Coastal Wetlands Planning, Protection and Restoration Act

3rd Priority Project List Report

November 1993

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CWPPRA project area. To facilitate the study process, the coastal zone was divided into nine hydrologic basins, as shown on the map.

STUDY PROCESS

The Interagency Planning Groups

Section 303(a)(I) of the **CWPPRA** directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force, to consist of the following members:

- **the** Secretary of the Army (Chairman)
- the Administrator, Environmental Protection Agency
- the Governor, State of Louisiana
- the Secretary of the Interior
- the Secretary of Agriculture
- the Secretary of Commerce.

The State of Louisiana is a full voting member of the Task Force except for selection of the Priority Project List [Section 303(a)(2)], as stipulated in Resident Bush's November 29, 1990, signing statement (Appendix A). In addition, the State of Louisiana may not serve as a "lead" Task Force member for design and construction of wetlands projects of the Priority Project List.

In practice, the Task Force members named by the law have delegated their responsibilities to other members of their organizations. For instance, the Secretary of the Army authorized the commander of the Corps' New Orleans District to **act in his** place as chairman of the Task Force.

To assist it in putting the CWPPRA into action, the Task Force established the Technical Committee and the Planning and Evaluation Subcommittee. Each of these bodies contains the same representation as the Task Force-one member from each of the five Fed&d agencies and one from the State. The Planning and Evaluation Subcommittee is responsible for the actual planning of projects and preparation of this restoration plan, as well as the other details involved in the CWPPRA process (such as development of schedules, budgets, etc.); the subcommittee makes recommendations to the Technical Committee and lays the groundwork for all decisions which will ultimately be made by the Task Force. The Technical Committee reviews all materials prepared by the subcommittee, makes appropriate revisions, and provides recommendations to the Task Force. The Technical Committee operates at an intermediate level between the planning details considered by the subcommittee and the policy matters dealt with by the Task Force, and often formalizes procedures and assists in formulating policy for the Task Force.

The Planning and Evaluation Subcommittee established several working groups to evaluate projects for Priority Project Lists and the restoration plan. The Environmental Work Group was charged with estimating the benefits (in terms of wetlands created, protected, enhanced, or restored) associated with various projects. The Engineering Work Group reviewed project cost estimates for consistency. The Economic Work Group performed the economic analysis which permitted comparison of projects on the basis of their cost effectiveness. The Monitoring Work Group established a standard procedure for monitoring of CWPPRA projects and developed a monitoring cost estimating procedure based on project type (Appendix F).

Coastal Wetlands Planning Protection-and Restoration **Act**

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INTRODUCTION

The State of Louisiana contains 40 percent of the Nation's coastal wetlands, but is experiencing 80 percent of the Nation's coastal wetland loss. The widespread and complex nature of the coastal wetland loss problem, coupled with the diversity of agencies involved and numerous alternatives proposed, has led many in Federal, state, and local government, as well as the general public, to the conclusion that a comprehensive approach is needed. The Coastal Wetlands Planning, Protection and Restoration Act (PL 101-646) was signed into law by Resident Bush on November 29, 1990, to address the need for a comprehensive approach to this significant environmental problem.

This report documents the implementation of Section 303(a) of the cited legislation.

STUDY AUTHORITY

Section 303(a) of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), displayed in Appendix A, directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force to:

> . . . initiate a process to identify and prepare a list of coastal wetlands restoration projects in Louisiana to provide for the long-term conservation of such wetlands and dependent fish and wildlife populations in order of priority, based upon the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands, with due allowance for small-scale projects necessary to demonstrate the use of new techniques or materials for coastal wetlands restoration.

STUDY PURPOSE

The purpose of this study effort was to prepare the 3rd Priority Project List (PPL) and transmit the list to Congress by November 1993, as specified in Section 303(a)(3) of the CWPPRA. Section 303(b) of the act calls for preparation of a comprehensive Restoration Plan f: coastal Louisiana; that effort is currently in progress, and will be reported on in November 1993, as required by the act.

PROJECT AREA

Plate 1 is a map which delineates the Louisiana coastal zone. The entire coastal area, which comprises all or part of 20 Louisiana parishes, is considered to be the

to incorporate another invaluable resource: the state's scientific community. The Task Force therefore retained the services of a scientific advisor, who selected a team of scientists to work with the basin teams in the preparation of the Priority Project Lists. The Task Force is currently developing formal relations with both the academic scientific community and the Citizen Participation Group in accordance with the Federal Advisory Committee Act (P.L. 92-463).

Public Involvement.

Even with its widespread membership, the Citizen Participation Group cannot represent all of the diverse interests affected by Louisiana's coastal wetlands. The CWPPRA public involvement program provides an opportunity for all interested parties to express their concerns and opinions and to submit their ideas concerning the problems facing Louisiana's wetlands.

