |
| SR-01M1.00 | <i>coord. w/leader teams</i> | BTPO-EPS2 | E | | | \$323 |
| SR-01M2.00 | <i>support sectors, teams</i> | BTPO-EPS2 | E | | | \$323 |
| SR-01M3.00 | <i>id new sectors, teams</i> | BTPO-EPS2 | E | | | \$808 |
| SR-01M4.00 | <i>develop team expertise</i> | BTPO-EPS2 | E | | | \$808 |

Action Plan SR-1: Community Sectors and Leader Teams

Table SR1-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$24,600
Total Funding Existing (Years 1-5): \$24,600
Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

Local communities within the BTES that share a common set of problems will be designated as a BTES Community Sector. For the purpose of initialization of SR-1 prototype community sectors have been designated:

1. Houma/South Terrebonne Community
2. Cut Off/Galliano/Larose
3. Port Allen and surrounding area
4. Pierre Part/Bell Rose
5. Marrero/Lower Jefferson Community
6. Vacherie and surrounding area

Citizens within these community sectors will work together as Leader Teams. Leader Teams will work with the Management Conference to maintain a network within their community sector and gain expertise necessary for massive grassroot support of the CCMP.

Interrelationships Among Components

1. Community sectors are based upon common problems thus, breaking down political boundaries.
2. Leadership Teams represent grassroot constituency of CCMP.
3. Leadership Teams represent grassroot implementation of the CCMP.
4. A continued liaison with LCES and other organizations to continue developing and expanding Community Sectors and Leader Teams.

Documentation of Plan Implementation and Success

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The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Designation of community sectors.
2. Designation of community leaders (volunteers).
3. Designation of community sectors and Leader Teams occurs in a timely fashion.

Objective 2.

1. Perception by citizens that they feel included in CCMP.
2. Citizens are agreeable to CCMP.
3. Citizens participate in State of the Estuary Symposium and festival.
4. Citizens participate in activities that support the CCMP.
5. Citizens feel well represented in BTMC.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Document number of sectors designated.
3. Document number of citizens in each Lead Team.
4. Obtain and archive minutes of meetings and reports.
5. Survey citizens regarding their perceived inclusion, support, and willingness to be involved in the CCMP (phone, questionnaire, interview).
6. Survey citizens regarding their perception of representation on BTMC (phone, questionnaire, interview).
7. Obtain and archive informal anecdotal information.
8. Case study (Bogdan & Biklen, 1992) by the monitor (journal records, interview records, observation notes).

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$20,000 |
| Year 2 | \$10,000 |
| Year 3 | \$10,000 |
| Year 4 | \$10,000 |
| Year 5 | <u>\$10,000</u> |
| Total | \$60,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC and the LCES can supply data to the individual or organization.
3. The individual or organization monitoring SR-1 shall prepare semiannual (twice yearly) reports for the BTMC regarding the timely implementation of the of the CCMP.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure grassroots level support of the CCMP and its implementation.
2. To document the existence of community sectors and Leader Teams.
3. To document that such leader teams functional.
4. To document that citizens are supportive of and have participated in the development of the CCMP.
5. To document that citizens are well represented on the BTMC.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be

Action Plan SR-1: Community Sectors and Leader Teams

employed. This particular monitor should have experience in social research and policy.

Data collection

1. Records that demonstrate the designation of community sectors.
2. Records of meetings such as minutes and reports.
3. Lists of members of Leader Teams.
4. Survey information supplied from questionnaires, interviews, and participant observation data that reveals citizens in each community sector feel:
 - a. they have been included in the development of the CCMP,
 - b. they support the CCMP,
 - c. participation in CCMP implementation or activities,
 - d. feel represented on BTMC.
5. Anecdotal information.

Data evaluation

1. Information from the BTMC is provided to the Third Party evaluator.
2. Monitor has assured validity and reliability of his/her conclusions.
3. The monitor and BTMC shall develop a procedure for obtaining information they need.

Review of monitoring documents

1. The BTMC shall receive draft monitoring documents 30 days prior to regularly scheduled meetings.
2. The monitor shall present report at BTMC meetings.
3. All raw data such as transcripts, minutes of meetings, journals, audio recordings shall be archived at a designated location.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-2: Participatory Public Meetings and Forums

SR-2 Participatory Public Meetings and Forums

OBJECTIVES

1. To give people a mechanism for regularly and methodically expressing issues, concerns and solutions for the BTES.
2. To increase involvement in decision-making and actions.
3. To give communities and individuals an experience of participatory group decision-making that will continue to enhance the progress of the CCMP.

DESCRIPTION

This action will develop a series of regular public meetings, forums, focus groups and workshops based on the reality that public input and thinking is important to the continuous development and implementation of the CCMP. These activities will include participatory methodologies and activities, as well as follow-up written documentation. Specific activities may include regular public CCMP review workshops, focus groups for Barataria-Terrebonne Management Conference (BTMC) constituencies, task force meetings and activities for specific CCMP actions, stakeholder meetings for special issues, and an annual State of the Estuary Symposium and progress review of CCMP implementation.

The key to these meetings is:

1. A focus on the shared vision.
2. Honoring of all ideas.
3. Methods which promote movement towards consensus, such as the Common Ground Solutions methodology which is to be utilized by the BTMC (see Action Plan *CP-1, Common Ground Solutions and Decision-Making*).

These methods ensure that diverse opinions are heard and a resolution is developed satisfactory to all stakeholders.

BACKGROUND/MAJOR ISSUES

The CCMP was developed by a group of people with diverse opinions about what is needed to protect the estuarine system. Public meetings were very important to ascertain if the original management conference decisions truly reflect the will of the public. In the first round of public meetings, overall the thinking of the management conference was affirmed by the public. However, these meetings gave a new emphasis on certain proposed actions and provided important feedback. Public meetings, special task forces and focus groups are all useful tools to continually enlarge the number of informed citizens. Participatory activities are key to conveying to the public the importance of their continual input to the implementation of the CCMP.

BENEFITS

The information obtained through these meetings and activities will be critical in planning actions to resolve problems in the estuary. These meetings will enable citizens to become informed about the estuary challenges, and to give them a means to participate in guiding the decision-making that impacts the estuary.

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IMPLEMENTATION SCHEDULE

The short-, medium- and long-term plans for this action are as follows:

- S 1.00 Hold open, well-publicized, public forums before major CCMP actions are implemented with each community sector.
- S 2.00 Analyze input with help of participants.
- S 3.00 Disseminate follow-up report to participants with suggestions for further involvement.
- S 4.00 Hold special task force workshops involving all those impacting and impacted by specific CCMP actions.
- S 5.00 Continually evaluate progress and effectiveness of public input activities.
- S 6.00 Expand outreach and involvement activities through community sectors and team leaders and other approaches.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action has been the BTNEP Program Office through the initial round of public meetings. The BTMC and Program Office will continue these efforts, coordinating all education and outreach efforts.

Support implementors will include individual members of the BTMC, consultants, and community sector and leader teams.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR2-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------------|---------------------------|------------------|-------------------|------------------|--------------------------|--|
| SR-02 | | | | | \$47,635 | \$0 |
| SR-2S1.00 | <i>hold public forums</i> | BTMC | E | | \$20,000 | \$0 |
| SR-2S2.00 | <i>analyze input</i> | | E | SR-2S1.00 | \$0 | \$0 |
| SR-2S3.00 | <i>follow-up report</i> | | | | \$4,673 | \$0 |
| SR-2S3.01 | <i>staff costs</i> | BTPO-EPS1 | E | | \$2,423 | \$0 |
| SR-2S3.02 | <i>additional costs</i> | BTMC | E | | \$2,250 | \$0 |
| SR-2S4.00 | <i>special task force</i> | | | | \$12,692 | \$0 |
| SR-2S4.01 | <i>prog dir</i> | BTPO-PD | E | | \$3,231 | \$0 |
| SR-2S4.02 | <i>eps2</i> | BTPO-EPS2 | E | | \$6,462 | \$0 |
| SR-2S4.03 | <i>additional costs</i> | BTMC | E | | \$3,000 | \$0 |
| SR-2S5.00 | <i>evaluate progress</i> | BTPO-EPS2 | E | | \$808 | \$0 |
| SR-2S6.00 | <i>expand outreach</i> | | | | \$9,462 | \$0 |

Action Plan SR-2: Participatory Public Meetings and Forums

| | | | | | | |
|-----------|-------------------------|-----------|---|--|---------|-----|
| SR-2S6.01 | <i>staff costs</i> | BTPO-EPS1 | E | | \$6,462 | \$0 |
| SR-2S6.02 | <i>additional costs</i> | BTMC | E | | \$3,000 | \$0 |

Table SR2-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$47,635
 Total Funding Existing (Years 1-5): \$47,635
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. A series of regular public meetings, forums, focus groups, and workshops.
2. Further, participatory strategies and activities will be developed.
3. All meetings will be documented.

Interrelationships Among Components

1. Citizens must be part of CCMP process.
2. A mechanism for citizen input must be established.
3. A mechanism for reporting to the citizenship must be established.
4. Various methods for participation need to be established (not all people respond to typical public meeting formats).

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. A calendar of scheduled public meetings, forums, and workshops.
2. Meetings are accessible to citizens within the basin in terms of when meetings are held and physical distance of

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travel.

3. Meetings agenda or purposes are announced 30 days in advance.

Objective 2.

1. Meetings are accessible to citizens within the basin in terms of when meetings are held and physical distance of travel.
2. Meetings agenda or purposes are announced 30 days in advance.
3. Suitable media strategy for announcing time and location of meetings.

Objective 3.

1. Meeting times and places vary to accommodate different groups.
2. Equal amounts of time are given to all parties who wish to give input or ask questions.
3. Participatory methods are employed to ensure equity in reporting, inquiry, and decision making.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Record number of meetings, their dates and times, and location.
3. Record citizen attendance of these meetings.
4. Record and make transcripts of these meetings.
5. Record strategy used at the meetings for example open-forum or focus groups.
6. Obtain, archive and document calendars, press releases, recordings of PSAs , and other announcements related to scheduled meetings.
7. Survey citizens (phone, questionnaire, & interview) about their awareness of such meetings.
8. Case study (Bogdan & Biklen, 1992) by monitor.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$20,000 |
| Year 2 | \$10,000 |
| Year 3 | \$10,000 |
| Year 4 | \$10,000 |
| Year 5 | <u>\$10,000</u> |
| Total | \$60,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. BTMC leaders can supply copies of announcements and calendars of scheduled meetings.

Quality Assurance/Quality Control

Objective of monitoring

1. To authenticate meetings occur.
2. To document if meetings were advertised and announced in order that citizens:
 - a. know about the meetings, and
 - b. have enough forewarning to plan to attend such as 30 days notice.
3. To determine if meetings were accessible.
4. To document attendance at meetings.
5. To document to use of various participatory strategies and activities.

Action Plan SR-2: Participatory Public Meetings and Forums

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience in working with public meetings.

Data collection

1. Collection of data by a designated monitor or monitoring organization.
2. Monitor must archive all transcripts and reports.

Data evaluation

1. Regular meetings between the monitor and the BTMC to assure usefulness of collection and reporting of data.
2. Monitor must report validity and reliability of data.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 2 Participatory Meetings and Forums

EVALUATION METHODS

Components of Plan

- A series of regular public meetings, forums, focus groups, and workshops.
- Further, participatory strategies and activities will be developed.
- All meetings will be documented.

Interrelationships Among Components

- Citizens must be part of CCMP process.
- A mechanism for citizen input must be established.
- A mechanism for reporting to the citizenship must be established.
- Various methods for participation need to be established (not all people respond to typical public meeting formats).

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- A calendar of scheduled public meetings, forums, and workshops.
- Meetings are accessible to citizens within the basin in terms of when meetings are held and physical distance of travel.
- Meetings agenda or purposes are announced 30 days in advance.

Objective 2.

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- Meetings are accessible to citizens within the basin in terms of when meetings are held and physical distance of travel.
- Meetings agenda or purposes are announced 30 days in advance.
- Suitable media strategy for announcing time and location of meetings.

Objective 3.

- Meeting times and places vary to accommodate different groups.
- Equal amounts of time are given to all parties who wish to give input or ask questions.
- Participatory methods are employed to ensure equity in reporting, inquiry, and decision making.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Record number of meetings, their dates and times, and location.
- Record citizen attendance of these meetings.
- Record and make transcripts of these meetings.
- Record strategy used at the meetings for example open-forum or focus groups.
- Obtain, archive and document calendars, press releases, recordings of PSAs , and other announcements related to scheduled meetings.
- Survey citizens (phone, questionnaire, & interview) about their awareness of such meetings.
- Case study (Bogdan & Biklen, 1992) by monitor.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$20,000 |
| Year 2 | \$10,000 |
| Year 3 | \$10,000 |
| Year 4 | \$10,000 |
| Year 5 | <u>\$10,000</u> |
| Total | \$60,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- BTMC leaders can supply copies of announcements and calendars of scheduled meetings.

QA/QC

Objective of monitoring

- To authenticate meetings occur.
- To document if meetings were advertised and announced in order that citizens (a) know about the meetings and (b) have enough forewarning to plan to attend such as 30 days notice.
- To determine if meetings were accessible.
- To document attendance at meetings.
- To document to use of various participatory strategies and activities.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience in working with public meetings.

Data collection

- Collection of data by a designated monitor or monitoring organization.

Action Plan SR-2: Participatory Public Meetings and Forums

- Monitor must archive all transcripts and reports.

Data evaluation

- Regular meetings between the monitor and the BTMC to assure usefulness of collection and reporting of data.
- Monitor must report validity and reliability of data.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

References

Bogdan, R.C. and Biklen, S.K. 1992. *Qualitative Research For Education*. Boston: Allyn and Bacon.

Action Plan SR-3: Citizen Involvement Programs and Activities

SR-3 Citizen Involvement Programs and Activities

OBJECTIVES

1. To provide a number of avenues to help citizens become more knowledgeable and committed to protecting and managing the estuary.

DESCRIPTION

These series of actions will develop and implement a series of public involvement programs and activities that can be duplicated throughout the estuary and can build a grassroots foundation for developing and expanding to additional projects. This initial plan recommends developing educational field trips, student poster and essay contests, the establishment of student estuary clubs, and coastal vegetation restoration projects. Mid-and long-term projects include corporate citizen's awards, citizen's estuary report cards, structured networks among school science and social-studies clubs, and corporate sponsorship of school science and estuary clubs.

BACKGROUND/MAJOR ISSUES

Giving citizens specific opportunities to experience or contribute to solving estuarine issues is a powerful avenue to generate public commitment for preserving the estuary. This plan describes a number of proven and needed tools to involve volunteers in hands-on activities which will benefit the estuary. Additionally, Action Plan *SR-4, Citizen Monitoring Program* provides an outline for a citizen water quality monitoring program.

BENEFITS

This approach will build public support for CCMP actions and the activities of the Barataria-Terrebonne Management Conference (BTMC). These activities will help in accomplishing the goal of attaining national recognition and support and in creating citizen stewardship of the estuary.

IMPLEMENTATION SCHEDULE

Short-term plans (October 1995 - December 1996) focus on increasing school and general public audiences through the following:

- S 1.00 Develop educational field trips for the public and students.
- S 2.00 Conduct student poster, photography, art, or essay contests concerning stewardship of estuary and highlight winners' work through posters, book covers, calendars, etc. of winners work and distribute to schools. Have winners present artwork at State of the Estuary Symposium and Festival.
- S 3.00 Develop a program of vegetated plantings for coastal restoration. (See also Action Plan *SR-6, Urban Green Spaces*).
- S 4.00 Establish student estuary clubs.

Strategies for medium-term plans (January 1997 - December 1998) are to continue and expand short-term efforts.

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Additionally a new emphasis can be developed to highlight corporate involvement:

- M 1.00 Create stakeholder stewardship award/good corporate image programs with presentations at the BTMC's annual State of the Estuary Symposium and Festival.
- M 2.00 Create networks among school science and social-studies clubs.
- M 3.00 Gain corporate sponsorship for school science and estuary clubs.
- M 4.00 Establish a corporate-based BTES Volunteers-In-The-Classroom Program.

Objectives for long-term planning (January 1999 - 2020) include the continued growth of public affairs, the continuation and expansion of efforts in short- and mid-term phases, and the promotion of continued stewardship and involvement in the estuary. Long-term strategy ideas include:

- L 1.00 Have volunteers track legislative action and document through a Citizens Report Card that reflects accountability of legislative actions per the BTES.
- L 2.00 Have volunteers develop and distribute a Estuary Progress Report that documents CCMP progress.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementors for this action will be the Program Office followed by the BTMC.

Support implementors will include participating BTES agencies and organizations, local banks and businesses, civic organizations, established community sectors and leader teams, consultants, school systems and individual schools, teachers, the LSU Cooperative Extension Service, LUMCON, the LDWF Grand Terre Lab staff, and citizen volunteers.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR3-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|---------------------------------|-------------|---------------------------|------------------|----------------------------------|--|
| SR-03_ | | | | | \$39,809 | \$5,775 |
| SR-03S1.00 | <i>field trips</i> | | | | \$13,500 | \$0 |
| SR-03S1.01 | <i>staff time</i> | LCES | N | | \$10,500 | \$0 |
| SR-03S1.02 | <i>other costs</i> | LCES | N | | \$3,000 | \$0 |
| SR-03S2.00 | <i>poster/photo/art contest</i> | | | | \$3,785 | \$0 |
| SR-03S2.01 | <i>staff time</i> | LCES | N | | \$3,635 | \$0 |
| SR-03S2.02 | <i>other costs</i> | LCES | N | | \$150 | \$0 |
| SR-03S3.00 | <i>vegetated plantings</i> | LDNR | N | | \$20,909 | \$0 |
| SR-03S4.00 | <i>student estuary clubs</i> | LCES | N | | \$1,615 | \$0 |
| SR-03M1.00 | <i>stewardship/image awards</i> | LCES | N | | | \$2,827 |
| SR-03M3.00 | <i>corporate sponsorship</i> | | N | SR-3M1.00 | | \$0 |

**Action Plan SR-3:
Citizen Involvement
Programs and Activities**

| | | | | | | |
|------------|-----------------------------|------|---|--|--|---------|
| SR-03M4.00 | <i>corporate volunteers</i> | LCES | N | | | \$1,010 |
|------------|-----------------------------|------|---|--|--|---------|

Table SR3-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$63,000
 Total Funding Existing (Years 1-5): \$0
 Total New Funding Necessary (Years 1-5): \$63,000

Table SR3-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|---|---|---|---|
| LCES | \$18,900 EPA Environmental Education Grant | \$7,600 EPA Environmental Education Grant | \$5,200 EPA Environmental Education Grant | \$5,200 EPA Environmental Education Grant | \$5,200 EPA Environmental Education Grant |
| LDNR | \$20,900 EPA Environmental Education Grant | | | | |

Summary of new funding strategy: EPA’s Environmental Education Grant program provides grants for projects specifically addressing environmental education. Grant applications for more than \$25,000 must be made directly to EPA Washington. Grant applications for projects less than \$25,000 are made to the EPA Regional office.

A grant application for \$39,800 should be made to EPA Washington to fund Year 1. The grant should be split with LCES receiving \$18,900 and LDNR receiving \$20,190 to fund Year 1 activities. In Years 2-5, application should be made to the Regional office. All of the grant in Years 2-5 will be used by LCES.

Additionally, this action plan centers around student education, increasing the probability of securing funding from not-for-profit foundations. Foundations listed in the *Funding Source Inventory for the Implementation of the CCMP* should be solicited to support this action plan. Any shortfall in funding should be made up from the license plate revenue.

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The components of SR-3 are the actual mechanisms developed to involve citizens, including students, in protecting and managing the estuary. Suggested mechanisms or avenues include:

1. educational field trips for the public and students;
2. student poster, photography, art, or essay contest;
3. highlighting students' work on book covers, calendars, or other such mediums;
4. present winners work at State of the Estuary Symposium;
5. develop a program of vegetative plantings;
6. establishment of student estuary clubs;
7. create networks between school science and social studies clubs;
8. gain corporate sponsorship for school science and estuary clubs;
9. establish a corporate-based Volunteers-In-The-Classroom Program;
10. conduct legislative tracking via a Citizens Report Card;
11. have volunteers develop and distribute a Estuary Progress Report of CCMP progress.

Interrelationships Among Components

1. Many of the components of SR-3 are school-based and interwoven and are related to other SR action plans. Coordination of monitoring will be essential.
2. SR-3 also brings the role of corporate sponsorship and the use of volunteers. Public and corporate involvement in schools will be necessary for the success of SR-3.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Components completed in a timely fashion.
2. Develop a portfolio of artifacts suggested in the components i.e., essays, photographs, etc.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Collection of artifacts of student contest.
3. Records or minutes of student club meetings that deal with BTES.
4. Records or documentation of corporate support of school clubs.
5. Records or documentation of volunteers in schools for estuarine education.
6. Documentation of field trips for the public and students.

Action Plan SR-3: Citizen Involvement Programs and Activities

7. Inclusion of recognition of student contest winners at State of the Estuary Symposium.
8. Copies of Citizens Report Cards.
9. Copies of Estuary Progress Report.
10. Document contest winners are part of the State of the Estuary Symposium.
11. Document vegetative plantings.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall provide the monitor with documentation relative to citizen involvement programs.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure a variety of avenues are developed to allow citizens (including students) to become more knowledgeable and committed to protecting and managing the estuary.
2. To document corporate support.
3. To document volunteer support in classrooms.
4. To document school-based clubs that concern themselves with basin protection and management.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience with working in and with schools.

Data collection

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
2. The BTMC shall report on the citizen involvement programs as outlined in Methods.
3. Monitor must archive all transcripts and reports.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

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The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 3 Citizen Involvement Programs

EVALUATION METHODS

Components of Plan

The components of SR-3 are the actual mechanisms developed to involve citizens, including students, in protecting and managing the estuary. Suggested mechanisms or avenues include:

- educational field trips for the public and students;
- student poster, photography, art, or essay contest;
- highlighting students' work on book covers, calendars, or other such mediums;
- present winners work at State of the Estuary Symposium;
- develop a program of vegetative plantings;
- establishment of student estuary clubs;
- create networks between school science and social studies clubs;
- gain corporate sponsorship for school science and estuary clubs;
- establish a corporate-based Volunteers-In-The-Classroom Program;
- conduct legislative tracking via a Citizens Report Card;
- have volunteers develop and distribute a Estuary Progress Report of CCMP progress.

Interrelationships Among Components

- Many of the components of SR-3 are school-based and interwoven and are related to other SR action plans. Coordination of monitoring will be essential.
- SR-3 also brings the role of corporate sponsorship and the use of volunteers. Public and corporate involvement in schools will be necessary for the success of SR-3.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Components completed in a timely fashion.
- Develop a portfolio of artifacts suggested in the components i.e., essays, photographs, etc.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Collection of artifacts of student contest.
- Records or minutes of student club meetings that deal with BTE.
- Records or documentation of corporate support of school clubs.
- Records or documentation of volunteers in schools for estuarine education.
- Documentation of field trips for the public and students.
- Inclusion of recognition of student contest winners at State of the Estuary Symposium.
- Copies of Citizens Report Cards.
- Copies of Estuary Progress Report.

Action Plan SR-3: Citizen Involvement Programs and Activities

- Document contest winners are part of the State of the Estuary Symposium.
- Document vegetative plantings.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall provide the monitor with documentation relative to citizen involvement programs.

QA/QC

Objective of monitoring

- To ensure a variety of avenues are developed to allow citizens (including students) to become more knowledgeable and committed to protecting and managing the estuary.
- To document corporate support.
- To document volunteer support in classrooms.
- To document school-based clubs that concern themselves with basin protection and management.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience with working in and with schools.

Data collection

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
- The BTMC shall report on the citizen involvement programs as outlined in Methods.
- Monitor must archive all transcripts and reports.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and

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end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-4: Citizen Monitoring Program

SR-4 Citizen Monitoring Program

OBJECTIVES

1. To effectively and efficiently monitor water quality and living resources in the estuary system.
2. To create an additional source of high-quality data that can be used in management decisions.
3. To recruit, train and actively engage citizens in water quality assessments and therefore greater stewardship of the resources.

DESCRIPTION

A demonstration program using volunteers to monitor water quality in a selected location with long-term goals of evolving a citizens' based data collection network throughout the estuary. This program will work closely with LDEQ's Water Quality Monitoring Demonstration Project mentioned below.

BACKGROUND/MAJOR ISSUES

The January 1994 EPA National Directory of Volunteer Environmental Monitoring Programs lists 517 volunteer monitoring programs across the country, including six in Louisiana. These are Bogue Falaya Citizens' Monitoring Project (1993), Citizens for a Clean Tangipahoa (1990), Keep Louisiana Beautiful (1981), LDEQ Water Quality Monitoring Demonstration Project (1993), Louisiana Beach Adoption Program, Fourchon Beach (1987) and Tangipahoa and Tickfaw Basin Citizens' Monitoring Program (1993). These programs use citizen volunteers to primarily monitor water quality in streams, rivers, lakes, estuaries, living resources or through debris clean-up. Key to these programs are clear, attainable goals and objectives, continuous training and motivation of volunteers, quality control of the data, effective use of the information and funding for staff and equipment. Budgets range from \$0 to \$150,000 depending on the nature and size of the project.

These programs have proven that volunteer monitoring can produce comparatively inexpensive, high-quality data that can be useful to the state, but the state (or other entity) has to commit resources and personnel from the start and carry that commitment through the life of the program. To be effective these programs must generate information that environmental managers need, can use, and which can be integrated with existing data from other programs. Essentially, these types of programs can help answer four questions: Is it safe to swim in the estuary? Is it safe to eat the local seafood? Are fisheries and other living resources being protected? Is the health of the estuary being safeguarded?

There has been tremendous growth in these programs since the first monitoring program in 1988. The EPA provides assistance through a manual: *Volunteer Water Monitoring: A Guide for State Managers*, a newsletter, an electronic communications board and bi-annual conferences. This growing network will form the basis for the BTES volunteer monitoring program.

BENEFITS

Citizens' Monitoring Programs provide effective, cost-efficient means to provide needed technical information. At the same time, citizens are becoming educated about the complex, interactive nature of the estuarine system as well

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as making an active contribution to data collection and the safety and health of the water in this area.

IMPLEMENTATION SCHEDULE

Short-term plans for this action follow the guidelines in the EPA manual:

- S 1.00 Establish a multi-jurisdictional technical workgroup to guide the development of this program. Include data users, existing programs and volunteer monitors so that expectations are reasonable.
- S 2.00 Clearly state objectives and goals for the program which are achievable, scientifically and technically sound and financially reasonable.
- S 3.00 Develop a uniform and consistent system of data collection, data management and quality assurance.
- S 4.00 Dedicate resources for analysis and interpretation of monitoring data.
- S 5.00 Assign qualified staff to recruit and train volunteers, analyze data, produce reports, etc.
- S 6.00 Begin with a pilot project.
- S 7.00 Train volunteers.
- S 8.00 Conduct quality control sessions.
- S 9.00 Evaluate the results of the pilot before expanding.

Medium-term plans are as follows:

- M 1.00 Expand program to several more projects.
- M 2.00 Promote estuary monitoring program to build public support and stewardship of the estuary.

Long-term plans include the following:

- L 1.00 Develop monitoring programs throughout the estuary region.
- L 2.00 Establish a communications system and structured network of all of these estuary monitoring programs through citizens estuary monitoring newsletter, annual reports and publications, meetings and workshops to learn successes, failures and program progress from each other, special meetings with the Barataria-Terrebonne Management Conference (BTMC), presentations at annual State of the Estuary Symposium and Festival, bi-annual EPA conferences and briefings with the BTES legislative caucus.

LEAD AND SUPPORT IMPLEMENTORS

The BTMC is responsible for working closely with LDEQ to establish an initial monitoring program.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR4-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

**Action Plan SR-4:
Citizen
Monitoring Program**

Table SR4-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING /_NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-----------|-----------------------------------|-----------|-------------------|---------|--------------------------|--|
| SR-04 | | | | | \$52,438 | \$43,877 |
| SR-041.00 | <i>technical workgroup</i> | | | | \$3,231 | \$0 |
| SR-041.01 | <i>staff</i> | LDEQ | E | | \$1,615 | \$0 |
| SR-041.02 | <i>staff</i> | BTPO-EPS2 | E | | \$1,615 | \$0 |
| SR-4S2.00 | <i>objectives and goals</i> | LDEQ | E | | \$808 | \$0 |
| SR-4S3.00 | <i>uniform data system</i> | BTPO-EPS2 | E | | \$1,615 | \$0 |
| SR-4S4.00 | <i>data analysis</i> | | no estimate | | | |
| SR-4S5.00 | <i>volunteer recruitment</i> | LDEQ | N | | \$1,615 | \$0 |
| SR-4S6.00 | <i>pilot project</i> | BTMC | N | | \$40,000 | \$0 |
| SR-4S7.00 | <i>train volunteers</i> | LDEQ | N | | \$1,615 | \$0 |
| SR-4S8.00 | <i>quality control</i> | LDEQ | E | | \$1,938 | \$0 |
| SR-4S9.00 | <i>evaluate pilot results</i> | BTPO-EPS2 | E | | \$1,615 | \$0 |
| SR-4M1.00 | <i>additional projects</i> | BTMC | N | | | \$40,000 |
| SR-4M2.00 | <i>promote monitoring program</i> | BTPO-EPS2 | E | | | \$3,877 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$228,000
 Total Funding Existing (Years 1-5): \$24,700
 Total New Funding Necessary (Years 1-5): \$203,200

Summary of new funding strategy: License plate revenue will provide the funding required to support LDEQ's volunteer recruitment and training efforts in Year 1. According to the *Action Plan Costing*, Section 4, page 157, funding is currently in place for the BTMC-led Citizens Monitoring Pilot Project in Year 1 (\$40,000). However, the funding source for pilot projects in Years 2-5 is unclear. If the pilot projects in the out years do not receive funding similar to that of the initial pilot project, license plate revenue can be used to support the \$40,000 annual cost.

Depending on the nature of citizen monitoring projects, they may also be eligible for federal grants. Potential grant sources include EPA Section 104(b)(3) CWA for point source monitoring, Section 106 CWA grants for point and nonpoint source monitoring, Section 319 CWA grants for nonpoint pollution monitoring, and potentially EPA environmental education grants.

Table SR4-2. Summary of New Funding Sources.

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| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------|--------------------------------------|--|--|--|--|
| BTMC | \$40,000 Funding already assigned | \$40,000 License plate revenue; federal grants |
| LDEQ | \$3,200 License plate revenue | | | | |

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

This action plan calls for the development of a "Citizens Monitoring Program" with the following components:

1. An expert advisory panel
2. Resource commitment
3. Volunteer training
4. A pilot project.

Interrelationships Among Components

1. This action plans calls for the coordination of many groups to realize the objectives and develop the components suggested.
2. The expert panel and volunteers must work cooperatively and coordinate their efforts with groups involved in ecological monitoring.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Formation of an expert panel to devise citizen monitoring protocol, train volunteers, and assist in quality control.
2. Volunteer training.
3. Resources are available to volunteers (such as lab equipment).
4. Demonstration of a pilot project.

Methods

1. Document formation of an expert advisory panel by obtaining copies of minutes of meetings, memos, and

Action Plan SR-4: Citizen Monitoring Program

- correspondence.
2. Obtain a list of panel members and their expertise.
 3. Obtain a list of volunteer citizen monitors or organizations.
 4. Document volunteer training by collecting agendas of training sessions, lists of participants, minutes or other written records of meetings.
 5. Document existence of resources for volunteers by obtaining an inventory of resources such as equipment and lab space available to volunteer monitors.
 6. Participate in the pilot monitoring effort.
 7. Obtain data generated by the pilot monitoring.
 8. Obtain list of pilot effort participants.
 9. Document interaction of the expert advisory panel and citizen volunteers in the pilot project by attending meetings and survey (questionnaire, phone, interview) members.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$10,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$30,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The coalition, when formed, should develop a self-evaluation scheme to assist the program's monitor.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure development of a "Citizen Monitoring Program."
2. To ensure the establishment of an expert advisory panel.
3. To document available resources are sufficient for monitors' needs.
4. To ensure volunteers are trained.
5. To ensure a pilot program is implemented.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience in working with citizen monitoring programs.

Data collection

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
2. The BTMC shall report on the citizen monitoring programs as outlined in Methods.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.

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2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 4 Citizen Monitoring Program

EVALUATION METHODS

Components of Plan

This action plan calls for the development of a "Citizens Monitoring Program" with the following components:

- An expert advisory panel
- Resource commitment
- Volunteer training
- A pilot project.

Interrelationships Among Components

- This action plans calls for the coordination of many groups to realize the objectives and develop the components suggested.
- The expert panel and volunteers must work cooperatively and coordinate their efforts with groups involved in ecological monitoring.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Formation of an expert panel to devise citizen monitoring protocol, train volunteers, and assist in quality control.
- Volunteer training.
- Resources are available to volunteers (such as lab equipment).
- Demonstration of a pilot project.

Methods

- Document formation of an expert advisory panel by obtaining copies of minutes of meetings, memos, and correspondence.
- Obtain a list of panel members and their expertise.
- Obtain a list of volunteer citizen monitors or organizations.
- Document volunteer training by collecting agendas of training sessions, lists of participants, minutes or other written records of meetings.
- Document existence of resources for volunteers by obtaining an inventory of resources such as equipment and lab space available to volunteer monitors.
- Participate in the pilot monitoring effort.
- Obtain data generated by the pilot monitoring.
- Obtain list of pilot effort participants.
- Document interaction of the expert advisory panel and citizen volunteers in the pilot project by

Action Plan SR-4: Citizen Monitoring Program

attending meetings and survey (questionnaire, phone, interview) members.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$10,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$30,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The coalition, when formed, should develop a self-evaluation scheme to assist the program's monitor.

QA/QC

Objective of monitoring

- To ensure development of a "Citizen Monitoring Program."
- To ensure the establishment of an expert advisory panel.
- To document available resources are sufficient for monitors' needs.
- To ensure volunteers are trained.
- To ensure a pilot program is implemented.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. This particular monitor should have experience in working with citizen monitoring programs.

Data collection

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
- The BTMC shall report on the citizen monitoring programs as outlined in Methods.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

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Action Plan SR-5:

Cultural Heritage

SR-5 Cultural Heritage

OBJECTIVES

1. To preserve the lifestyles and unique historical traditions of the BTES through conserving the estuary's resources.
2. To portray the historical interaction of BTES residents and the estuary's resources.
3. To develop greater awareness of the way the lifestyles and unique historical traditions of the BTES have contributed to the protection of the estuary.

DESCRIPTION

This action will develop and support a series of activities which will highlight the cultural richness of the BTES while emphasizing the stewardship of resources for future generations. These activities, sponsored by existing culturally-related organizations, will enhance ongoing cultural awareness efforts and build pride in the region.

BACKGROUND/MAJOR ISSUES

Because of the strong ties between the cultural heritage of the BTES and the area's natural resources, the cultural traditions and unique lifestyles of the estuary are threatened as the overall quality of the estuary is diminished. Southern Louisiana has a strong multi-cultural heritage of history, food, music, language, folklore and lifestyles, all clearly related to the beauty, mystique and richness of the natural resources of the area. As little as 30 years ago, this was an area characterized by large families, the church, neighbors who stuck together and people who bartered for food and goods. People depended upon the land and the water for their livelihood. Within one generation, the fish and wildlife resources are diminishing, and many people are not directly dependent upon the "land" for their income and do not engage in traditional "ways of doing things." Still, many families are engaged in hunting, fishing, shrimping, etc. for all or part of their livelihood and even more use these resources for recreation. It is obvious that to maintain this cultural tie to the land, we must maintain the environment. We must also look carefully at how the traditional culture contributed to the degradation of this area's resources and find ways to generate stewardship of the estuary using our rich heritage. As one member stated, "people need roots that tie them to their culture and wings that allow them to move forward".

There are many opportunities to highlight a linkage between the environment and the culture of the BTES. The parish libraries offer the most logical means to both organize and publicize culturally-based activities. Each has a number of resources, including collections, archives, videotapes and others, which could form the basis for developing activities. In addition, the schools and locally-based cultural organizations (ie., historical and genealogical societies, arts councils, crafts guilds, etc.) could also organize activities such as art shows or photography exhibits in local museums, malls or festivals. There are also numerous existing activities, such as fairs, festivals, dances, and other special events, which could be utilized to highlight the important relationship between the environment and the culture. Numerous historical and archeological sites and landscapes exist in the BTES, which could be the focus of research, preservation and special events. Finally, state agencies such as the Louisiana Historical Society and the Louisiana Department of Culture, Recreation and Tourism could provide valuable support in organizing and publicizing activities.

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BENEFITS

Activities such as these will bring greater awareness to the interaction between people, lifestyles and the environment. The activities represent innovative ways to show the value of the estuary and how the estuary can continue to support the culture of this area. As community pride is built, citizens will become more engaged in the preservation of both the physical and cultural resources in the region.

IMPLEMENTATION SCHEDULE

Contact has already been made with the Director of the Lafourche Parish Library System, and presentations have been made to six branch libraries. Numerous ideas have been generated from these presentations, including the production of a manual defining the connection between the culture and the environment, the establishment of local history centers within the libraries, the use of Internet to help increase awareness and publicize activities, and the need to connect with the numerous culturally-based activities that already exist.

Short-term plans (1995-1996) for this action focus on establishing a coalition of cultural organizations, led by the directors of the library system, to educate and inform citizens, explore funding sources and create a cultural/environmental manual. Specific plans are as follows:

- S 1.00 Invite parish library directors and other organizations to an informational meeting about CCMP (Program Office September 1995).
- S 2.00 Conduct meetings to explore issues, plan activities (Program Office/ libraries; January 1996 - March 1996).
- S 3.00 Establish a coalition of organizations (BTMC, libraries; March 1996).
- S 4.00 Explore funding sources and prepare grant applications (Coalition; March 1996 - August 1996).
- S 5.00 Create a schedule of activities for the next three years (Coalition; December 1996).

Medium-term plans (1997-2000) call for:

- M 1.00 Each participating organization to host at least one event dedicated to the stewardship of the estuary.
- M 2.00 Develop a resource manual and guidelines for creating stewardship of culture and the estuary.
- M 3.00 Find a "public personality" to be a spokesperson for the estuary's culture.
- M 4.00 Begin oral history/storytelling projects.

Long-term plans (2001-2020) call for the coalition to expand and maintain an awareness of the role of the BTES culture in preserving the estuary. This activities may include:

- L 1.00 Conduct or tie-in with existing elder hostel programs and create a "younger hostel" at Nicholls State University, LUMCON or Lafitte Park (Elder hostel is a nationwide program aimed at educating older citizens about different regions of the country by bringing them to a region and conducting hands-on activities and classes.).
- L 2.00 A handbook highlighting history of area food and demonstrating the direct links between the estuary's living resources and cultural cooking.
- L 3.00 An estuary-wide cultural event - similar to a renaissance festival.
- L 4.00 A cultural history curriculum.
- L 5.00 Tie-ins with Jazz and Heritage Festival and Festival Internationale.

Action Plan SR-5:

Cultural Heritage

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Program Office.

Support implementors will include parish libraries, local and parish historical societies and museums, BTES schools, universities, genealogical societies, arts councils, and other individuals and organizations presently involved in culturally-based activities.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR5-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------|---------------------------------|-----------|-------------------|------------|--------------------------|--|
| SR-05 | | | | | \$23,423 | \$8,050 |
| SR-05S1.00 | <i>library director meeting</i> | BTPO-EPS1 | E | | \$808 | \$0 |
| SR-05S2.00 | <i>exploration meetings</i> | BTPO-EPS1 | E | | \$808 | \$0 |
| SR-05S3.00 | <i>organization coalition</i> | BTPO-EPS1 | E | | \$3,500 | \$0 |
| SR-05S4.00 | <i>funding and grants</i> | LDEQ | E | | \$17,500 | \$0 |
| SR-05S5.00 | <i>activity schedule</i> | BTPO-EPS2 | E | | \$808 | \$0 |
| SR-05M1.00 | <i>stewardship event</i> | BTMC | N | | | \$4,000 |
| SR-05M2.00 | <i>resource manual</i> | BTMC | N | | | \$3,750 |
| SR-05M3.00 | <i>public personality</i> | | | SR-11S3.00 | | \$0 |
| SR-05M4.00 | <i>oral history projects</i> | BTMC | N | | | \$300 |

Table SR5-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$55,600

Total Funding Existing (Years 1-5): \$23,400

Total New Funding Necessary (Years 1-5): \$32,200

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Table SR5-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------|---------------|--|----------------------------------|----------------------------------|----------------------------------|
| BTMC | | \$19,300 License plate revenue; BTPO staff | \$4,300 License plate revenue | \$4,300 License plate revenue | \$4,300 License plate revenue |

Summary of new funding strategy: License plate revenue should be used to support the \$4,300 annual cost for hosting estuary stewardship events and the oral history projects in Years 2-5. The excess BTPO staff capacity in Year 2 should be used to develop the stewardship of culture resource manual and guidelines. Using existing staff will save the program from incurring an incremental \$15,000 cost for hiring a contractor to develop the manual.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

This action plan (SR-5) calls for several distinct components:

1. Establish a coalition of libraries and other organizations that have heritage and cultural interests.
2. That each participating organization within the coalition host at least one event dedicated to the stewardship of the estuary.
3. The coalition will develop a manual to act as a resource guide for creating stewardship of culture and the estuary.
4. Find a public personality spokesperson for the estuary culture to conduct oral history/storytelling projects.
5. Sponsor an elder hostel and "younger hostel."
6. Develop a cookbook highlighting history of the area.
7. Host an estuary-wide cultural event.
8. Develop a cultural/history curriculum.
9. Develop tie-ins with Jazz and Heritage Festival and Festival Internationale.

Interrelationships Among Components

This action plans calls for the coordination of many groups to realize the objectives and develop the components suggested. The groups forming this coalition are represented in the basin. This is consistent with the grassroots approach taken by the CCMP.

Action Plan SR-5:

Cultural Heritage

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Formation of a coalition to develop SR-5 components.
2. Explore fund raising sources.
3. Hosting culture related events.
4. Develop oral history program with a public personality.
5. Develop a cookbook.
6. Make the culture of BTES a component of larger festivals.

Objective 2.

1. Formation of a coalition to develop SR-5 components.
2. Explore fund raising sources.
3. Hosting culture related events.
4. Develop oral history program with a public personality.
5. Develop a cookbook.
6. Make the culture of BTES a component of larger festivals.

Objective 3.

1. Formation of a coalition to develop SR-5 components.
2. Explore fund raising sources.
3. Hosting culture related events.
4. Develop oral history program with a public personality.
5. Develop a cookbook.
6. Develop hostel-type education program.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Document formation of coalition through meeting minutes and transcripts.
3. Document hosted events through planning documents, minutes of meetings, advertisements, and photographs or video of the events.
4. Survey participants of these events (questionnaire and interview).
5. Document attempts at funding through copies of letters, proposals, and minutes of meetings.
6. Obtain a copy of the cookbook when completed.
7. Document the "estuary-wide cultural event" through planning documents, minutes of meetings, advertisements, and photographs or video of the event.
8. Document tie-ins with other festivals through copies of letters, minutes of meetings, and photographs or video of BTES culture in the larger festival.
9. Document elder and youth hotels through copies of itineraries, lists of participants, and photographs or video.
10. The monitor shall attend events.

Cost estimates

Year 1 \$ 5,000

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| | |
|--------|-----------------|
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The coalition, when formed, should develop a self-evaluation scheme to assist the program's monitor.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure formation of a coalition that will take responsibility for development of the components.
2. To document the actual existence of the components developed.
3. To ensure cultural heritage becomes part of the CCMP.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.

Data collection

1. The coalition, through self-assessment, can supply data to the monitor.
2. The monitor will collect data independently and must verify coalition evidence.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 5 Cultural Heritage

EVALUATION METHODS

Components of Plan

This action plan (SR-5) calls for several distinct components:

- Establish a coalition of libraries and other organizations that have heritage and cultural interests.

Action Plan SR-5:

Cultural Heritage

- That each participating organization within the coalition host at least one event dedicated to the stewardship of the estuary.
- The coalition will develop a manual to act as a resource guide for creating stewardship of culture and the estuary.
- Find a public personality spokesperson for the estuary culture to conduct oral history/storytelling projects.
- Sponsor an elder hostel and "younger hostel."
- Develop a cookbook highlighting history of the area.
- Host an estuary-wide cultural event.
- Develop a cultural/history curriculum.
- Develop tie-ins with Jazz and Heritage Festival and Festival Internationale.

Interrelationships Among Components

This action plans calls for the coordination of many groups to realize the objectives and develop the components suggested. The groups forming this coalition are represented in the basin. This is consistent with the grassroots approach taken by the CCMP.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- Formation of a coalition to develop SR-3 components.
- Explore fund raising sources.
- Hosting culture related events.
- Develop oral history program with a public personality.
- Develop a cookbook.
- Make the culture of BTE a component of larger festivals.

Objective 2.

- Formation of a coalition to develop SR-3 components.
- Explore fund raising sources.
- Hosting culture related events.
- Develop oral history program with a public personality.
- Develop a cookbook.
- Make the culture of BTE a component of larger festivals.

Objective 3.

- Formation of a coalition to develop SR-3 components.
- Explore fund raising sources.
- Hosting culture related events.
- Develop oral history program with a public personality.
- Develop a cookbook.
- Develop hostel-type education program.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Document formation of coalition through meeting minutes and transcripts.
- Document hosted events through planning documents, minutes of meetings, advertisements, and photographs or video of the events.
- Survey participants of these events (questionnaire and interview).

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- Document attempts at funding through copies of letters, proposals, and minutes of meetings.
- Obtain a copy of the cookbook when completed.
- Document the "estuary-wide cultural event" through planning documents, minutes of meetings, advertisements, and photographs or video of the event.
- Document tie-ins with other festivals through copies of letters, minutes of meetings, and photographs or video of BTE culture in the larger festival.
- Document elder and youth hotels through copies of itineraries, lists of participants, and photographs or video.
- The monitor shall attend events.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The coalition, when formed, should develop a self-evaluation scheme to assist the program's monitor.

QA/QC

Objective of monitoring

- To ensure formation of a coalition that will take responsibility for development of the components.
- To document the actual existence of the components developed.
- To ensure cultural heritage becomes part of the CCMP.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.

Data collection

- The coalition, through self-assessment, can supply data to the monitor.
- The monitor will collect data independently and must verify coalition evidence.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Action Plan SR-5:

Cultural Heritage

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-6:

Urban Green Spaces

SR-6 Urban Green Spaces

OBJECTIVES

1. To encourage the growth of habitats for animal wildlife in urban areas, provide additional recreational space for visitors and residents of the estuary, augment economic development, and increase natural processes for clearing atmosphere of pollution.

DESCRIPTION

This action will encourage each community sector team to undertake a voluntary system of plantings, nature trails and parks in urban areas, such as along bayous, which provide wildlife habitat, recreation, and helps to stabilize the banks of the bayous and other waterways.

BACKGROUND/MAJOR ISSUES

Many areas of south Louisiana are lush and green. But with modernization and growing populations, much of the natural woods, forests, swamp areas are being lost, and diverse wildlife is being threatened. For instance, bayous in south Louisiana are among some of most naturally beautiful scenery that exists in the state. With careful planning and attention, the bayous can contribute, even more than they currently do, to the preservation of wild bird species and our enjoyment of nature. The creation of urban "green spaces" includes the following concepts: plantings of flowers, bushes and trees; development of nature trails; and, the establishment or expansion of parks.

Development of these areas require a high level of coordination among agencies and private entities to provide a balanced use of these "urban green spaces" for recreation, economic growth, flood protection and wildlife habitat enhancement. In fact, multiple use of these areas can provide capital funding from multiple sources. These outdoor areas allow residents to highlight their culture, the beauty of their natural resources and the contribution of the land and waterways to the livelihood and lifestyles of their area. Urban green spaces give visitors to the area easy access to waters in small and large towns. Careful design will provide needed feeding and resting places for migrating birds and other wildlife. This type of effort has been most recently undertaken in Cutoff. There, with the energy of one woman organizing many people, new plantings can be seen along the bayou.

BENEFITS

Urban green spaces can serve multiple uses including enhancing the natural beauty and overall attractiveness of the urban area, as well as helping in flood control. Migrating birds will have additional resting and feeding places in protected habitats, and visitors will have greater access to natural areas. These results contribute directly to the economic health of the community by increasing the economic diversity of the area.

IMPLEMENTATION SCHEDULE

The goal of the short-term plans (1995-1997) for this action is to have teams of people actively designing and developing "urban green spaces" in each community sector in the estuary. Specific plans are as follows:

- S 1.00 Establish an "urban green space" committee in each community sector.

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- S 2.00 Work with local officials to identify potential sites, explaining to them resulting economic benefits.
- S 3.00 Write a joint citizen/government plan.
- S 4.00 Educate public about benefits of urban green spaces.
- S 5.00 Solicit funding.

Medium- and long-term plans (1998-2020) :

- M 1.00 Encourage “green” planning for public and private development. This may mean that a new industry will commit to creating "green" spaces on their site of business for use by their employees or at a designated "green" site in the town.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementors for this action will be the Barataria-Terrebonne Management Conference (BTMC), the Community Sector Teams and the Regional Planning Commission. Support implementors include federal, state and local governments, local universities, horticultural groups, civic organizations, businesses, and the Jean Lafitte National Historical Park and Preserve.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR6-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|--|-------------|---------------------------|----------------|----------------------------------|--|
| SR-06 | | | | | \$16,815 | \$969 |
| SR-06S1.00 | <i>green space committees</i> | | | | \$7,590 | \$0 |
| SR-06S1.01 | <i>staff time</i> | LDAF | E | | \$7,000 | \$0 |
| SR-06S1.02 | <i>additional costs</i> | LDAF | E | | \$590 | \$0 |
| SR-06S2.00 | <i>identify sites</i> | | | | \$1,558 | \$0 |
| SR-06S2.01 | <i>staff time</i> | LDAF | E | | \$808 | \$0 |
| SR-06S2.02 | <i>additional costs</i> | LDAF | E | | \$750 | \$0 |
| SR-06S3.00 | <i>joint citizen/govt. plan</i> | | | | \$923 | \$0 |
| SR-06S3.01 | <i>staff time</i> | LDAF | E | | \$363 | \$0 |
| SR-06S3.02 | <i>additional costs</i> | LDAF | E | | \$560 | \$0 |
| SR-06S4.00 | <i>education about benefits</i> | | | | \$5,627 | \$0 |
| SR-06S4.01 | <i>staff time</i> | LDAF | E | | \$1,777 | \$0 |
| SR-06S4.02 | <i>additional costs</i> | LDAF | E | | \$3,850 | \$0 |
| SR-06S5.00 | <i>solicit funding</i> | | | | \$1,117 | \$0 |
| SR-06S5.01 | <i>staff time</i> | LDAF | E | | \$717 | \$0 |
| SR-06S5.02 | <i>additional costs</i> | LDAF | E | | \$400 | \$0 |

Action Plan SR-6:

Urban Green Spaces

| | | | | | | |
|------------|---------------------------------|------|---|--|--|-------|
| SR-06M1.00 | <i>encourage green planning</i> | LDAF | E | | | \$969 |
|------------|---------------------------------|------|---|--|--|-------|

Table SR6-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$20,700
 Total Funding Existing (Years 1-5): \$20,700
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

This action plan calls for the creation of "urban green spaces." This includes such things as:

1. plantings of flowers, shrubs, or trees,
2. development of nature trails,
3. and establishment and expansion of parks.
4. A further component is the establishment of an "urban green space committee" within each community sector.

Interrelationships Among Components

To a limited degree the creation of "urban green spaces" can be accomplished by volunteers and private property owners. However, for a large scale organized effort, working committees within each community sector need to be established.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Committees are formed within each community sector.
2. Funding is sought for increases in "urban green spaces."
3. Plantings, expansion of nature trails, and increases in park space occur.

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Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Document establishment of "urban green space" committees by collecting meeting announcements, meeting agendas, meeting minutes, and reports to the BTMC.
3. Document plantings and establishment of nature trails by collecting photographs, video footage, or by notes taken from direct participation.
4. Document funding attempts by collecting copies of letters, public meeting minutes, and copies of proposals aimed at securing funds or in-kind services.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The community sector committees, through self-assessment, can supply data to the monitor.
3. The monitor can collect data independently and must verify coalition evidence.

Quality Assurance/Quality Control

Objective of monitoring

1. To document the actual formation of a working committee within each community sector.
2. To document actual plantings, development of nature trails, and increases of park space.
3. To document funding attempts.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. Community sector committees should assist the monitor in the development of the portfolio that will be part of the monitor's report

Data collection

The community sector committees and BTMC will provide the monitor with all documents described above.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify

Action Plan SR-6:

Urban Green Spaces

possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 6 Urban Green Spaces

EVALUATION METHODS

Components of Plan

This action plan calls for the creation of "urban green spaces." This includes such things as:

- plantings of flowers, shrubs, or trees,
- development of nature trails,
- and establishment and expansion of parks.
- A further component is the establishment of an "urban green space committee" within each community sector.

Interrelationships Among Components

To a limited degree the creation of "urban green spaces" can be accomplished by volunteers and private property owners. However, for a large scale organized effort, working committees within each community sector need to be established.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Committees are formed within each community sector.
- Funding is sought for increases in "urban green spaces."
- Plantings, expansion of nature trails, and increases in park space occur.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Document establishment of "urban green space" committees by collecting meeting announcements, meeting agendas, meeting minutes, and reports to the BTMC.
- Document plantings and establishment of nature trails by collecting photographs, video footage, or by notes taken from direct participation.
- Document funding attempts by collecting copies of letters, public meeting minutes, and copies of proposals aimed at securing funds or in-kind services.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.

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- The community sector committees, through self-assessment, can supply data to the monitor.
- The monitor can collect data independently and must verify coalition evidence.

QA/QC

Objective of monitoring

- To document the actual formation of a working committee within each community sector.
- To document actual plantings, development of nature trails, and increases of park space.
- To document funding attempts.

Identification of monitor

A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed. Community sector committees should assist the monitor in the development of the portfolio that will be part of the monitor's report

Data collection

The community sector committees and BTMC will provide the monitor with all documents described above.

Data evaluation

The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

**Action Plan SR-7:
Storm Drain
Stenciling**

SR-7 Storm Drain Stenciling

OBJECTIVES

1. To prevent the disposal of paint, oil, trash and garbage substances into the storm drain system.
2. To provide hands-on activities that focus on and result in conserving the estuary.

DESCRIPTION

This action will continue the implementation of an ongoing storm drain stenciling program in conjunction with the Louisiana Department of Environmental Quality's (LDEQ) nonpoint source pollution prevention program. This program focuses on the northernmost portion of the estuary, identifies storm drains and polluting substances, and organizes student and neighborhood groups to participate.

BACKGROUND/MAJOR ISSUES

Storm stenciling projects are fun, easy and educational. They give students and adults direct information about the interaction of the public infrastructure and the natural environment. People who learn in this way often become more aware of neighborhood-related environmental issues and can be effective in changing their own habits. These projects are essential to address the increasing problems associated with urban runoff.

BENEFITS

This project will benefit the estuary by involving students and neighborhood groups in environmental issues through a fun activity. At the same time, young and old citizens learn about the impact of polluting substances in the storm drain system and alternative methods of disposing those substances. By educating the public, we are bringing greater awareness of these issues which can result in changed behavior.

IMPLEMENTATION SCHEDULE

In fiscal years 1993, 1994 and 1995, the BTNEP participated in a joint effort with the LDEQ nonpoint source program to organize student and neighborhood groups to conduct storm drain stenciling.

The short-term plans for this action are:

- S 1.00 Continue this effort in the northern parishes in the estuary.
- S 2.00 Conduct research regarding other storm stenciling projects in Louisiana and other states to make the project a comprehensive educational experience. From this research, produce a comprehensive training package.

Medium- and long-term plans are:

- M 1.00 Continue the development of this program until it is active in every parish in the estuary region.
- M 2.00 Expand the program to include day-long programs for kids so they can learn about sources of garbage and pollution while becoming involved in stenciling of the drainage system.

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Action

Plans

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor of this action will be LDEQ, as administrators of the nonpoint source pollution prevention program.

The support implementor of this action will be the Barataria-Terrebonne Management Conference (BTMC).

COSTS AND ECONOMIC CONSIDERATIONS

Table SR7-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|----------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| SR-07 | | | | | \$8,773 | \$35,455 |
| SR-07S1.00 | <i>northern parishes</i> | | | | \$3,273 | \$0 |
| SR-07S1.01 | <i>northern parishes</i> | LDEQ | E | | \$808 | \$0 |
| SR-07S1.02 | <i>northern parishes</i> | BTPO-EPS1 | E | | \$808 | \$0 |
| SR-07S1.03 | <i>northern parishes</i> | BTPO-EPS2 | E | | \$808 | \$0 |
| SR-07S1.04 | <i>northern parishes</i> | BTMC | E | | \$600 | \$0 |
| SR-07S1.05 | <i>northern parishes</i> | LDEQ | E | | \$250 | \$0 |
| SR-07S2.00 | <i>stenciling research</i> | LDEQ | E | | \$5,500 | \$0 |
| SR-07M1.00 | <i>parish-wide program</i> | | | | | \$2,455 |
| SR-07M1.01 | <i>parish-wide program</i> | LDEQ | E | | | \$606 |
| SR-07M1.02 | <i>parish-wide program</i> | BTPO-EPS1 | E | | | \$606 |
| SR-07M1.03 | <i>parish-wide program</i> | BTPO-EPS2 | E | | | \$606 |
| SR-07M1.04 | <i>parish-wide program</i> | BTMC | E | | | \$450 |
| SR-07M1.05 | <i>parish-wide program</i> | LDEQ | E | | | \$188 |
| SR-07M2.00 | <i>children's programs</i> | BTMC | N | | | \$33,000 |

Table SR7-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

**Action Plan SR-7:
Storm Drain
Stenciling**

Total Funding Necessary (Years 1-5): \$150,600
 Total Funding Existing (Years 1-5): \$18,600
 Total New Funding Necessary (Years 1-5): \$132,000

Table SR7-1. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--------|---|---|---|---|
| BTMC | | \$36,000 Foundation grants; corporate sponsorship; license plate revenue | \$36,000 Foundation grants; corporate sponsorship; license plate revenue | \$36,000 Foundation grants; corporate sponsorship; license plate revenue | \$24,000 Foundation grants; corporate sponsorship; license plate revenue |

Summary of new funding strategy: Foundation grants and corporate sponsorship should be the primary funding sources for this action plan. Because this action plan involves a high degree of child education, the chance of securing foundation grants is high. In addition, the project involves expanding the education program into 11 distinct parishes, and corporate sponsors could be asked to sponsor specific parishes (e.g., the XYZ Corporation/Jefferson Parish Storm Drain Stenciling Program for Children). Any cost not supported by these two sources should be supported by license plate revenues.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Storm drain stenciling projects in every BTES community.
2. Liaison with other storm drain stenciling projects.
3. Production of a comprehensive training package.
4. Provide citizens and students with a hands-on activity aimed at estuary conservation.

Interrelationships Among Components

Storm drain stenciling is an ongoing project of the LDEG and has had some pilot efforts within the basin. However, the program needs to be expanded into all BTES communities. Storm drain stenciling is done in other locations in the state and country. It would be beneficial to compare these projects for further enhancement of these efforts. To assist in the establishment of storm drain stenciling in other locations and to enhance existing programs, a training

manual needs to be established. This project allows the citizenry and students within the basin an opportunity to participate in a manner consistent with the grassroots nature of the CCMP.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Establish storm drain stenciling program within each BTES community.
2. Recruit a school or civic organization within each community to undertake this project.

Objective 2.

1. Records of publicity.
2. Lists of participants.
3. Photographs or video of stenciling.
4. Number of stenciling projects.
5. Interviews of participants.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Document BTMC efforts to recruit an organization or school group within each community through obtaining copies of letters soliciting organizations, journals or records of meetings or phone conversations with organizational representatives.
3. Document the actual storm drain stenciling projects by collecting minutes of meetings of participatory organizations, participants list, number and location of storm drains stenciled, and photographs or video of storm drain stenciling.
4. Interview participants (phone, questionnaire & interview) about their perceptions of such participation and such efforts at conserving the estuary.
5. The monitor will participate in a stenciling program.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 3,000 |
| Year 2 | \$ 3,000 |
| Year 3 | \$ 3,000 |
| Year 4 | \$ 3,000 |
| Year 5 | <u>\$ 3,000</u> |
| Total | \$15,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC should request from the participatory organizations that the data needed be collected and provided to the monitor.

Quality Assurance/Quality Control

Objective of monitoring

1. To document BTMC efforts to recruit organizations to do storm drain stenciling.
2. To document the actual occurrence of storm drain stenciling in each BTES community.

**Action Plan SR-7:
Storm Drain
Stenciling**

3. To document storm drain stenciling effort (number of storm drains stenciled).
4. To document the number of participants (organizations and individuals).
5. To document participants' perceptions of this effort to conserving the estuary.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. Organizations conducting storm drain stenciling projects should supply the monitor data needed for the monitor's report to the BTMC.

Data collection

1. BTMC will provide recruit data by supplying the monitor with letters, journals or logs of meetings and phone calls with organizations or any other effort such as public notices, etc. that encourage storm drain stenciling.
2. The monitor will independently collect evidence of storm drain stenciling by verifying stenciling sites or being preset during stenciling.
3. The monitor will collect a portfolio type report from each organization that includes minutes of meetings, announcements, lists of participants, and photographs or video of storm drain stenciling projects.

Data evaluation

1. The monitor will verify data supplied by BTMC concerning recruitment.
2. The monitor will verify data supplied by the organizations.
3. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 7 Storm Drain Stenciling

EVALUATION METHODS

Components of Plan

- Storm drain stenciling projects in every BTE community.
- Liaison with other storm drain stenciling projects.
- Production of a comprehensive training package.
- Provide citizens and students with a hands-on activity aimed at estuary conservation.

Interrelationships Among Components

Storm drain stenciling is an ongoing project of the LDEG and has had some pilot efforts within the basin. However, the program needs to be expanded into all BTE communities. Storm drain stenciling is done in other locations in the state and country. It would be beneficial to compare these projects for further enhancement of these efforts. To assist in the establishment of storm drain stenciling in other locations and to enhance existing programs, a training manual needs to be established. This project allows the citizenry and students within the basin an opportunity to participate in a manner consistent with the grassroot nature of the CCMP.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- Establish storm drain stenciling program within each BTE community.
- Recruit a school or civic organization within each community to undertake this project.

Objective 2.

- Records of publicity.
- Lists of participants.
- Photographs or video of stenciling.
- Number of stenciling projects.
- Interviews of participants.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Document BTMC efforts to recruit an organization or school group within each community through obtaining copies of letters soliciting organizations, journals or records of meetings or phone conversations with organizational representatives.
- Document the actual storm drain stenciling projects by collecting minutes of meetings of participatory organizations, participants list, number and location of storm drains stenciled, and photographs or video of storm drain stenciling.
- Interview participants (phone, questionnaire & interview) about their perceptions of such participation and such efforts at conserving the estuary.
- The monitor will participate in a stenciling program.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 3,000 |
| Year 2 | \$ 3,000 |
| Year 3 | \$ 3,000 |
| Year 4 | \$ 3,000 |
| Year 5 | <u>\$ 3,000</u> |
| Total | \$15,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.

Action Plan SR-7: Storm Drain Stenciling

- The BTMC should request from the participatory organizations that the data needed be collected and provided to the monitor.

QA/QC

Objective of monitoring

- To document BTMC efforts to recruit organizations to do storm drain stenciling.
- To document the actual occurrence of storm drain stenciling in each BTE community.
- To document storm drain stenciling effort (number of storm drains stenciled).
- To document the number of participants (organizations and individuals).
- To document participants' perceptions of this effort to conserving the estuary.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- Organizations conducting storm drain stenciling projects should supply the monitor data needed for the monitor's report to the BTMC.

Data collection

- BTMC will provide recruit data by supplying the monitor with letters, journals or logs of meetings and phone calls with organizations or any other effort such as public notices, etc. that encourage storm drain stenciling.
- The monitor will independently collect evidence of storm drain stenciling by verifying stenciling sites or being preset during stenciling.
- The monitor will collect a portfolio type report from each organization that includes minutes of meetings, announcements, lists of participants, and photographs or video of storm drain stenciling projects.

Data evaluation

- The monitor will verify data supplied by BTMC concerning recruitment.
- The monitor will verify data supplied by the organizations.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-8:

Legislative Education

SR-8 Legislative Education

OBJECTIVES

1. To keep legislators and other governmental officials informed as to the critical issues of the estuary.
2. To secure legislator support for the implementation of the CCMP.
3. To encourage the Louisiana Congressional Delegation to actively promote the national significance of the estuary.

DESCRIPTION

This action will develop and implement a program to educate our representatives and engage legislative support for the policies set forth in this CCMP and for estuarine issues in general. Specifically, this plan proposes:

1. A BTES Legislative Task Force made up of non-government related Conference Members who will make informational contacts with legislators and other governmental officials.
2. A semi-annual "town meeting" with legislators and officials.
3. Special educational events such as boat tours and other public relations activities in which legislators have first-hand experience with issues facing the estuary and potential solutions.
4. A group of volunteer letter writers for specific issues.
5. The potential establishment of a BTES Legislative Caucus.
6. Other activities that help to build an alliance with estuary legislators and others sympathetic to the needs of the estuary.

BACKGROUND/MAJOR ISSUES

The future of the CCMP partially depends upon the writing, enactment and funding of legislation which will have a positive impact on the estuarine system. This requires a coordinated effort between legislators and the public including small and large business, recreation, education, and other economic indicators of the area. Legislators need factual information about the value of the estuary and the benefits it provides this state's economy and to the nation. Legislators also need to know the will of the people and should suggest and spearhead legislation needed to implement the CCMP and provide stewardship for the estuary. Legislators are also needed to ensure that administrative functions, decisions and responses to constituent requests are consistent with the purposes of the CCMP.

BENEFITS

The long term intended benefit of this plan is a high degree of trust and respect between the implementors of the CCMP and legislators relative to the intent of the BTNEP and a fair, well-balanced implementation process. With the help of legislators, the significance of the estuary will be known locally, state-wide and nationally and the program will be seen as a major legislative accomplishment. The plan specifically addresses the goal to *Create Local, State and National Recognition and Support* particularly as it refers to the goal characteristic of *Informed Advocacy*.

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IMPLEMENTATION SCHEDULE

There has been only limited contact thus far with legislators on garnering support for the CCMP. Conference members are planning briefing sessions with legislators. Short-term plans (0-1 year) for this action include the following (all actions are the responsibility of the Barataria-Terrebonne Management Conference):

- S 1.00 Develop list of legislators that are potential allies or friends of the estuary (December 1995). Include Congressional, State, Parish, City, Political Subdistricts, Judges, Police, Levee Districts.
- S 2.00 Identify stakeholders who are willing to educate governmental officials re: the CCMP (January 1996 and call meeting).
- S 3.00 Compile list of individuals and organizations which agree to send letters from "Estuary Alert" announcements (February 1996).
- S 4.00 Develop fact sheets which show how CCMP affects district/state/nation and can have a positive effect for economy, lifestyles, health, etc.
- S 5.00 Make appointments with known legislators to get advice, on expanding legislative support (April 1996).
- S 6.00 Organize task force to plan first special event (May 1996).
- S 7.00 Set date for the event (May 1996).

Medium-term plans (1-5 years) call for the establishment of an ongoing process that builds legislative alliances to support the primary focus of the CCMP. Specifically, medium-range plans include the following:

- M 1.00 Hold first event (winter 1996).
- M 2.00 Highlight positive legislative involvement through media, speaking engagements and educational tours and annual presentation to legislators.
- M 3.00 Devise fund raising events (winter 1996).
- M 4.00 Build calendar of events (spring 1996).

The long-term plan (5-10 years) for this action is to incorporate and establish reliable funding sources. Within this time frame, the establishment of a state and national BTES Legislative Caucus should be explored. A permanent staff position to oversee education of government officials should be created.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Louisiana Cooperative Extension Service. It is anticipated that a special BTES legislative task force will be created to specifically administer this action. Support implementors may include the Coalition to Restore Coastal Louisiana, the Louisiana Association of Conservation Districts, and other environmental organizations, as well as those members of the BTMC who are not affiliated with a government agency.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR8-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered "new" (a direct product of CCMP recommendations) and "existing" (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan

Action Plan SR-8:

Legislative Education

implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR8-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG Costs/YR (Medium Term) |
|------------|-----------------------------------|-----------|-------------------|------------|-----------------------------|--|
| SR-08 | | | | | \$35,269 | \$7,915 |
| SR-08S1.00 | <i>list of friends</i> | BTPO-EPS2 | E | | \$1,615 | \$0 |
| SR-08S2.00 | <i>identify stakeholders</i> | BTPO-PD | | | \$1,615 | \$0 |
| SR-08S3.00 | <i>list of letter senders</i> | | E | | \$808 | \$0 |
| SR-08S3.01 | <i>compile</i> | LCES | E | | \$404 | \$0 |
| SR-08S3.02 | <i>compile</i> | BTPO-EPS2 | E | | \$404 | \$0 |
| SR-08S4.00 | <i>fact sheets</i> | | E | SR-11S6.00 | | \$0 |
| SR-08S5.00 | <i>appointments w/legislators</i> | BTPO-PD | E | | \$2,019 | \$0 |
| SR-08S6.00 | <i>task force</i> | | | | \$29,212 | \$0 |
| SR-08S6.01 | <i>organization</i> | BTPO-EPS1 | E | | \$14,000 | \$0 |
| SR-08S6.02 | <i>organization</i> | BTPO-EPS2 | E | | \$14,000 | \$0 |
| SR-08S6.03 | <i>organization</i> | BTPO-PD | E | | \$1,212 | \$0 |
| SR-08S7.00 | <i>set date for event</i> | | E | SR-08S6.00 | | \$0 |
| SR-08M1.00 | <i>hold first event</i> | | | | | \$646 |
| SR-08M1.01 | <i>support</i> | BTPO-EPS1 | E | | | \$323 |
| SR-08M1.02 | <i>support</i> | BTPO-EPS2 | E | | | \$323 |
| SR-08M2.00 | <i>highlight positives</i> | BTPO-EPS2 | E | | | \$4,846 |
| SR-08M3.00 | <i>fund raising events</i> | BTPO-EPS2 | E | | | \$1,615 |
| SR-08M4.00 | <i>calendar of events</i> | BTPO-EPS1 | E | | | \$808 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$66,900
 Total Funding Existing (Years 1-5): \$66,900
 Total New Funding Necessary (Years 1-5): \$0

Summary of new funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. Formation of a BTES Legislative Task Force.
2. Semi-annual town meetings with legislators and officials.
3. Educational/public relations activities for legislators.
4. Establish a group of volunteer letter writers.
5. Develop fact sheets that show how CCMP affects district, state, and nation in a positive light (economics, health, etc.).
6. Legislative support of CCMP.

Interrelationships Among Components

The promotion of legislative support of the CCMP is important to its overall success. The BTMC along with various citizens within the basin must establish themselves with the legislators. This will facilitate future contact as needed.

A system of educating the legislators by town meetings, special events, and newsletters may also serve to gain legislative support.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Document the development of a BTES Legislative Task Force.
2. Document communication between Task Force and legislators such as letters, minutes or records of meetings, phone logs or journals, scheduled appointments, and incidental meetings.
3. Documentation of town meetings.
4. Document educational/public relation events.
5. Development of fact sheets.
6. Survey legislative offices as to whether or not they feel informed about the CCMP and BTES issues.

Objective 2.

1. Document public records, press releases, media quotes, or position statements by legislators that support the CCMP.
2. Copies of any proposed resolutions or legislative action in favor of the CCMP.
3. Document letter writing campaign.

Objective 3.

1. Document communication between Task Force and legislators such as letters, minutes or records of meetings, phone logs or journals, scheduled appointments, and incidental meetings.
2. Documentation of town meetings.
3. Document educational/public relation events.
4. Development of fact sheets.

Action Plan SR-8:

Legislative Education

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. BTMC shall provide the meeting minutes that establish the Legislative Task Force, their recruiting efforts for basin wide representation, and membership lists of the Task Force and its subcommittees.
3. The Legislative Task Force must supply meeting announcements, agendas, and minutes of their meetings.
4. The Legislative Task Force must document all efforts to meet with and provide information to legislators.
5. Special events and educational/public relations activities must be documented by newspaper clipping or other proof of media coverage such a recordings, lists of participants, specific dates and times, and photographs or video of the event or activity.
6. Copies of facts sheets will be collected.
7. The number of letters written to support an "Estuary Alert" announcement by surveying (phone & questionnaire) a significant number of the established letter writing individuals and organizations.
8. Any record of any action that a legislator takes that favors the CCMP must be collected such as excerpts from public records, press releases, copies of legislation, and letters of support from the legislators.
9. Legislators or their officers will be surveyed (phone & interview) as to what extent they feel they were informed about the CCMP and issues related to the BTES.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall provide the monitor with documentation relative to the formation of the Legislative Task Force.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure the formation of a Legislative Task Force.
2. To document wide spread membership from within the basin.
3. To document Task Force communication with legislators.
4. To document educational/public relation events.
5. To document town meetings.
6. To document actions taken by legislators that favor the CCMP or deal with issues within the BTES.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. Self-evaluation and documentation by the BTMC and Legislative Task Force need to be provided to the monitor.

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

Data collection

1. The monitor will collect documentation from the BTMC and Legislative Task Force.
2. The monitor will independently collect data as described above to independently verify data reported.
3. The monitor will survey the legislative offices.
4. The monitor must show evidence of validity and reliability of data collected.

Data evaluation

1. The monitor will verify data supplied by BTMC concerning recruitment for the Legislative Task Force.
2. The monitor will verify data supplied by BTMC and Legislative Task Force.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 8 Legislative Education

EVALUATION METHODS

Components of Plan

- Formation of a BTE Legislative Task Force.
- Semi-annual town meetings with legislators and officials.
- Educational/public relations activities for legislators.
- Establish a group of volunteer letter writers.
- Develop fact sheets that show how CCMP affects district, state, and nation in a positive light (economics, health, etc.).
- Legislative support of CCMP.

Interrelationships Among Components

The promotion of legislative support of the CCMP is important to its overall success. The BTMC along with various citizens within the basin must establish themselves with the legislators. This will facilitate future contact as needed.

A system of educating the legislators by town meetings, special events, and newsletters may also serve to gain legislative support.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- Document the development of a BTE Legislative Task Force.
- Document communication between Task Force and legislators such as letters, minutes or records of meetings, phone logs or journals, scheduled appointments, and incidental meetings.

Action Plan SR-8:

Legislative Education

- Documentation of town meetings.
- Document educational/public relation events.
- Development of fact sheets.
- Survey legislative offices as to whether or not they feel informed about the CCMP and BTE issues.

Objective 2.

- Document public records, press releases, media quotes, or position statements by legislators that support the CCMP.
- Copies of any proposed resolutions or legislative action in favor of the CCMP.
- Document letter writing campaign.

Objective 3.

- Document communication between Task Force and legislators such as letters, minutes or records of meetings, phone logs or journals, scheduled appointments, and incidental meetings.
- Documentation of town meetings.
- Document educational/public relation events.
- Development of fact sheets.

Methods

- Measure accomplishments against time frame established in the CCMP.
- BTMC shall provide the meeting minutes that establish the Legislative Task Force, their recruiting efforts for basin wide representation, and membership lists of the Task Force and its subcommittees.
- The Legislative Task Force must supply meeting announcements, agendas, and minutes of their meetings.
- The Legislative Task Force must document all efforts to meet with and provide information to legislators.
- Special events and educational/public relations activities must be documented by newspaper clipping or other proof of media coverage such a recordings, lists of participants, specific dates and times, and photographs or video of the event or activity.
- Copies of facts sheets will be collected.

- The number of letters written to support an "Estuary Alert" announcement by surveying (phone & questionnaire) a significant number of the established letter writing individuals and organizations.
- Any record of any action that a legislator takes that favors the CCMP must be collected such as excerpts from public records, press releases, copies of legislation, and letters of support from the legislators.
- Legislators or their officers will be surveyed (phone & interview) as to what extent they feel they were informed about the CCMP and issues related to the BTE.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall provide the monitor with documentation relative to the formation of the Legislative Task

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

Force.

QA/QC

Objective of monitoring

- To ensure the formation of a Legislative Task Force.
- To document wide spread membership from within the basin.
- To document Task Force communication with legislators.
- To document educational/public relation events.
- To document town meetings.
- To document actions taken by legislators that favor the CCMP or deal with issues within the BTE.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- Self-evaluation and documentation by the BTMC and Legislative Task Force need to be provided to the monitor.

Data collection

- The monitor will collect documentation from the BTMC and Legislative Task Force.
- The monitor will independently collect data as described above to independently verify data reported.
- The monitor will survey the legislative offices.
- The monitor must show evidence of validity and reliability of data collected.

Data evaluation

- The monitor will verify data supplied by BTMC concerning recruitment for the Legislative Task Force.
- The monitor will verify data supplied by BTMC and Legislative Task Force.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-9:

Media Support

SR-9 Media Support

OBJECTIVES

1. To utilize the local, state, national and international media to educate the public about BTNEP and estuarine issues by informing and building relationships with media representatives, so that the program and estuary receive frequent, dynamic and accurate attention.
2. To have the BTES known nationally as a valuable resource that must be safeguarded by the entire nation.

DESCRIPTION

This action will develop and implement a plan to establish good working relationships and informative activities with the media that will produce continuous, accurate pictures and stories about the BTES and estuary issues in local, state and national markets. This involves targeted activities and press releases that engage media attention, with careful thought to particular local, state and national tie-ins.

BACKGROUND/MAJOR ISSUES

Public opinion is often formed on the basis of what and how the media reports issues. It is important that the public gain an accurate picture of the work of the program. Particularly, because BTNEP is a program with a broad base of representation, it is important that the media understand and convey the unique structure of the program as well as the complex interrelationships of estuary issues that are being addressed. Locally, through ongoing efforts of the BTNEP staff, contractors and public workshops, the BTES name is gaining recognition. Still, there is a great challenge to make the BTES as well known as the "Chesapeake Bay" or the "Florida Everglades". This plan outlines key elements in a maintaining positive media attention that will greatly aid these efforts.

BENEFITS

Accurate portrayal of the program is important so that timely and supportive information is presented in newspapers, magazines, television and radio. The BTES will become recognized as a valuable national resource.

IMPLEMENTATION SCHEDULE

Short-term plans (September 1995 - 1997) are as follows:

- S 1.00 Continue current public relations and media campaign of feature and news stories in various regional and national publications, television and radio public service announcements, and publicity for public workshops series.
- S 2.00 Develop an up-to-date database of active media contacts and outlets.
- S 3.00 Develop a message strategy, including a "spokesperson" or "character", for the BTES that can be presented in a unified approach by all user groups, stakeholders, state and federal agency representatives, etc.
- S 4.00 Develop a regular media schedule for news and feature release distribution.
- S 5.00 Develop a list of issues, talking points and potential interview questions for news and public affairs broadcast shows/programming.
- S 6.00 Host editorial board meetings for specific BTES issues and CCMP actions.

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- S 7.00 Conduct field trips and events in different areas of the estuary and during different seasons for prominent leaders and media representatives.
- S 8.00 Schedule media breakfasts, press club appearances, interviews on public affairs and news shows to discuss BTES issues and CCMP actions.
- S 9.00 Follow up, nurture and expand relationships with media representatives.
- S 10.00 Coordinate informational and media campaigns with related state agencies.
- S 11.00 Establish a list of estuary residents and experts who can be used to put faces and names to news stories.
- S 12.00 Identify examples of estuary residents who have made a living from the estuary and can be featured in news stories.
- S 13.00 Cultivate experts in economics and business who can lend credence to stories; make them available to speak freely and candidly on estuary subjects.

Medium-term plans include the following:

- M 1.00 Continue to develop good working relationships with all media representatives.
- M 2.00 Develop and conduct specific media and public relations campaigns tailored for individual estuary issues and CCMP actions.
- M 3.00 Gain national recognition through having estuary issues discussed on major/national television network programming: nightly news shows, morning news programs, news magazine shows, and others.
- M 4.00 Arrange for *Haunted Waters*, *Fragile Lands* video-documentary to be televised on major/national television networks such as Discovery Channel, The Learning Channel, National Public Broadcasting, NBC, CBS, FOX, ABC, and others.
- M 5.00 Raise public awareness and gain national recognition through feature and news articles published in major regional and national publications, such as *National Geographic*, *USA Today*, *Time*, *Southern Living*, and others.
- M 6.00 Maintain, continually update and expand media contact database.
- M 7.00 Continue to hold editorial board meetings.
- M 8.00 Establish and formalize a regular media breakfast program.

Long-term plans are as follows:

- L 1.00 Continue to develop and expand on good working relationships with all media representatives.
- L 2.00 Consistently evaluate media and public relations campaigns, productivity and effectiveness of activities, and accomplishments of action plan. Care should be taken to clearly define the purpose of any evaluation so as not to create the perception that reporters are being 'graded.'
- L 3.00 Continue and expand short- and mid-term activities listed above.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementor for this action will be the Program Office.

Support implementors will include media and public relations consultants, the Association of Outdoor Writers, editors of the estuary-based newspapers and organizational newsletters and publications, broadcast and print reporters, university communications departments, and state agencies' public information departments/divisions.

COSTS AND ECONOMIC CONSIDERATIONS

Action Plan SR-9:

Media Support

Table SR9-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR9-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/_ NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------|-----------------------------------|-----------|-------------------|------------|--------------------------|--|
| SR-08 | | | | | \$35,269 | \$7,915 |
| SR-08S1.00 | <i>list of friends</i> | BTPO-EPS2 | E | | \$1,615 | \$0 |
| SR-08S2.00 | <i>identify stakeholders</i> | BTPO-PD | | | \$1,615 | \$0 |
| SR-08S3.00 | <i>list of letter senders</i> | | E | | \$808 | \$0 |
| SR-08S3.01 | <i>compile</i> | LCES | E | | \$404 | \$0 |
| SR-08S3.02 | <i>compile</i> | BTPO-EPS2 | E | | \$404 | \$0 |
| SR-08S4.00 | <i>fact sheets</i> | | E | SR-11S6.00 | | \$0 |
| SR-08S5.00 | <i>appointments w/legislators</i> | BTPO-PD | E | | \$2,019 | \$0 |
| SR-08S6.00 | <i>task force</i> | | | | \$29,212 | \$0 |
| SR-08S6.01 | <i>organization</i> | BTPO-EPS1 | E | | \$14,000 | \$0 |
| SR-08S6.02 | <i>organization</i> | BTPO-EPS2 | E | | \$14,000 | \$0 |
| SR-08S6.03 | <i>organization</i> | BTPO-PD | E | | \$1,212 | \$0 |
| SR-08S7.00 | <i>set date for event</i> | | E | SR-08S6.00 | | \$0 |
| SR-08M1.00 | <i>hold first event</i> | | | | | \$646 |
| SR-08M1.01 | <i>support</i> | BTPO-EPS1 | E | | | \$323 |
| SR-08M1.02 | <i>support</i> | BTPO-EPS2 | E | | | \$323 |
| SR-08M2.00 | <i>highlight positives</i> | BTPO-EPS2 | E | | | \$4,846 |
| SR-08M3.00 | <i>fund raising events</i> | BTPO-EPS2 | E | | | \$1,615 |
| SR-08M4.00 | <i>calendar of events</i> | BTPO-EPS1 | E | | | \$808 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$420,900

Total Funding Existing (Years 1-5): \$420,900

Total New Funding Necessary (Years 1-5): \$0

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Summary of funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The essential component of SR-9 is the development of a media strategy. The media strategy has several sub components such as:

1. Continuance of current public relations and media campaign.
2. Develop a database of active media contacts.
3. Use of a "spokesperson" or "character."
4. Develop a regular media schedule for news releases and feature release distribution.
5. Develop a catalog of issues, discussion points, and responses to anticipated questions.
6. Host editorial board meetings.
7. Conduct field trips for media.
8. Schedule various opportunities to discuss BTES issues such as media breakfasts, press clubs, public affairs shows.
9. Coordinate media campaigns with related state agencies.
10. Establish a list of estuary residents who have made a living from the estuary to use on featured stories.
11. Cultivate experts in economics and business who can support stories.
12. Gain national attention through network programming.
13. Air "Haunted Waters, Fragile Lands" on national network television.
14. Gain national attention through regional and national publications.

Interrelationships Among Components

With the list of components above, BTMC will need to employ a full time public relations expert. This person will need to work with all committees and sub-committees of the BTMC.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Document effort to develop media relations through copies of letters to the media, phone logs or journals, notes on incidental meetings, press releases.
2. Document success of media relations by surveying key media personal about their knowledge base of the CCMP and their perception of the quality and timeliness of information they receive.
3. Document media attention by collecting copies of all media attention written, video, visual, or oral.

Action Plan SR-9:

Media Support

Objective 2.

1. Document any national media coverage through collecting TV broadcasting schedules, video of any TV coverage, copies of any written coverage.
2. Survey members (questionnaire, phone, interview) of the Environmental and Outdoor Writers Association.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation of their media program and provide this information to the monitor.
3. The BTMC data should include documentation of efforts to develop media relations and success of these efforts by providing copies of letters, minutes of meetings, phone logs or journals, notes on incidental or informal meetings and contacts.
4. The BTMC data should include copies of all media attention.
5. The BTMC shall conduct on-line or internet searches that document BTES and CCMP media attention.
6. The monitor shall independently collect data to verify data supplied by the BTMC.
7. The monitor must show evidence of validity and reliability of data collected.
8. The monitor will survey (phone, questionnaire, & interview) the local and regional media about their perceptions of the BTES and the CCMP during scheduled events.
9. The monitor will survey the Environmental And Outdoor Writers Association members.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The public relations officer for the BTMC shall provide the monitor with data necessary.
3. The monitor will independently collect data to verify supplied data.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure the development of a media strategy.
2. To ensure the timely development of relationships with the media.
3. To ensure the promotion of BTES and the CCMP through public media sources.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. Monitor should be familiar with public relation strategies and media relations.
3. The BTMC should develop a self-evaluation strategy that would assist the monitor in data collection.

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Data collection

1. Collection of documents such as memos, letters, phone logs or journals related to media strategy.
2. Collection of minutes of BTMC meetings where the media strategies are discussed.
3. Copies of press releases.
4. Newspaper clippings, video footage, and audio recordings where the media discusses the BTES.
5. Documentation of media events such as announcements, lists of participants, photographs or video of the event.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its ongoing media strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC meeting.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 9 Media Support

EVALUATION METHODS

Components of Plan

The essential component of SR-9 is the development of a media strategy. The media strategy has several sub components such as:

- Continuance of current public relations and media campaign.
- Develop a database of active media contacts.
- Use of a "spokesperson" or "character."
- Develop a regular media schedule for news releases and feature release distribution.
- Develop a catalog of issues, discussion points, and responses to anticipated questions.
- Host editorial board meetings.
- Conduct field trips for media.
- Schedule various opportunities to discuss BTE issues such as media breakfasts, press clubs, public affairs shows.
- Coordinate media campaigns with related state agencies.
- Establish a list of estuary residents who have made a living from the estuary to use on featured stories.
- Cultivate experts in economics and business who can support stories.
- Gain national attention through network programming.
- Air "Haunted Waters, Fragile Lands" on national network television.
- Gain national attention through regional and national publications.

Action Plan SR-9:

Media Support

Interrelationships Among Components

With the list of components above, BTMC will need to employ a full time public relations expert. This person will need to work with all committees and sub-committees of the BTMC.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- Document effort to develop media relations through copies of letters to the media, phone logs or journals, notes on incidental meetings, press releases.
- Document success of media relations by surveying key media personal about their knowledge base of the CCMP and their perception of the quality and timeliness of information they receive.
- Document media attention by collecting copies of all media attention written, video, visual, or oral.

Objective 2.

- Document any national media coverage through collecting TV broadcasting schedules, video of any TV coverage, copies of any written coverage.
- Survey members (questionnaire, phone, interview) of the Environmental and Outdoor Writers Association.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation of their media program and provide this information to the monitor.
- The BTMC data should include documentation of efforts to develop media relations and success of these efforts by providing copies of letters, minutes of meetings, phone logs or journals, notes on incidental or informal meetings and contacts.
- The BTMC data should include copies of all media attention.
- The BTMC shall conduct on-line or internet searches that document BTE and CCMP media attention.
- The monitor shall independently collect data to verify data supplied by the BTMC.
- The monitor must show evidence of validity and reliability of data collected.
- The monitor will survey (phone, questionnaire, & interview) the local and regional media about their perceptions of the BTE and the CCMP during scheduled events.
- The monitor will survey the Environmental And Outdoor Writers Association members.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The public relations officer for the BTMC shall provide the monitor with data necessary.
- The monitor will independently collect data to verify supplied data.

QA/QC

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Objective of monitoring

- To ensure the development of a media strategy.
- To ensure the timely development of relationships with the media.
- To ensure the promotion of BTE and the CCMP through public media sources.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- Monitor should be familiar with public relation strategies and media relations.
- The BTMC should develop a self-evaluation strategy that would assist the monitor in data collection.

Data collection

- Collection of documents such as memos, letters, phone logs or journals related to media strategy.
- Collection of minutes of BTMC meetings where the media strategies are discussed.
- Copies of press releases.
- Newspaper clippings, video footage, and audio recordings where the media discusses the BTE.
- Documentation of media events such as announcements, lists of participants, photographs or video of the event.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its ongoing media strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC meeting.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-10:

Speakers Bureau

SR-10 Speakers Bureau

OBJECTIVES

1. To efficiently spread the word about the Barataria-Terrebonne National Estuary Program throughout the estuary by using the expertise of the management conference members and newly recruited volunteers.

DESCRIPTION

This action will establish and organize a group of committed and knowledgeable persons who are available for speaking engagements about estuary issues dealing with renewable resources, sustainable development, and personal responsibility for protecting the many attributes (physical, biological, and cultural) that make the BTES unique and important to the state and nation.

BACKGROUND/MAJOR ISSUES

Informing the public about the local, state, and national challenges facing this estuary, especially those who do not make their living directly from the “land”, will be a continuous effort. One of the most effective ways to convey information is to have it presented in small groups by a respected and committed “expert” or community leader. In this case, leaders extends beyond politicians and into the broad range of professionals and respected individuals found throughout the community. Meetings of civic, business, church or sports organizations in this region are ready outlets for presentations about BTES issues. The Barataria-Terrebonne Management Conference (BTMC) members, at least initially, are excellent choices to convey the interest and excitement of this program. As the program expands, trained volunteers will be recruited. These speakers will have access to slide shows, the video *Haunted Waters*, *Fragile Lands - Oh, What Tales to Tell!* as well as other written and visual material to aid their presentation.

BENEFITS

A group of volunteer speakers will greatly extend the ability of the Program Office staff to reach and engage citizens in BTES issues, goals and activities. These speakers will enable a greater percentage of the public to view the *Haunted Waters* video, and to learn how to become directly involved in the BTES program. Additionally, the speakers will relate public questions, ideas, and comments to the Program Office so that information can continually be updated and tailored to the public needs.

IMPLEMENTATION SCHEDULE

Short-term plans are as follows:

- S 1.00 Update information packet.
- S 2.00 Create packet appropriate for 15 minute, 30 minute and one hour presentations.
- S 3.00 Create a list of potential management conference members to serve as speakers. Be sure to include representatives of sportsmen and fishermen, not just politicians.
- S 4.00 Hold a meeting of the speakers to generate potential audiences. Don't forget to contact community organizations.
- S 5.00 Provide speakers' orientation and training.

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- S 6.00 Schedule presentations with veterans organizations, civic associations, service clubs, church groups, and, in particular, those who do not make a living directly from the land.
- S 7.00 Make assignments and schedules of speaking dates.
- S 8.00 Create a “Speakers Directory” with listings by expertise.
- S 9.00 Network with other speakers’ training such as Toastmasters.
- S 10.00 Give volunteer speakers “thanks”.
- S 11.00 Continually solicit engagements for speakers.
- S 12.00 Develop key issues and talking points.
- S 13.00 Develop position/issue papers.
- S 14.00 Develop informational materials for speakers to distribute at engagements.

The medium- and long-term goal is:

- M 1.00 Maintain an updated information packet and a well-trained group of volunteer speakers.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementors for this action will be the Program Office followed by the BTMC.

Support implementors will include individual members of the BTMC and hired consultants. The Program Office will update the information packet and chair a team to create the new presentations. The Program Office will provide administrative support to the Speaker's Bureau, such as preparing lists, directories, chairing meetings, distributing notices, and serving as the point of contact and clearinghouse for contacting speakers, scheduling events, and mailing packets of information.

COSTS AND ECONOMIC CONSIDERATIONS

Action Plan SR-10:

Speakers Bureau

Table SR10-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR10-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------|-------------------------------------|-----------|-------------------|------------|-----------------------------|--|
| SR-10 | | | | | \$26,246 | \$2,808 |
| SR-10S01.00 | <i>update info packet</i> | | E | SR-11S7.00 | | \$0 |
| SR-10S02.00 | <i>variable times packets</i> | | E | SR-11S7.00 | | \$0 |
| SR-10S03.00 | <i>speakers list</i> | | | | \$1,938 | \$0 |
| SR-10S03.01 | <i>sec2</i> | BTPO-S2 | E | | \$969 | \$0 |
| SR-10S04.00 | <i>speakers meeting, training</i> | | | | \$5,452 | \$0 |
| SR-10S04.01 | <i>secretary2</i> | BTPO-S2 | E | | \$1,212 | \$0 |
| SR-10S04.02 | <i>eps2</i> | BTPO-EPS2 | E | | \$1,212 | \$0 |
| SR-10S04.03 | <i>eps1</i> | BTPO-EPS1 | E | | \$3,029 | \$0 |
| SR-10S05.00 | <i>orientation and training</i> | | E | SR-10S4.00 | | \$0 |
| SR-10S06.00 | <i>schedule presentations</i> | | | | \$3,877 | \$0 |
| SR-10S06.01 | <i>secretary2</i> | BTPO-S2 | E | | \$1,938 | \$0 |
| SR-10S06.02 | <i>eps1</i> | BTPO-EPS1 | E | | \$1,938 | \$0 |
| SR-10S07.00 | <i>assign/schedule dates</i> | | E | SR-10S6.00 | | \$0 |
| SR-10S08.00 | <i>"Speakers Directory"</i> | BTPO-S2 | E | | \$3,500 | \$0 |
| SR-10S09.00 | <i>network with other programs</i> | | | | \$1,696 | \$0 |
| SR-10S09.01 | <i>secretary2</i> | BTPO-S2 | E | | \$485 | \$0 |
| SR-10S09.02 | <i>eps1</i> | BTPO-EPS1 | E | | \$1,212 | \$0 |
| SR-10S10.00 | <i>give "thanks"</i> | BTMC | E | | \$90 | \$0 |
| SR-10S11.00 | <i>solicit speaking engagements</i> | | E | SR-10S6.00 | | \$0 |
| SR-10S12.00 | <i>key issues, talking points</i> | | | | \$9,692 | \$0 |
| SR-10S12.01 | <i>secretary2</i> | BTPO-S2 | E | | \$1,938 | \$0 |
| SR-10S12.02 | <i>eps2</i> | BTPO-EPS2 | E | | \$3,877 | \$0 |
| SR-10S12.03 | <i>eps1</i> | BTPO-EPS1 | E | | \$3,877 | \$0 |
| SR-10S13.00 | <i>position, issues papers</i> | | E | SR-11S6.00 | | \$0 |

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| | | | | | | |
|-------------|----------------------------------|-----------|---|------------|--|---------|
| SR-10S14.00 | <i>informational materials</i> | | E | SR-10S1.00 | | \$0 |
| SR-10M1.00 | <i>maintain packet, speakers</i> | | | | | \$2,808 |
| SR-10M1.01 | <i>update packet</i> | BTPO | E | | | \$2,000 |
| SR-10M1.02 | <i>eps2</i> | BTPO-EPS2 | E | | | \$808 |
| | | | | | | |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$37,500
 Total Funding Existing (Years 1-5): \$37,500
 Total New Funding Necessary (Years 1-5): \$0

Summary of funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

1. An updated information packet.
2. Develop packets for 15 minute, 30 minute, and one hour presentations.
3. Develop a list of volunteer speakers that represent diverse interests in the basin.
4. Provide speakers orientation and training.
5. Contact organizations and schedule speakers.
6. Create a speakers directory with each speaker's expertise.
7. Develop key issues and talking points.
8. Develop position/issue papers.
9. Develop informal materials for speakers to distribute at engagements.

Interrelationships Among Components

In order to spread the word, engage and inform the public within the basin about estuary issues an organized effort of providing speakers is necessary. Speakers recruited need to represent the diverse interest within the basin. The speakers should be provided training and materials to assist them in a successful speaking engagement.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Names of recruited speakers.
2. Lists of speakers' backgrounds and expertise.
3. Materials to assist speakers such as the information packet, lists of discussion points, and position statements.

Action Plan SR-10:

Speakers Bureau

4. Samples of informal materials distributed at speaking engagements.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.
3. Obtain and archive list of speakers and their backgrounds and expertise.
4. Survey speakers (phone, questionnaire, interview) about the perception of training and preparedness.
5. Survey speakers (phone, questionnaire, interview) about utility of information packet.
6. Attend several speaking engagements.
7. Survey audience of speaking engagements.
8. Obtain and archive records of training sessions such lists or participants.
9. Obtain and archive records of attempts to schedule speaking opportunities such as copies of letters, phone logs, or notes of incidental meetings.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.
3. The monitor should have expertise in public speaking and public relations.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure a list of speakers is developed representing the diverse interest of the basin.
2. To ensure the development of materials necessary to assist speakers.
3. To ensure the training of speakers.
4. To ensure an effort to solicit speaking opportunities.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.

Data collection

1. Information provided by the BTMC.
2. Obtain and archive materials developed to assist speakers.
3. Obtain and archive lists of speakers and their background and expertise.

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4. Number of speaking engagements and types of audiences.
5. Surveys of audiences.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its Speakers Bureau.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC meeting.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 10 Speakers Bureau

EVALUATION METHODS

Components of Plan

- An updated information packet.
- Develop packets for 15 minute, 30 minute, and one hour presentations.
- Develop a list of volunteer speakers that represent diverse interests in the basin.
- Provide speakers orientation and training.
- Contact organizations and schedule speakers.
- Create a speakers directory with each speaker's expertise.
- Develop key issues and talking points.
- Develop position/issue papers.
- Develop informal materials for speakers to distribute at engagements.

Interrelationships Among Components

In order to spread the word, engage and inform the public within the basin about estuary issues an organized effort of providing speakers is necessary. Speakers recruited need to represent the diverse interest within the basin. The speakers should be provided training and materials to assist them in a successful speaking engagement.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Names of recruited speakers.
- Lists of speakers' backgrounds and expertise.
- Materials to assist speakers such as the information packet, lists of discussion points, and position statements.
- Samples of informal materials distributed at speaking engagements.

Methods

- Measure accomplishments against time frame established in the CCMP.

Action Plan SR-10:

Speakers Bureau

- The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.
- Obtain and archive list of speakers and their backgrounds and expertise.
- Survey speakers (phone, questionnaire, interview) about the perception of training and preparedness.
- Survey speakers (phone, questionnaire, interview) about utility of information packet.
- Attend several speaking engagements.
- Survey audience of speaking engagements.
- Obtain and archive records of training sessions such lists or participants.
- Obtain and archive records of attempts to schedule speaking opportunities such as copies of letters, phone logs, or notes of incidental meetings.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.
- The monitor should have expertise in public speaking and public relations.

QA/QC

Objective of monitoring

- To ensure a list of speakers is developed representing the diverse interest of the basin.
- To ensure the development of materials necessary to assist speakers.
- To ensure the training of speakers.
- To ensure an effort to solicit speaking opportunities.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their Speakers Bureau Program and provide this information to the monitor.

Data collection

- Information provided by the BTMC.
- Obtain and archive materials developed to assist speakers.
- Obtain and archive lists of speakers and their background and expertise.
- Number of speaking engagements and types of audiences.
- Surveys of audiences.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its Speakers Bureau.
- The monitor must show evidence of validity and reliability of data collected.

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Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC meeting.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-11: Written, Audio and Visual Materials

SR-11 Written, Audio and Visual Materials

OBJECTIVES

1. To produce a communications package that provides informational and educational materials about the BTES and CCMP in formats that relate and correspond to identified target audiences.

DESCRIPTION

This action will develop sets of educational materials tailored to BTES target audiences that provide accurate, technical and up-to-date information about the BTES and CCMP actions. All materials will be part of a communications package and will share a consistent message. Materials will be developed in a cohesive manner by building on the overall message. Using this consistent message, materials will be presented in various formats--printed, audio and visual--specific to the target audience's needs.

BACKGROUND/MAJOR ISSUES

For citizens to form or change opinions and become advocates of CCMP actions, they must be informed and educated about the BTES and CCMP goals. Communications packages that are tailored to specific target audiences will increase the likelihood of the audience's acceptance of the material. Targeting information to the audience is more appealing and gains the interest of the reader, listener or viewer. It presents a direct link between the audience and the estuary.

BENEFITS

A clear, consistent strategy of producing informational materials helps to efficiently and effectively target key audiences. The materials produced will greatly enhance citizen knowledge, awareness and involvement in resolving estuary challenges.

This action plan supports the following BTNEP goals: *Create an Accessible, Comprehensive Data Base with Interpreted Information for the Public; Implement Comprehensive Education and Awareness Programs that Enhance Public Involvement; Create Regional Pride and Long-term Stewardship; and Promote Environmentally Responsible Economic Activities that Sustain Estuarine Resources.*

IMPLEMENTATION SCHEDULE

Short-term plans for this action are:

- S 1.00 Continue to identify and create database of all BTES target audiences. Database should include geographical, educational, socio-economic, and other demographic aspects of target audiences. Building from the community sector approach, determine issues of concern and the educational needs of specific target audiences and include in database.
- S 2.00 Develop messages and message strategies for BTES issues and CCMP actions.
- S 3.00 Create a character, such as a crab, crawfish, black-necked stilt, king or clapper rail, or redfish to represent the estuary.

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- S 4.00 Determine the most effective formats (printed, audio, and/or visual) for conveying the overall message and information to each target audience.
- S 5.00 Collect needed data and research technical information to update BTNEP Program Information Package.
- S 6.00 Produce fact sheets and position papers about BTNEP projects, actions and activities.
- S 7.00 Update current slide presentation to include information about CCMP actions and develop more audio/visual and slide presentations.
- S 8.00 Produce cause and effect fact sheets.
- S 9.00 Produce one page flyers as interim news releases between news bulletin issues.
- S 10.00 Produce summaries of technical reports translated for general readership.
- S 11.00 Produce materials about CCMP actions in various printed formats including brochure style, one-page fact sheet, two to three page issue papers, etc.
- S 12.00 Produce summary reports of the final draft CCMP and final CCMP for general public readership.
- S 13.00 Produce a brief informal update on CCMP actions targeted to state, parish, municipal and national public officials.
- S 14.00 Produce a smaller summary of the CCMP as a newspaper insert that is targeted to the general public.
- S 15.00 Extract significant and newsworthy facts from larger technical reports to help promote and publicize CCMP goals.
- S 16.00 Complete BTNEP's project that uses the Status and Trends and Characterization efforts to produce a sequel to the historical *Haunted Waters, Fragile Lands - Oh, What Tales to Tell!* video that summarizes the current "State of the Estuary."
- S 17.00 Continue BTNEP's project to create a teachers guide for *Haunted Waters* video.
- S 18.00 Continue BTNEP's project to produce a recreational guidebook to promote use of the estuary.
- S 19.00 Continue BTNEP's project to produce a citizens activity handbook to inform individual citizens on ways they can help conserve and manage the estuary to promote stewardship.
- S 20.00 Complete educational video and brochure targeted to homeowners, home buyers, and 7th-12th grade students about proper residential sewage treatment.
- S 21.00 Create list/chart of positive aspects of the BTES and determine how they can be used as part of the overall communications campaign to better target information.
- S 22.00 Consistently generate information as the public's educational needs dictate.
- S 23.00 Evaluate suggestions from Community Sector meetings and implement as appropriate.

Medium-term plans are:

- M 1.00 Produce materials about CCMP actions in various formats including slide presentations, visual displays, videos, newspaper inserts, bill stuffers, brochures, reports and other publications.
- M 2.00 Consistently update materials as information becomes available.
- M 3.00 Evaluate the effectiveness of each message.
- M 4.00 Formulate new message strategies.
- M 5.00 Re-evaluate printed, audio and visual formats for target audiences.
- M 6.00 Periodically produce a new communications package as needed to further CCMP goals.

Long-term plans are:

- L 1.00 Continually produce materials to inform and educate citizens throughout the estuary, state and nation about the BTES issues and CCMP goals.
- L 2.00 Periodically produce new communications packages as needed to build support for CCMP actions.

Action Plan SR-11: Written, Audio and Visual Materials

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Barataria-Terrebonne Management Conference (BTMC).

Support implementors will include individual management conference members, the National Park Service, Louisiana Department of Culture, Recreation, & Tourism, the Louisiana Cooperative Extension Service, Louisiana Sea Grant, and Louisiana Department of Education.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR11-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------|------------------------------------|-----------|-------------------|-------------|--------------------------|---------------------------------------|
| SR-11 | | | | | \$73,231 | \$57,533 |
| SR-11S01.00 | <i>audience database</i> | BTPO-EPS2 | E | | \$808 | \$0 |
| SR-11S02.00 | <i>id issues and needs</i> | BTPO-S2 | E | | \$323 | \$0 |
| SR-11S03.00 | <i>messages, strategies</i> | | complete | | \$0 | \$0 |
| SR-11S04.00 | <i>determine formats</i> | BTPO-S2 | E | | \$808 | \$0 |
| SR-11S05.00 | <i>data, info for info package</i> | BTMC | E | | \$2,000 | \$0 |
| SR-11S06.00 | <i>produce fact sheets</i> | BTMC | E | | \$2,000 | \$0 |
| SR-11S07.00 | <i>update slide presentation</i> | | | | \$8,808 | \$0 |
| SR-11S07.01 | <i>staff time</i> | BTMC | E | | \$808 | \$0 |
| SR-11S07.02 | <i>additional costs</i> | BTMC | E | | \$8,000 | \$0 |
| SR-11S08.00 | <i>cause/effect fact sheets</i> | | E | SR-11S06.00 | | \$0 |
| SR-11S09.00 | <i>one-page flyers</i> | | E | SR-11S12.00 | | \$0 |
| SR-11S10.00 | <i>technical summaries</i> | BTMC | E | | \$30,000 | \$0 |
| SR-11S11.00 | <i>materials re CCMP actions</i> | BTMC | E | | \$8,000 | \$0 |
| SR-11S12.00 | <i>draft, final CCMP summaries</i> | BTMC | E | | \$15,000 | \$0 |
| SR-11S13.00 | <i>info update on CCMP actions</i> | | E | SR-11S09.00 | | \$0 |
| SR-11S14.00 | <i>newspaper insert</i> | | E | SR-11S12.00 | | \$0 |
| SR-11S15.00 | <i>extract facts</i> | BTMC | E | | \$5,000 | \$0 |
| SR-11S16.00 | <i>Haunted Waters sequel</i> | BTMC | complete | | \$0 | \$0 |
| SR-11S17.00 | <i>teachers guide</i> | BTMC | complete | | \$0 | \$0 |
| SR-11S18.00 | <i>recreational guidebook</i> | | complete | | \$0 | \$0 |
| SR-11S18.01 | <i>recreational guidebook</i> | BTMC | complete | | \$0 | \$0 |

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| | | | | | | |
|-------------|------------------------------------|-----------|----------|--------|-------|----------|
| SR-11S18.02 | <i>recreational guidebook</i> | LDOE | complete | | \$0 | \$0 |
| | <i>sewage brochure/video</i> | BTMC | complete | | \$0 | \$0 |
| SR-11S20.00 | <i>id positive BTES aspects</i> | BTPO-S2 | E | | \$323 | \$0 |
| SR-11S21.00 | <i>generate information</i> | | E | SR-ALL | \$0 | \$0 |
| SR-11S22.00 | <i>evaluate suggestions</i> | BTPO-EPS2 | E | | \$162 | \$0 |
| SR-11S23.00 | <i>materials re CCMP actions</i> | BTMC | E | | | \$6,000 |
| SR-11M1.00 | <i>update materials</i> | BTMC | E | | | \$1,000 |
| SR-11M2.00 | <i>eval. message effectiveness</i> | BTPO-S2 | E | | | \$323 |
| SR-11M3.00 | <i>new message strategies</i> | BTPO-S2 | E | | | \$1,615 |
| SR-11M4.00 | <i>reevaluate formats</i> | BTPO-S2 | E | | | \$3,500 |
| SR-11M5.00 | <i>new communication package</i> | BTMC | E | | | \$45,095 |
| SR-11M6.00 | | | | | | |

Table SR11-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$303,400
 Total Funding Existing (Years 1-5): \$303,400
 Total New Funding Necessary (Years 1-5): \$0

Summary of funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

Action Plan SR-11: Written, Audio and Visual Materials

The essence of SR-11 is an "information delivery system" that is multi-formatted for targeted audiences. This information delivery system has the following sub components:

1. Development of databases of BTES target audiences.
2. Develop a message strategy such as the use of a crab, crawfish, or redfish to convey messages about the estuary.
3. Determine the most effective formats for conveying messages to target audiences.
4. Maintain and update BTES information package.
5. Maintain and update slide presentation.
6. Production of short concise informational or educational materials such as flyers, fact sheets, position papers, etc.
7. Summarize CCMP as a newspaper insert.
8. Produce a video that summarizes the "State of the Estuary."
9. Continue effort to develop a teacher's guide for "Haunted Waters, Fragile Lands."
10. Continue effort to produce recreational guidebook.
11. Produce a citizens activity handbook.
12. Complete sewage treatment video.

Interrelationships Among Components

This action plan calls for a well coordinated effort "to get the message out" by multiple means. The BTMC coordinator of this information strategy must coordinate among other action plans such as SR-9 and SR-10. The multiple sub-components of this action plan are all aimed at there be an informed citizenry within the BTES and enhanced public involvement.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. To show a coordinated effort at creating an information strategy by collecting minutes of meetings, copies of letters, memos, phone logs or journals of incidental meetings.
2. Copies of databases of BTES target audiences.
3. The use of a crab, crawfish, or redfish to convey messages about the estuary.
4. Documentation of how the most effective format was determined such as results of surveys.
5. Document revisions and updating of BTES information package by collecting old and new packets, minutes of meetings where revisions are discussed, and statements from BTMC about what changes were made.
6. Document updating of the slide presentation by collecting the list of slides and narration of slide presentation as they are changed.
7. Obtain and archive informational or educational materials such as flyers, fact sheets, position papers, etc. that are produced.
8. Obtain and archive a copy or sample of the summary of the CCMP newspaper insert.
9. Obtain and archive a copy of the video product that summarizes the "State of the Estuary."
10. Obtain and archive copy of the teachers guide for "Haunted Waters, Fragile Lands."
11. Obtain and archive copy of recreational guidebook.
12. Obtain and archive copy of a citizens activity handbook.
13. Obtain and archive copy of sewage treatment video.
14. Surveys of citizens' perceptions of the information delivery system on a periodic basis.

Methods

1. Measure accomplishments against time frame established in the CCMP.

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2. The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
3. The BTMC shall archive all products produced as components of this action plan. These materials shall be accessible to the monitor.
4. The BTMC shall survey citizens in the basin to determine baseline knowledge, any growth in that knowledge, and perceptions of the citizens about BTMC or CCMP. This should be done through phone surveys, mail out and return questionnaires, and individual interviews.
5. The monitor or subcontracted party shall independently survey the citizens in the basin to determine baseline knowledge, any growth in that knowledge, and perceptions of the citizens about BTMC or CCMP. This should be done through phone surveys, mail out and return questionnaires, and individual interviews.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect archival information to verify the BTMC data.
4. The BTMC will conduct public perception surveys.
5. The monitor or subcontractor will independently collect survey data to verify BTMC survey results.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure a coordinated information strategy is developed.
2. To ensure the implementation of such a strategy.
3. To ensure the products of this action plan are developed.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
3. The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
2. The BTMC shall report on the information strategy development as outlined in Methods.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its

Action Plan SR-11: Written, Audio and Visual Materials

information/education/message strategy.

2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 11 Written, Audio, and Visual Materials

EVALUATION METHODS

Components of Plan

The essence of SR-11 is an "information delivery system" that is multi-formatted for targeted audiences. This information delivery system has the following sub components:

- Development of databases of BTE target audiences.
- Develop a message strategy such as the use of a crab, crawfish, or redfish to convey messages about the estuary.
- Determine the most effective formats for conveying messages to target audiences.
- Maintain and update BTE information package.
- Maintain and update slide presentation.
- Production of short concise informational or educational materials such as flyers, fact sheets, position papers, etc.
- Summarize CCMP as a newspaper insert.
- Produce a video that summarizes the "State of the Estuary."
- Continue effort to develop a teacher's guide for "Haunted Waters, Fragile Lands."
- Continue effort to produce recreational guidebook.
- Produce a citizens activity handbook.
- Complete sewage treatment video.

Interrelationships Among Components

This action plan calls for a well coordinated effort "to get the message out" by multiple means. The BTMC coordinator of this information strategy must coordinate among other action plans such as SR-9 and SR-10. The multiple sub-components of this action plan are all aimed at there be an informed citizenry within the BTE and enhanced public involvement.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- To show a coordinated effort at creating an information strategy by collecting minutes of meetings, copies of letters, memos, phone logs or journals of incidental meetings.
- Copies of databases of BTE target audiences.

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- The use of a crab, crawfish, or redfish to convey messages about the estuary.
- Documentation of how the most effective format was determined such as results of surveys.
- Document revisions and updating of BTE information package by collecting old and new packets, minutes of meetings where revisions are discussed, and statements from BTMC about what changes were made.
- Document updating of the slide presentation by collecting the list of slides and narration of slide presentation as they are changed.
- Obtain and archive informational or educational materials such as flyers, fact sheets, position papers, etc. that are produced.
- Obtain and archive a copy or sample of the summary of the CCMP newspaper insert.
- Obtain and archive a copy of the video product that summarizes the "State of the Estuary."
- Obtain and archive copy of the teachers guide for "Haunted Waters, Fragile Lands."
- Obtain and archive copy of recreational guidebook.
- Obtain and archive copy of a citizens activity handbook.
- Obtain and archive copy of sewage treatment video.
- Surveys of citizens' perceptions of the information delivery system on a periodic basis.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
- The BTMC shall archive all products produced as components of this action plan. These materials shall be accessible to the monitor.
- The BTMC shall survey citizens in the basin to determine baseline knowledge, any growth in that knowledge, and perceptions of the citizens about BTMC or CCMP. This should be done through phone surveys, mail out and return questionnaires, and individual interviews.
- The monitor or subcontracted party shall independently survey the citizens in the basin to determine baseline knowledge, any growth in that knowledge, and perceptions of the citizens about BTMC or CCMP. This should be done through phone surveys, mail out and return questionnaires, and individual interviews.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 5,000 |
| Year 2 | \$ 5,000 |
| Year 3 | \$ 5,000 |
| Year 4 | \$ 5,000 |
| Year 5 | <u>\$ 5,000</u> |
| Total | \$25,000 |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect archival information to verify the BTMC data.
- The BTMC will conduct public perception surveys.
- The monitor or subcontractor will independently collect survey data to verify BTMC survey results.

QA/QC

Action Plan SR-11: Written, Audio and Visual Materials

Objective of monitoring

- To ensure a coordinated information strategy is developed.
- To ensure the implementation of such a strategy.
- To ensure the products of this action plan are developed.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
- The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
- The BTMC shall report on the information strategy development as outlined in Methods.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-12: Distribution of Informational Materials

SR-12 Distribution of Informational Materials

OBJECTIVES

1. To develop and implement a well-coordinated, cohesive campaign for distribution of educational materials about BTES issues and CCMP actions in estuary businesses and public points of interest.
2. To provide citizens, businesses, organizations and agencies with current, meaningful information about BTES issues and CCMP actions.

DESCRIPTION

This action will involve a massive, targeted distribution of printed, audio and visual information to educate and influence estuary citizens about BTES and CCMP actions. The distribution campaign will be coordinated to reach local, state and national target audiences in an appropriate manner, with interesting, credible materials.

This action will:

1. Provide businesses and public points-of-interest with displays of BTES materials in a planned, coordinated manner. The goal is to have estuary displays in as many "highly trafficked" businesses and public points-of-interest as possible throughout the BTES.
2. Continue distribution of the BTES news bulletin to update stakeholders on science, economic and public involvement activities.
3. Coordinate with educators, media contacts, relevant civic organizations and special interest groups to distribute specific and general information to public.
4. Develop a well-coordinated system within the Program Office to respond to and keep accurate accounts of requests for information.

BACKGROUND/MAJOR ISSUES

There are many local, state and national publics who must be made aware of and concerned about BTES problems in order to build broad support for CCMP actions. Distributing meaningful, up-to-date technical information to these publics can provide the education needed to make informed decisions. However, the manner of information delivery is critical to creating the required response. Targeted audiences are more responsive when information comes to them in a manner they respect and are familiar with. In addition to conveying the BTES message through the media (see Action Plan *SR-9, Media Support*), information must be made readily available and easily accessible.

Throughout the distribution campaign, information must appear and be provided where the people live, work, recreate and visit in ways that relate to public needs. This kind of dissemination is essential in order to gain recognition for the BTES as a nationally significant area of the country.

BENEFITS

A massive, targeted informational campaign will create positive public attitudes towards BTES issues, and in turn, increase citizen involvement in furthering CCMP goals. In addition, businesses and public points-of-interest will lend credibility to the importance of estuarine management issues. By participating in this program, business organizations and agencies will be able to become directly involved in supporting and furthering the CCMP goals.

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

Implementing this plan supports three BTNEP goals for the future: *Create an accessible, comprehensive data base with interpreted information for the public; Implement comprehensive education and awareness programs that enhance public involvement; and Create regional pride and long-term stewardship.*

IMPLEMENTATION SCHEDULE

Short-term plans for this action are:

- S 1.00 Create database to track and evaluate dissemination campaign including quantities of materials distributed, formats of information distributed, dissemination methods corresponding to each target audience, dates and locations.
- S 2.00 Produce small displays of information.
- S 3.00 Request all management conference members to use displays and distribute materials at their respective business, organization or agency.
- S 4.00 Determine local businesses, local and state tourist offices, libraries, parks, etc. to take part in program. Contact and coordinate program for each location.
- S 5.00 Contact and coordinate with economic councils, chambers of commerce, etc., to develop a distribution program with their business members.
- S 6.00 At speaking engagements, ask volunteers to participate in the program. (see Action Plan *SR-10, Speakers Bureau*).
- S 7.00 Decide with each distribution point an appropriate display and amount of materials for the location. Use businesses' existing displays where possible and supply with materials.
- S 8.00 Deliver displays and materials to locations quickly and follow up with contacts.
- S 9.00 Regularly, quarterly or bi-monthly as needed, coordinate with distribution points to replenish materials, determine effectiveness of displays, amount of information distributed, types of citizens that frequent the locations, etc., and prepare project reports. Change displays as needed for effectiveness. Keep accurate records of dates, locations and amounts of materials, so that a regular distribution schedule can be developed.
- S 10.00 The Program Office staff will work with the Regional Education Center to disseminate information to teachers (see Action Plans *SR-15 through 18*). They will develop ways to respond effectively to requests for information. On a state and national basis, the staff will work closely with media contacts as well as other estuary programs (see Action Plan *SR-10*).
- S 11.00 Continue publication and distribution of a quarterly news bulletin.
- S 12.00 Work to expand the mailing list of this important information-sharing mechanism.

LEAD AND SUPPORT IMPLEMENTORS

Lead implementors for this action will be the Program Office, individual Barataria-Terrebonne Management Conference (BTMC) members, and consultants when necessary.

Support implementors will include volunteer businesses, agencies, chambers of commerce, economic councils, tourism offices, and other public points-of-interest at the local and state level. At the national level, agreements will be developed with appropriate federal agencies, nonprofit organizations and special interest groups to distribute, display and use BTES informational materials.

COSTS AND ECONOMIC CONSIDERATIONS

**Action Plan SR-12:
Distribution of
Informational Materials**

Table SR12-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR12-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|--------------------------------------|----------------|---------------------------|------------------|--------------------------------------|--|
| SR-12 | | | | | \$15,015 | \$0 |
| SR-12S1.00 | <i>create database</i> | BTPO-S2 | E | | \$808 | \$0 |
| SR-12S2.00 | <i>distribution through displays</i> | | | | | \$0 |
| SR-12S2.01 | <i>small displays</i> | | E | SR-11S11.00 | | \$0 |
| SR-12S2.02 | <i>request for use</i> | BTPO-S2 | E | | \$485 | \$0 |
| SR-12S2.03 | <i>determine other participation</i> | BTPO-S2 | E | | \$808 | \$0 |
| SR-12S2.04 | <i>business distribution program</i> | BTPO-S2 | E | | \$808 | \$0 |
| SR-12S2.05 | <i>speaking engagements vols.</i> | BTPO | E | SR-10S6.00 | | \$0 |
| SR-12S2.06 | <i>decision re display</i> | BTMC | E | | \$808 | \$0 |
| SR-12S2.07 | <i>deliver displays</i> | BTPO-S2 | E | | \$3,877 | \$0 |
| SR-12S2.08 | <i>coordination</i> | BTPO-S2 | E | | \$1,938 | \$0 |
| SR-12S3.00 | <i>info to teachers</i> | | E | SR-9S1.00 | | \$0 |
| SR-12S4.00 | <i>quarterly newsletter</i> | BTMC | E | | \$5,000 | \$0 |
| SR-12S5.00 | <i>expand mailing list</i> | BTPO-S2 | E | | \$485 | \$0 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$15,000
 Total Funding Existing (Years 1-5): \$15,000
 Total New Funding Necessary (Years 1-5): \$0

Summary of funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The essence of SR-12 is the development of method(s) for distributing informational and educational materials with the following sub components:

1. Database of distribution
2. Public displays.

Interrelationships Among Components

Action plans SR-10 and SR-11 call for development and distribution of materials developed. This action plan establishes a mechanism for distribution of informational and educational materials developed by the BTMC. This is consistent with the concept of informed citizenry therefore, enhancing public participation.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementations steps and project success were accomplished:

Objective 1.

1. Document plan development through records of meetings, minutes, memos, or other evidence that such planning took place.
2. Document the establishment of a database with information relative to distribution such as points of distributions, quantities distributed, target audiences, dates, etc. This can be done through printed reports based on querying the database or examining the system at its location.
3. Document the number and location of public displays.

Objective 2.

1. Document frequency of restocking.
2. Document that a periodic review occurs of the information for purposes of updating the materials.
3. Document growth in newsletter mailing list.
4. Document the number of information requests.
5. Document the receiving and distribution of educational materials.
6. Document the number of media mentions.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
3. The BTMC shall provide the monitor with access to the database for verification of its development.
4. The BTMC shall provide the monitor with the newsletter mailing list.
5. The monitor shall verify that people are receiving the newsletter.

Action Plan SR-12: Distribution of Informational Materials

6. The BTMC shall provide the monitor with data regarding information requests and the names of people making those requests.
7. The monitor shall verify that people did make such requests and received information.
8. The monitor will visit distribution sites and verify their existence.
9. The monitor will verify that material is updated regularly by sample materials from the distribution points and data supplied by the BTMC such as older versions of materials and new generation materials.
10. The monitor will interview Directors of Louisiana Dept. of Education Regional Service Centers within the basin to verify receiving and distribution off educational materials.
11. The BTMC will supply the monitor with data relative to the number of media mentions.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect archival information to verify the BTMC data.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure the development of a strategy for distribution of informational and educational materials.
2. To ensure that public distribution points are established.
3. To ensure materials are updated.
4. To ensure materials are kept stocked.
5. To ensure LDOE Regional Service Centers receive and distribute educational materials.
6. To ensure people on the newsletter mailing list and people who request information receive such information.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
3. The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
2. The BTMC shall report on the information strategy development as outlined in Methods.

Data evaluation

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 12 Distribution of Informational Materials

EVALUATION METHODS

Components of Plan

The essence of SR-12 is the development of method(s) for distributing informational and educational materials with the following sub components:

- Database of distribution
- Public displays.

Interrelationships Among Components

Action plans SR-10 and SR-11 call for development and distribution of materials developed. This action plan establishes a mechanism for distribution of informational and educational materials developed by the BTMC. This is consistent with the concept of informed citizenry therefore, enhancing public participation.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementations steps and project success were accomplished:

Objective 1.

- Document plan development through records of meetings, minutes, memos, or other evidence that such planning took place.
- Document the establishment of a database with information relative to distribution such as points of distributions, quantities distributed, target audiences, dates, etc. This can be done through printed reports based on querying the database or examining the system at its location.
- Document the number and location of public displays.

Objective 2.

- Document frequency of restocking.
- Document that a periodic review occurs of the information for purposes of updating the materials.
- Document growth in newsletter mailing list.
- Document the number of information requests.
- Document the receiving and distribution of educational materials.

Action Plan SR-12: Distribution of Informational Materials

- Document the number of media mentions.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
- The BTMC shall provide the monitor with access to the database for verification of its development.
- The BTMC shall provide the monitor with the newsletter mailing list.
- The monitor shall verify that people are receiving the newsletter.
- The BTMC shall provide the monitor with data regarding information requests and the names of people making those requests.
- The monitor shall verify that people did make such requests and received information.
- The monitor will visit distribution sites and verify their existence.
- The monitor will verify that material is updated regularly by sample materials from the distribution points and data supplied by the BTMC such as older versions of materials and new generation materials.
- The monitor will interview Directors of Louisiana Dept. of Education Regional Service Centers within the basin to verify receiving and distribution off educational materials.
- The BTMC will supply the monitor with data relative to the number of media mentions.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect archival information to verify the BTMC data.

QA/QC

Objective of monitoring

- To ensure the development of a strategy for distribution of informational and educational materials.
- To ensure that public distribution points are established.
- To ensure materials are updated.
- To ensure materials are kept stocked.
- To ensure LDOE Regional Service Centers receive and distribute educational materials.
- To ensure people on the newsletter mailing list and people who request information receive such information.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP,

CCMP Part Three - The Technical Supplement: Barataria-Terrebonne Action Plans

- should be employed.
- The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
- The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed to collect data as outlined in Methods.
- The BTMC shall report on the information strategy development as outlined in Methods.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-13:

1-800 Number

SR-13 1-800 Number

OBJECTIVES

1. To create an accessible communications system for the public of the BTES.
2. To be able to exchange information about the program and CCMP implementation efficiently and effectively.

DESCRIPTION

This action will continue the operation of the Program Office 1-800 telephone number. When the office is established for the Management Conference the use of the toll-free 1-800 number will continue. The toll-free number will be promoted through news releases, feature articles, public awareness items and other correspondence.

BACKGROUND/MAJOR ISSUES

The Barataria-Terrebonne National Estuary Program includes fifteen parishes and an area that averages one hundred miles in almost any direction from its central office in Thibodaux. In most areas, this would require a day-time long-distance call to Thibodaux. The cost of this phone call may deter many people from getting information about the program. The program office has used a toll-free phone service for several years. The 1-800 phone number has proven to be an effective public service and communications mechanism. As the program undertakes more and more public participation activities, this type of system will be increasingly needed.

BENEFITS

Easy communications with the public is a critical element to create support for the BTES program. A toll-free telephone number allows the public to have almost immediate access to information about the program's progress, CCMP implementation activities, meetings, publications and educational materials available, the speakers' bureau or other contacts in the BTES network. Easy access to information allows people to develop a relationship with office staff and establishes the program as an important resource. This action plan addresses the BTNEP Goal -- *Implement Comprehensive Education and Awareness Programs that Enhance Public Involvement*.

IMPLEMENTATION SCHEDULE

The short-term goal of this action is:

S 1.00 Continue the use and promotion of an 1-800 telephone number for the Program Office.

The medium- and long-term goals for this action are:

M 1.00 Continue the use of an 1-800 phone number or to use the most effective communication technology that will be available in the future.

LEAD AND SUPPORT IMPLEMENTORS

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The lead implementor for this action will be the Barataria-Terrebonne Management Conference (BTMC).

COSTS AND ECONOMIC CONSIDERATIONS

Table SR13-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR13-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|------------|----------------------------|------|-------------------|---------|-----------------------------|---------------------------------------|
| SR-13 | | | | | \$5,400 | \$6,000 |
| SR-13S1.00 | <i>continue 800 number</i> | BTMC | E | | \$5,400 | \$0 |
| SR-13M1.00 | <i>continue 800 number</i> | BTMC | E | | | \$6,000 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$29,400
 Total Funding Existing (Years 1-5): \$29,400
 Total New Funding Necessary (Years 1-5): \$0

Summary of funding strategy: Existing funding for this action plan for the next five years has been identified and will come from department budgets, grants, and volunteer time. No new funding source is required.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The major component of SR-13 is the continued use of the toll free 800 telephone number for the program office.

Interrelationships Among Components

Action Plan SR-13:

1-800 Number

The 800 telephone number has proven useful during the planning stages of the CCMP and promises to be useful in the implementation phases of the CCMP. It is essential that citizens within the basin have a means of communication with the program office. This is one way to promote equal access.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

1. Document the existence of the 800 phone number through phone records or phone bills.
2. Dial the number and see if someone answers.

Objective 2.

1. Document usage of the 800 phone system by logs of the number of calls, types of users, and types of requests.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. Obtain and archive copies of phone bills and program office supplied data relative to use, types of users, and number of users.
3. Test the system by making a call and request information.
4. Survey (phone and questionnaire) callers about their perceived usefulness of this system.

Cost estimates

| | |
|-------|----------------|
| Year | \$1,000 |
| Year | <u>\$1,000</u> |
| total | \$5,000 |

Recommendations and Feedback to Program/Implementor

1. The program office will supply the monitor with phone records and other data needed for documentation.
2. The monitor will survey system users.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure the continued use of the 800 phone number.
2. To ensure a need for this system through logs of callers.
3. To survey the users relative to their perceptions of the systems utility.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.

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3. The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

1. The program office shall provide data as described in Methods.
2. The monitor will collect data as describe in Methods.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its 800 phone number and its users.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 13 1-800 Number

EVALUATION METHODS

Components of Plan

The major component of SR-13 is the continued use of the toll free 800 telephone number for the program office.

Interrelationships Among Components

The 800 telephone number has proven useful during the planning stages of the CCMP and promises to be useful in the implementation phases of the CCMP. It is essential that citizens within the basin have a means of communication with the program office. This is one way to promote equal access.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

Objective 1.

- Document the existence of the 800 phone number through phone records or phone bills.
- Dial the number and see if someone answers.

Objective 2.

- Document usage of the 800 phone system by logs of the number of calls, types of users, and types of requests.

Methods

- Measure accomplishments against time frame established in the CCMP.
- Obtain and archive copies of phone bills and program office supplied data relative to use, types of users, and number of users.

Action Plan SR-13:

1-800 Number

- Test the system by making a call and request information.
- Survey (phone and questionnaire) callers about their perceived usefulness of this system.

Cost estimates

| | |
|-------|----------------|
| Year | \$1,000 |
| Year | <u>\$1,000</u> |
| total | \$5,000 |

Recommendations and Feedback to Program/Implementor

- The program office will supply the monitor with phone records and other data needed for documentation.
- The monitor will survey system users.

QA/QC

Objective of monitoring

- To ensure the continued use of the 800 phone number.
- To ensure a need for this system through logs of callers.
- To survey the users relative to their perceptions of the systems utility.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their information strategy program and provide this information to the monitor.
- The monitor should be familiar with information technology, public relations, and survey procedures.

Data collection

- The program office shall provide data as described in Methods.
- The monitor will collect data as describe in Methods.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its 800 phone number and its users.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

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A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-14:
Estuarine
Curriculum Development

SR-14 Estuarine Curriculum Development

OBJECTIVES

1. To develop and produce curriculum and instructional materials and programs for estuarine education for the BTES.

DESCRIPTION

This action will develop and disseminate curriculum and instructional materials and programs to support estuarine education at the K-16 (kindergarten through college) formal and informal levels. This includes a survey of available curriculum materials, decisions on where gaps exist, development of materials and dissemination of materials into state and national curriculum frameworks. These materials focus on the cultural as well as the environmental heritage of the BTES.

BACKGROUND/MAJOR ISSUES

There is a need to develop knowledge, appreciation and value for the BTES as a national treasure and depository of cultural and natural resources important to the State of Louisiana, the United States and the global economy. In the last decade, educational programs for teachers have expanded through efforts by the Louisiana Universities Marine Consortium (LUMCON), faculty at Nicholls State University (NSU), and most recently, through the Louisiana Systemic Initiative Program (LaSIP) and the BTNEP. While the Lafourche Parish Coastal Zone Management office published a curriculum resource unit several years ago, the unit is now dated and does not review existing curriculum projects. In addition, this publication did not necessarily focus on estuarine issues and concepts, nor did it have an accompanying mechanism to ensure its perpetual use.

Many teachers have taken the opportunity to participate in environmental in-service training such as the Nicholls workshop on the BTES priority problems or the Louisiana Coastal Wetlands Workshops at LUMCON and Lafitte. Teachers learn critical science information and hands-on activities to bring back into the classrooms. These teacher education programs need to be expanded.

The Governor's Office on Environmental Education was recently signed into law. This office, which will serve as a clearinghouse on environmental educational activities, will be an immense assistance in research and dissemination of materials generated by these efforts. In addition, associations of teachers on a parish and state level will form an important network for creating and updating curriculum materials.

BENEFITS

This action will serve to facilitate the development of BTES constituents as stakeholders in the resources of the region. The development of stakeholders will produce an informed, concerned and responsible citizenry, from children to adults, within the BTES. The population will become more literate in estuarine issues as voters, harvesters and developers. The educational programs will be recognized and used in estuarine education throughout the nation. Therefore, knowledge and appreciation of the BTES will be increased on a national level.

IMPLEMENTATION SCHEDULE

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Short-term plans (0-1 year) include the following:

- S 1.00 Develop a committee of educators and advisors to authenticate grassroots needs and facilitate resource support.
- S 2.00 Inventory existing materials (BTNEP; FY 1995-96).
- S 3.00 Develop video support and distribution of the video, *Haunted Waters, Fragile Lands: Oh, What Tales to Tell!* (BTNEP; FY 1995-96) for appropriate education audiences.

Medium-term plans include:

- M 1.00 Develop college level courses (FY 1995-96) and systematically integrate curricular materials into college and graduate courses.
- M 2.00 Develop archeology/anthropology/cultural heritage document (December, 1997).
- M 3.00 Distribute course materials throughout Louisiana state system through Louisiana Science Teachers Association Newsletter/Annual Convention, Regional Education Service Center, Office of Environmental Education, parish teachers associations, national associations and university continuing teacher education courses.

Long-term plans are as follows:

- L 1.00 Develop curricular materials for K-12 and systematically integrate curricular materials into the K-12 Program of Studies (1998 and ongoing).
- L 2.00 Distribute course materials throughout Louisiana state system through Louisiana Science Teachers Association Newsletter/Annual Convention, Regional Education Service Center, Office of Environmental Education, parish teachers associations, national associations and university continuing teacher education courses.
- L 3.00 Review and update curriculum document (periodic, every three years).

LEAD AND SUPPORT IMPLEMENTORS

State institutions of higher education will be the lead implementors of this action. Support implementors will include the Management Conference, LaSIP, the Governor’s Office of Environmental Education, the National Science Foundation (NSF), and the Environmental Protection Agency (EPA).

COSTS AND ECONOMIC CONSIDERATIONS

Table SR14-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Table SR14-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ | SUBSUME | Y1 COSTS | Y2-5 AVG |
|--|--------------------------|-------------|------------------|----------------|-----------------|-----------------|
|--|--------------------------|-------------|------------------|----------------|-----------------|-----------------|

**Action Plan SR-14:
Estuarine
Curriculum Development**

| | | | _NEW | | (Short Term) | COSTS/YR (Medium Term) |
|------------|-------------------------------------|------|------|-------------|--------------|------------------------|
| SR-14 | | | | | \$11,292 | \$56,000 |
| SR-14S1.00 | <i>committee to authenticate</i> | BTMC | N | | \$1,292 | \$0 |
| SR-14S2.00 | <i>inventory existing materials</i> | BTMC | N | | \$10,000 | \$0 |
| SR-14S3.00 | <i>support/dist. Haunted Waters</i> | BTMC | N | SR-11S16.00 | \$0 | \$0 |
| SR-14M1.00 | <i>college course development</i> | BTMC | N | | | \$15,000 |
| SR-14M2.00 | <i>arch/anthro/cult. document</i> | BTMC | N | | | \$40,000 |
| SR-14M3.00 | <i>distribute course materials</i> | BTMC | N | | | \$1,000 |

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$235,300
 Total Funding Existing (Years 1-5): \$0
 Total New Funding Necessary (Years 1-5): \$235,300

Table SR14-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|---|--|--|--|--|
| BTMC | \$11,300 Environmental education grants; license plate revenue | \$56,000 Environmental education grant; license plate revenue; BTPO staff | \$56,000 Environmental education grant; license plate revenue; BTPO staff | \$56,000 Environmental education grant; license plate revenue; BTPO staff | \$56,000 Environmental education grant; license plate revenue; BTPO staff |

Summary of funding strategy: This action should be eligible for EPA environmental education grants. To the extent these funds are not available, the action can be funded using license plate revenues. BTPO staff should distribute the course materials in Years 2-5. According to current projections in the *CCMP Action Plan Costing*, there will be excess staff capacity after Year 1 and using this staff will save the program from incurring an incremental \$1,000 per year contractor cost.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

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Components of Plan

1. Establish an advisory committee.
2. Inventory of existing materials.
3. Video support for "Haunted Waters, Fragile Lands."
4. Development of a college level course.
5. Development of an anthropology/archaeology/cultural heritage document.
6. Develop a curriculum document.
7. Periodic review of curriculum materials produced.

Interrelationships Among Components

An organized effort to enhance education within schools is essential to the long term success of the CCMP. The understanding of the major issues including scientific, social, and economic of the BTES is based on a complex knowledge base. The development of curriculum materials that address these concepts and issues will help produced an informed citizenry.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation and project success were accomplished:

1. Document the establishment of an advisory committee through copies of correspondence, minutes of meetings, and list of participants.
2. Document inventory of existing materials by obtaining a copy of this report and its presentation to the advisory committee.
3. Document the development of a video support or teacher's guide to "Haunted Waters, Fragile Lands" by obtaining a copy of the document and its presentation to the BTMC.
4. Document the development of a cultural heritage document by obtaining a copy of the document and its presentation to the BTMC.
5. Document the development of a curriculum document by obtaining a copy of the document and its presentation to the BTMC.
6. Document the development of a college level course by obtaining the course syllabus and schedule of offering.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
3. Obtain and archive minutes of meetings of BTMC.
4. Obtain and archive a copy of the inventory of existing materials report.
5. Obtain and archive a copy of the teacher's guide for "Haunted Waters, Fragile Lands."
6. Obtain and archive a copy of the cultural heritage document.
7. Obtain and archive a copy of the curriculum document.
8. Obtain and archive college course syllabus, catalog descriptions, brochures, and schedule of offerings.

Cost estimates

| | |
|--------|---------------|
| Year 1 | \$ 500 |
| Year 2 | \$ 500 |
| Year 3 | \$ 500 |
| Year 4 | \$ 500 |
| Year 5 | <u>\$ 500</u> |
| Total | \$2,500 |

Action Plan SR-14: Estuarine Curriculum Development

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect archival information to verify the BTMC data.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure the formation of an advisory committee to guide SR-14.
2. To ensure the inventorying of existing relevant educational materials.
3. To ensure the development of a teacher's guide for "Haunted Waters, Fragile Lands."
4. To ensure the development of a cultural heritage document.
5. To ensure the development of a curriculum document.
6. To ensure the development of a college level course.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their education materials and provide this information to the monitor.
3. The monitor should have expertise in education at K-16 levels.

Data collection

1. The BTMC shall collect and archive materials as described in Methods.
2. The monitor will independently collect evidence as described in the Methods to verify material supplied by the BTMC.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and

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end-of-year report. The end-of-year report will also be written as an annual report.

SR - 14 Estuarine Curriculum Development

EVALUATION METHODS

Components of Plan

- Establish an advisory committee.
- Inventory of existing materials.
- Video support for "Haunted Waters, Fragile Lands."
- Development of a college level course.
- Development of an anthropology/archaeology/cultural heritage document.
- Develop a curriculum document.
- Periodic review of curriculum materials produced.

Interrelationships Among Components

An organized effort to enhance education within schools is essential to the long term success of the CCMP. The understanding of the major issues including scientific, social, and economic of the BTE is based on a complex knowledge base. The development of curriculum materials that address these concepts and issues will help produce an informed citizenry.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation and project success were accomplished:

- Document the establishment of an advisory committee through copies of correspondence, minutes of meetings, and list of participants.
- Document inventory of existing materials by obtaining a copy of this report and its presentation to the advisory committee.
- Document the development of a video support or teacher's guide to "Haunted Waters, Fragile Lands" by obtaining a copy of the document and its presentation to the BTMC.
- Document the development of a cultural heritage document by obtaining a copy of the document and its presentation to the BTMC.
- Document the development of a curriculum document by obtaining a copy of the document and its presentation to the BTMC.
- Document the development of a college level course by obtaining the course syllabus and schedule of offering.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
- Obtain and archive minutes of meetings of BTMC.
- Obtain and archive a copy of the inventory of existing materials report.
- Obtain and archive a copy of the teacher's guide for "Haunted Waters, Fragile Lands."
- Obtain and archive a copy of the cultural heritage document.
- Obtain and archive a copy of the curriculum document.
- Obtain and archive college course syllabus, catalog descriptions, brochures, and schedule of offerings.

Cost estimates

| | |
|--------|--------|
| Year 1 | \$ 500 |
| Year 2 | \$ 500 |
| Year 3 | \$ 500 |
| Year 4 | \$ 500 |

Action Plan SR-14: Estuarine Curriculum Development

| | |
|--------|----------------|
| Year 5 | <u>\$ 500</u> |
| Total | <u>\$2,500</u> |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect archival information to verify the BTMC data.

QA/QC

Objective of monitoring

- To ensure the formation of an advisory committee to guide SR-14.
- To ensure the inventorying of existing relevant educational materials.
- To ensure the development of a teacher's guide for "Haunted Waters, Fragile Lands."
- To ensure the development of a cultural heritage document.
- To ensure the development of a curriculum document.
- To ensure the development of a college level course.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their education materials and provide this information to the monitor.
- The monitor should have expertise in education at K-16 levels.

Data collection

- The BTMC shall collect and archive materials as described in Methods.
- The monitor will independently collect evidence as described in the Methods to verify material supplied by the BTMC.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

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Barataria-Terrebonne Action Plans**

Action Plan SR-15: Continuing and Informal Education Programs

SR-15 Continuing and Informal Education Programs

OBJECTIVES

1. To provide opportunities for a comprehensive education program.

DESCRIPTION

This action establishes continuing education programs, classes and events that address environmental issues of the BTES. This plan calls for a review of existing programs, especially those run by the Louisiana Cooperative Extension Service, Louisiana Department of Wildlife and Fisheries, by college continuing education offices and other groups. The review may provide for possible revision of existing programs such as pesticide certification and hunter safety certification courses to include issues of concern to the BTES. The result will be educational programs that address environmental interests of children, teenagers and adults. Continuing environmental education programs will provide opportunities that will help the public understand their role in the environment and the value of the environment to them in their health, occupational, and recreational endeavors.

BACKGROUND/MAJOR ISSUES

Non-credit continuing education programs are becoming increasingly attractive to all segments of our populations. In recent years, multi-week traditional courses have been successfully offered at universities in environmental education also the highly popular one and two-day Louisiana Coastal Wetlands Workshops at Louisiana Universities Marine Consortium (LUMCON) and Jean Lafitte National Historical Park and Preserve. There have also been one and a half to two-day teacher training workshops conducted at LUMCON and other sites throughout the basin which allow teachers to work with and receive curricula and laboratory/field equipment to be used in their classrooms. These program formats can be expanded to reach many other segments of the populace including children, more teachers, and the general public.

People from all age groups and backgrounds must understand that they as individuals make a difference in the health and well-being of the BTES. They must be introduced through educational activities about the importance of their actions or lack of action. They must also learn that each individual has responsibilities for the estuarine system and the extrinsic and intrinsic resources it provides.

BENEFITS

These types of programs provide a means for groups of individuals to gain new knowledge, to interact with others with similar interests and to be introduced to the BTES issues and challenges. Many of these types of courses offer participants a chance to do hands-on activities in natural environments. These are often relaxed, comfortable and fun events which encourage continuing awareness and involvement.

IMPLEMENTATION SCHEDULE

Short-term plans for this action include:

- S 1.00 A review of all existing programs with an evaluation of successes and gaps in program offerings.

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Mid-Term Plans include:

- M 1.00 Establishing relationships with university continuing education programs as well as other key institutions which have an interest in these issues.
- M 2.00 Recruiting coordinators and faculty to propose projects for implementation.

Long-Term Plans include:

- L 1.00 Regularly held programs in a variety of settings.
- L 2.00 An on-going review of program offerings and the relevance and value to the continuing education needs of the BTES.

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Barataria-Terrebonne Management Conference (BTMC).

Support implementors will include institutions of higher education within the BTES, the Louisiana Cooperative Extension Service, the Louisiana Department of Wildlife and Fisheries, the Louisiana Department of Environmental Quality, and other agencies and organizations which undertake programs of environmental education and issues and have an interest in the BTES.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR15-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|---------------------------------------|-------------|---------------------------|------------------------|--------------------------------------|--|
| SR-15 | | | | | \$5,158 | \$16,500 |
| SR-15S1.00 | <i>program evaluation</i> | | | | \$5,158 | \$0 |
| SR-15S1.01 | <i>program evaluation</i> | LDWF | E | | \$485 | \$0 |
| SR-15S1.02 | <i>program evaluation</i> | BTMC | E | | \$485 | \$0 |
| SR-15S1.03 | <i>program evaluation</i> | LUMCO N | E | | \$485 | \$0 |
| SR-15S1.04 | <i>program evaluation</i> | LDEQ | E | | \$485 | \$0 |
| SR-15S1.05 | <i>program evaluation</i> | LCES | E | | \$485 | \$0 |
| SR-15S1.06 | <i>program evaluation</i> | LDOE | E | | \$485 | \$0 |
| SR-15S1.07 | <i>additional costs</i> | BTMC | E | | \$2,250 | \$0 |
| SR-15M1.00 | <i>estab. relationships cont. ed.</i> | BTMC | N | | | \$16,500 |
| SR-15M2.00 | <i>recruit program coordinators</i> | | E | SR- 15M1.00 | | \$0 |

Table SR15-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead

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agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$71,200
 Total Funding Existing (Years 1-5): \$5,200
 Total New Funding Necessary (Years 1-5): \$66,000

Table SR15-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--------|---|---|---|---|
| BTMC | | \$16,500 License plate revenue; environmental education grant |

Summary of funding strategy: This action plan should be supported by license plate revenue and, if available, environmental education grants.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The major component of SR-15 is the establishment of continuing education programs. Sub components of SR-15 include:

1. A review of existing programs.
2. Establishing relationships with continuing education programs at colleges.
3. Recruit coordinators and faculty.

Interrelationships Among Components

The continuing goal of the CCMP to create an informed citizenry is consistent with SR-15. Effective

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communication between program coordinators at colleges and the BTMC will facilitate the implementation of such courses.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Document the review of existing programs by obtaining a copy of this report or minutes of a meeting where this is considered.
2. Document anecdotal information relative to course needs.
3. Document the establishment of continuing education courses through copies of announcements, record of publicity, numbers of courses taught, class syllabi, where the courses are taught, numbers and names of participants. Further documentation through surveys of course participants and monitor's journal.
4. Document the establishment of relationships between the BTMC and college offices of continuing education.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
3. Obtain and archive report of existing programs or minutes of meetings where components are discussed.
4. Obtain and archive announcements or other publicity relative to courses being taught.
5. Obtain and archive specific information about each course taught including: location, number of participants, names of participants, course itinerary or syllabus, and names of instructors.
6. Survey (phone) college continuing education officials.
7. Survey (phone, questionnaire, and interview) course participants.
8. Obtain and archive copies of course evaluations.
9. Participate in a continuing education course.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | <u>\$10,000</u> |

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect archival information to verify the BTMC data.
4. The monitor will survey (phone or personal interview) the continuing education officials.
5. The monitor will survey course participants.
6. The monitor will participate in a continuing education course and keep a journal of his/her observations.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure an inventory of existing continuing education programs is carried out.

Action Plan SR-15: Continuing and Informal Education Programs

2. To ensure continuing education courses are being taught.
3. To ensure the BTMC establishes relationships with college offices of continuing education.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their education materials and provide this information to the monitor.
3. The monitor should have expertise in continuing education, workshops, and non-credit courses.

Data collection

1. The BTMC shall collect and archive materials as described in Methods.
2. The monitor will independently collect evidence as described in Methods to verify material supplied by the BTMC.
3. The monitor will survey college continuing education office officials.
4. The monitor will survey course participants.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 15 Continuing and Informal Education Programs

EVALUATION METHODS

Components of Plan

The major component of SR-15 is the establishment of continuing education programs. Sub components of SR-15 include:

- A review of existing programs.
- Establishing relationships with continuing education programs at colleges.
- Recruit coordinators and faculty.

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Interrelationships Among Components

The continuing goal of the CCMP to create an informed citizenry is consistent with SR-15. Effective communication between program coordinators at colleges and the BTMC will facilitate the implementation of such courses.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Document the review of existing programs by obtaining a copy of this report or minutes of a meeting where this is considered.
- Document anecdotal information relative to course needs.
- Document the establishment of continuing education courses through copies of announcements, record of publicity, numbers of courses taught, class syllabi, where the courses are taught, numbers and names of participants. Further documentation through surveys of course participants and monitor's journal.
- Document the establishment of relationships between the BTMC and college offices of continuing education.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
- Obtain and archive report of existing programs or minutes of meetings where components are discussed.
- Obtain and archive announcements or other publicity relative to courses being taught.
- Obtain and archive specific information about each course taught including: location, number of participants, names of participants, course itinerary or syllabus, and names of instructors.
- Survey (phone) college continuing education officials.
- Survey (phone, questionnaire, and interview) course participants.
- Obtain and archive copies of course evaluations.
- Participate in a continuing education course.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect archival information to verify the BTMC data.
- The monitor will survey (phone or personal interview) the continuing education officials.
- The monitor will survey course participants.
- The monitor will participate in a continuing education course and keep a journal of his/her

Action Plan SR-15: Continuing and Informal Education Programs

observations.

QA/QC

Objective of monitoring

- To ensure an inventory of existing continuing education programs is carried out.
- To ensure continuing education courses are being taught.
- To ensure the BTMC establishes relationships with college offices of continuing education.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their education materials and provide this information to the monitor.
- The monitor should have expertise in continuing education, workshops, and non-credit courses.

Data collection

- The BTMC shall collect and archive materials as described in Methods.
- The monitor will independently collect evidence as described in Methods to verify material supplied by the BTMC.
- The monitor will survey college continuing education office officials.
- The monitor will survey course participants.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-16: Financial Support for Educational Initiatives

SR-16 Financial Support for Educational Initiatives

OBJECTIVES

1. To develop support and secure financial sources for the implementation of curriculum and professional development initiatives.

DESCRIPTION

This action will create community support for funding by developing an awareness of the need to invest in environmental education. This plan calls for the strategic development and coordination of support from national and local foundations, from corporations and through legislative action. This includes cooperative efforts with other programs, support of indirect or direct costs from private donations as well as grants, contracts and selling of materials.

BACKGROUND/MAJOR ISSUES

Education has been identified to be a key in sustaining awareness and long-term involvement in stewardship of the estuary. However, funding for these efforts is highly competitive. Seeking funds for estuarine education efforts should be coordinated by one entity to avoid duplicative efforts.

BENEFITS

This action will serve to facilitate the creation of stakeholders in the BTES who support the restoration, conservation, and preservation of the estuary's natural and cultural resources, and are concerned about the BTES as a national treasure.

IMPLEMENTATION SCHEDULE

Short-term plans for this action include:

- S 1.00 Coordinate a statewide Basin Education Summit (March 1996).
- S 2.00 Originate the securing of funding (October 1995).

Medium-term plans are as follows:

- M 1.00 Inventory state and federal agencies as potential funding sources for educational activities (December 1995).
- M 2.00 Identify foundations that support environmental and cultural education programs and initiatives (December 1995 and ongoing).
- M 3.00 Develop strategies for fund raising to support educational activities (October 1995 and ongoing).

Long-term plans include:

- L 1.00 Establish a plan with strategies to assure sustained funding for educational activities (January 1996 and ongoing).

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L 2.00 Establish the BTES Chair at a state university holding purview over the continuance of educational initiatives (January 1998).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Barataria-Terrebonne Management Conference (BTMC).

Support implementors will include institutions of higher education within the BTES, economic councils, the Louisiana Systemic Initiative Program (LaSIP), the Governor’s Office of Environmental Education and the Louisiana Department of Education (LDOE).

COSTS AND ECONOMIC CONSIDERATIONS

Table SR16-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|-------------------------------------|-------------|---------------------------|----------------|----------------------------------|--|
| SR-16 | | | | | \$6,352 | \$4,750 |
| SR-16S1.00 | <i>coord. Basin Ed. Summit</i> | | | | \$6,110 | \$0 |
| SR-16S1.01 | <i>coord. Basin Ed. Summit</i> | BTMC | N | | \$1,010 | \$0 |
| SR-16S1.02 | <i>coord. Basin Ed. Summit</i> | BTMC | N | | \$4,100 | \$0 |
| SR-16S1.03 | <i>coord. Basin Ed. Summit</i> | BTMC | N | | \$500 | \$0 |
| SR-16S1.04 | <i>coord. Basin Ed. Summit</i> | BTMC | N | | \$500 | \$0 |
| SR-16S2.00 | <i>secure funding</i> | | | | \$242 | \$0 |
| SR-16S2.01 | <i>secure funding</i> | BTPO-PD | E | | \$61 | \$0 |
| SR-16S2.02 | <i>secure funding</i> | LDOE | E | | \$61 | \$0 |
| SR-16S2.03 | <i>secure funding</i> | LDEQ | E | | \$61 | \$0 |
| SR-16S2.04 | <i>secure funding</i> | BTMC | E | | \$61 | \$0 |
| SR-16M1.00 | <i>inventory agencies</i> | BTMC | N | | | \$1,250 |
| SR-16M2.00 | <i>id foundations, ed. programs</i> | | N | SR-16M1.00 | | \$0 |
| SR-16M3.00 | <i>fundraising strategies</i> | BTPO-PD | E | | | \$3,500 |

Table SR16-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered “new” (a direct product of CCMP recommendations) and “existing” (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

Action Plan SR-16: Financial Support for Educational Initiatives

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$25,400
 Total Funding Existing (Years 1-5): \$14,300
 Total New Funding Necessary (Years 1-5): \$11,100

Table SR16-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--|---|--------|--------|--------|
| BTMC | \$6,100 License plate revenue; environmental education grant | \$5,000 Program Office Staff; environmental education grant | | | |

Summary of funding strategy: The \$6,100 cost incurred in Year 1 will be supported with funding from license plate revenue or, preferably, an environmental education grant. The \$5,000 cost incurred in Year 2 is a result of conducting an inventory of state and federal funding sources for educational activities. The Program Office has excess staff capacity in Year 2 and could assign this task to a staff member. By doing so, the program will avoid incurring an incremental \$5,000 contractor cost.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the private sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outlined here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The essence of SR-16 is the development of a "funding strategy" for education initiatives with the following subcomponents:

1. A statewide basin education summit.
2. An inventory of potential funding sources establishing a chair within a state university for continuance of educational initiatives.

Interrelationships Among Components

In order for SR-14 to SR-17 to be carried out external funding must be sought.

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Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Document the occurrence of a statewide basin summit through meeting announcements, minutes of meetings, list of participants.
2. Document an inventory of possible funding sources by obtaining a copy of such a report or minutes of meetings.
3. Document attempts at funding by collecting copies of grant proposals.
4. Document awards by obtaining letters of award and copies of executed contracts/grants.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
3. Obtain and archive announcements, minutes of meetings, and lists of participants of the state-wide summit.
4. Attend state-wide summit.
5. Obtain and archive report of possible funding sources or minutes of meetings.
6. Obtain and archive copies of funding proposals or RFPs.
7. Obtain and archive awards letters or copies of executed contracts.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect archival information to verify the BTMC data.

Quality Assurance/Quality Control

Objective of monitoring

1. To ensure statewide basin summit occurs.
2. To ensure possible funding sources are identified.
3. To ensure proposals are written.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their funding strategy and provide this information to the monitor.
3. The monitor should have expertise in grant writing and external funding.

Action Plan SR-16: Financial Support for Educational Initiatives

Data collection

1. The BTMC shall collect and archive materials as described in Methods.
2. The monitor will independently collect evidence as described in Methods to verify material supplied by the BTMC.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its funding strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

SR - 16 Financial Support for Educational Initiatives

EVALUATION METHODS

Components of Plan

The essence of SR-16 is the development of a "funding strategy" for education initiatives with the following subcomponents:

- A statewide basin education summit.
- An inventory of potential funding sources establishing a chair within Nicholls State for continuance of educational initiatives.

Interrelationships Among Components

In order for SR-1 to SR-17 to be carried out external funding must be sought.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Document the occurrence of a statewide basin summit through meeting announcements, minutes of meetings, list of participants.
- Document an inventory of possible funding sources by obtaining a copy of such a report or minutes of meetings.
- Document attempts at funding by collecting copies of grant proposals.
- Document awards by obtaining letters of award and copies of executed contracts/grants.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data

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necessary to monitor this action plan.

- Obtain and archive announcements, minutes of meetings, and lists of participants of the state-wide summit.
- Attend state-wide summit.
- Obtain and archive report of possible funding sources or minutes of meetings.
- Obtain and archive copies of funding proposals or RFPs.
- Obtain and archive awards letters or copies of executed contracts.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect archival information to verify the BTMC data.

QA/QC

Objective of monitoring

- To ensure statewide basin summit occurs.
- To ensure possible funding sources are identified.
- To ensure proposals are written.

Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
- The BTMC shall develop a self-evaluation of their funding strategy and provide this information to the monitor.
- The monitor should have expertise in grant writing and external funding.

Data collection

- The BTMC shall collect and archive materials as described in Methods.
- The monitor will independently collect evidence as described in Methods to verify material supplied by the BTMC.

Data evaluation

- The BTMC shall develop a procedure for reviewing data that will inform the council about its funding strategy.
- The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

- BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
- The monitor shall present the semiannual report to the BTMC.

Action Plan SR-16: Financial Support for Educational Initiatives

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

Action Plan SR-17: Educational Resources Network

SR-17 Educational Resources Network

OBJECTIVES

1. To develop a network of science supervisors, faculty, and interested individuals which advocate for estuarine issues in education, help develop curriculum, and provide training and development of teachers and other educational personnel in curriculum issues of significance to the BTES.

DESCRIPTION

This action will establish a BTES educational resources network of personnel in formal and informal educational environments in order for educators to gain a broader understanding and appreciation of the BTES. These individuals will be recruited initially through parish teacher association meetings. Training and development of educational personnel will be accomplished through formal workshops, teacher networks, and workshops presented in state, regional, and national meetings. These educational personnel will provide the expertise and support for continuous development and refinement of curriculum and instruction concerning estuarine issues.

BACKGROUND/MAJOR ISSUES

The development and compilation of curriculum materials as described in action plan *SR-14, Estuarine Curriculum Development*, along with the financial support described in *SR-16, Financial Support for Educational Initiatives*, will culminate in the provision of workshops and training to teachers and other individuals in educational settings through communication and networking in the development of human resources. As described, these types of courses have been offered through university continuing education offices and have provided excellent hands-on experience for teachers. These opportunities must be expanded in order to continually generate accurate, up-to-date science and social science information for teachers as well as innovative teaching methods.

BENEFITS

This action will assist in the development of educators and their students as constituents and stakeholders in the BTES through direct training. Furthermore, it will establish networks of individuals from many educational institutions and settings for the purpose of supporting state-of-the-art educational initiatives and providing resources to be used in many types and levels of classrooms. Through the development of educators and students in the BTES and other parts of the state, region, and country, there will be a resulting appreciation and understanding of the significance and importance of the estuary, Louisiana wetlands, and wetlands as a whole.

IMPLEMENTATION SCHEDULE

The short-term plans for this action include the following:

- S 1.00 Communicate intentions and expected activities to parish-level teacher associations (November 1995).
- S 2.00 Develop a network of basin-wide science supervisors, faculty and interested individuals through individual and small group meetings (October 1995).

The medium-term plan is:

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M 1.00 Continue to coordinate teacher and student workshops, seminars, and courses about the BTES (October 1995 and ongoing - See action plan *EM-14, Estuarine Curriculum Development*).

The long-term plan is to continue building educational networks by communicating with state, regional, and national educational agencies, associations, and institutions through newsletters, e-mail, workshops and public presentations (1996 and ongoing).

LEAD AND SUPPORT IMPLEMENTORS

The lead implementor for this action will be the Barataria-Terrebonne Management Conference (BTMC).

Support implementors will include the Louisiana Systemic Initiative Program (LaSIP), the Louisiana Science Teachers Association, the Governor's Office of Environmental Education and educational institutions based in the BTES.

COSTS AND ECONOMIC CONSIDERATIONS

Table SR17-1. Estimated Costs.

| | ACTION DESCRIPTOR | LEAD | EXISTING/ _NEW | SUBSUME | Y1 COSTS (Short Term) | Y2-5 AVG COSTS/YR (Medium Term) |
|-------------------|-------------------------------|------------------|---------------------------|----------------|----------------------------------|--|
| SR-17 | | | | | \$5,654 | \$50,000 |
| SR-17S1.00 | <i>communicate intentions</i> | LCES | E | | \$808 | \$0 |
| SR-17S2.00 | <i>develop network</i> | BTPO-EPS1 | E | | \$4,846 | \$0 |
| SR-17M1.00 | <i>continue coordination</i> | BTMC | N | | | \$50,000 |

Table SR17-1 provides estimated costs for short- and medium term activities specified in this plan. It includes lead agencies and costs for short- and medium-term activities. Costs are broken down into those considered "new" (a direct product of CCMP recommendations) and "existing" (where plans coincide with existing responsibilities/activities). Acceptance of this plan by the agencies or entities listed as lead or support implementors does not commit that agency or entity to implement the plan. At a later date, parties identified as potential plan implementors will work with the Program Office, the BTMC and other plan implementors to formalize all commitments concerning implementation.

FUNDING STRATEGY

Total Funding Necessary (Years 1-5): \$205,700
 Total Funding Existing (Years 1-5): \$5,700
 Total New Funding Necessary (Years 1-5): \$200,000

**Action Plan SR-17:
Educational
Resources Network**

Table SR17-2. Summary of New Funding Sources.

| Lead Agency | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------|--------|--|--|--|--|
| BTMC | | \$50,000 License plate revenue; public or private grants |

Summary of funding strategy: This action plan will be supported with funding from license plate revenue or an environmental education grant. Alternatively, the wide exposure to students in this action plan might make it an appealing candidate for corporate support.

EVALUATION METHODS

The following monitoring strategies are intended to serve as a statement of the most comprehensive and effective mechanisms to assess the effectiveness of projects implemented under the action plans. These strategies should only be used as a guide, not as a requirement. It must be recognized that the monitoring strategies outlined here will be expensive to implement and that, because all levels of government and much of the public sector currently have severe funding restraints, they may not be affordable without significant modification. It must also be recognized that these strategies are not intended to suggest that regulatory agencies require a higher level of monitoring by permit applicants than is currently required. The monitoring strategies outline here do not override or replace project monitoring that would be done by an agency related to specific agency-sponsored projects.

Components of Plan

The essential component of SR-17 is the development of a "network of educators" at all levels and other interested parties to advocate estuarine education.

Interrelationships Among Components

Action plans SR-14 to SR-16 require the efforts of numerous educators and facilitators. The establishment of an organized network among these educators will facilitate educational objectives of the CCMP.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

1. Document effort to establish this network by obtaining copies of letters, minutes of meetings, phone logs or journals.
2. Document a working network by obtaining copies of newsletters, records of meetings, and presentations at professional meetings about BTES education programs.

Methods

1. Measure accomplishments against time frame established in the CCMP.
2. The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
3. Obtain and archive announcements, minutes of meetings, and lists of participants of the educator network.

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4. Survey (phone, questionnaire, and interview) members of the network.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

1. The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
2. The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
3. The monitor will independently collect information to verify the BTMC data.

Quality Assurance/Quality Control

Objectives of monitoring

To ensure the establishment of a functional educators network.

Identification of monitor

1. A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
2. The BTMC shall develop a self-evaluation of their education materials and provide this information to the monitor.
3. The monitor should have expertise in the local, state, and national education systems.

Data collection

1. The BTMC shall collect and archive materials as described in Methods.
2. The monitor will independently collect evidence as described in Methods to verify material supplied by the BTMC.
3. The monitor will survey members of the educator network.

Data evaluation

1. The BTMC shall develop a procedure for reviewing data that will inform the council about its information/education/message strategy.
2. The monitor must show evidence of validity and reliability of data collected.

Review of monitoring documents

1. BTMC shall review draft reports from the monitor on a semiannual (twice per year) basis.
2. The monitor shall present the semiannual report to the BTMC.

Presentation of problems and proposed actions

The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for

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accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

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EVALUATION METHODS

Components of Plan

The essential component of SR-17 is the development of a "network of educators" at all levels and other interested parties to advocate estuarine education.

Interrelationships Among Components

Action plans SR-14 to SR-16 require the efforts of numerous educators and facilitators. The establishment of an organized network among these educators will facilitate educational objectives of the CCMP.

Documentation of Plan Implementation and Success

The following criteria will be used to determine if plan implementation steps and project success were accomplished:

- Document effort to establish this network by obtaining copies of letters, minutes of meetings, phone logs or journals.
- Document a working network by obtaining copies of newsletters, records of meetings, and presentations at professional meetings about BTE education programs.

Methods

- Measure accomplishments against time frame established in the CCMP.
- The BTMC shall develop a self-evaluation procedure that facilitates the collection of evidence and data necessary to monitor this action plan.
- Obtain and archive announcements, minutes of meetings, and lists of participants of the educator network.
- Survey (phone, questionnaire, and interview) members of the network.

Cost estimates

| | |
|--------|-----------------|
| Year 1 | \$ 2,000 |
| Year 2 | \$ 2,000 |
| Year 3 | \$ 2,000 |
| Year 4 | \$ 2,000 |
| Year 5 | <u>\$ 2,000</u> |
| Total | \$10,000 |

Recommendations and Feedback to Program/Implementor

- The BTMC shall develop a self-evaluation procedure to determine the effectiveness of the information distribution strategy.
- The BTMC will be responsible for archiving all products of this action plan and making them available to the monitor.
- The monitor will independently collect information to verify the BTMC data.

QA/QC

Objectives of monitoring

To ensure the establishment of a functional educators network.

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Identification of monitor

- A Third Party, who can be reasonably impartial, but who is knowledgeable about the basin and the CCMP, should be employed.
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The monitoring document shall identify the causes of problems observed during the reporting period, describing the short- and long-term consequences of these problems, recommend action to address the problems, and identify possible parties to implement these actions. The monitoring document shall also propose a schedule for accomplishing the recommendations.

Schedule

A semiannual report shall be prepared for the BTMC. The monitoring reports should be called a mid-year report and end-of-year report. The end-of-year report will also be written as an annual report.

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