The first step in the program comprised two series of scoping meetings held by the Task Force in October and November 1991-one series for coastal zone parish officials and another series for the general public. The purpose of these scoping meetings was to identify wetland loss problems throughout the coastal zone and potential solutions to those problems. Literally hundreds of ideas were submitted to the Task Force through the scoping meetings. (Appendix E is a compendium of those proposals.) All of the ideas presented in those meetings have been evaluated during the planning process; many of them have been incorporated into the Restoration Plan. The schedule of scoping meetings is shown in Table 2 (for parish officials) and Table 3 (for the general public).

Table 2
Parish Scoping Meetings (for Parish Officials)

Date	Location	Parishes
October 8,1991	Crowley, La.	Calcasieu Parish Cameron Parish Iberia Parish Vermilion Parish
October 16,1991	New Orleans, La.	Jefferson Parish Orleans Parish Plaquemines Parish St. Bernard Parish St. Charles Parish
October 16,1991	New Orleans, La.	Livingston Parish St. James Parish St. John the Baptist Parish St. Tammany Parish Tangipahoa Parish
October 17,1991	Thibodaux, La.	Ascension Parish Assumption Parish Lafourche Parish St. Martin Parish St. Mary Parish Terrebonne Parish

The Planning and Evaluation Subcommittee also established an interdisciplinary basin team for each of the nine hydrologic basins in the coastal area. The nucleus of each team consisted of representatives of the five federal Task Force agencies and the State; these six members made the final decisions on team recommendations. However, team meetings frequently involved additional agency representatives, scientific advisors, and local interests. The basin teams serve as the first level of screening for proposed Priority Project List projects and helped shape the comprehensive restoration plans for the basins.

The Citizen Participation Group.

The Task Force also established a Citizen Participation Group to provide general input from the diverse interests across the coastal zone: local officials, landowners, farmers, sportsmen, commercial fisherman, oil and gas developers, navigation interests, and environmental organizations. The Citizen Participation Group was formed to promote citizen participation and involvement in formulating Priority Project Lists and the restoration plan. The group meets at its own discretion, but may at times meet in conjunction with other CWPPRA elements, such as the Technical Committee. The purpose of the Citizen Participation Group is to maintain consistent public review and input into the plans and projects being considered by the Task Force and to assist and participate in the public involvement program. The membership of the Citizen Participation Group is shown in Table 1.

Table 1
Membership of the Citizen Participation Group

Gulf Coast Conservation Association	**Concerned Shrimpers of America**
Coalition to Restore Coastal Louisiana	**Gulf Intracoastal Canal Association**
Lake Pontchartrain Basin Foundation	**Louisiana Association of Soil and Water Conservation Districts**
Louisiana Farm Bureau Federation, Inc.	**Louisiana Landowners Association**
Louisiana League of Women Voters	**Louisiana Nature Conservancy**
Louisiana Oyster Growers and Dealers Association	**Louisiana Wildlife Federation, Inc.**
Midcontinent Oil and Gas Association	**New Orleans Steamship Association**
Oil and Gas Task Force (Regional Economic Development Council)	**Police Jury Association of Louisiana**
Organization of Louisiana Fishermen	

Involvement of the Scientific Community.

While the agencies sitting on the Task Force possess considerable expertise regarding Louisiana's coastal wetlands problems, the Task Force recognized the need

At a series of public meetings held in June 1992, the conceptual plans developed for the comprehensive Restoration Plan were presented to the public, along with the candidate projects for the 2nd Priority Project List. Public meetings were held as shown in Table 5.

Table 5
Public Meetings
(2nd Priority Project List)

Date	Location	Hydrologic Basins
June 16,1992	**Morgan City**	**Atchafalaya, Teche/Vermilion**
June l8,1992	**Belle Chasse**	**Barataria, Breton Sound, Mississippi River Delta**
June 23,1992	**Houma**	**Terrebonne**
June 25,1992	**Lake Charles**	**Mermentau, Calcasieu /Sabine**
Tune 30,1992	**New Orleans**	**Pontchartrain**

Public involvement continued with the latest set of public meetings held in July and August 1993. These meetings were held in conjunction with the state of Louisiana's Wetlands Conservation and Restoration Authority. The purpose of the meetings was to present the Draft Restoration Plan, and the candidate projects for the 3rd Priority Project List, and to accept comments and recommendations. The meeting schedules are shown in Table 6.

Table 3
Public Scoping Meetings

Date	Location
October 21,1991	**Lake Charles, La.**
October 22,1991	**Abbeville, La.**
October 24,1991	**Houma, La.**
October 28,1991	**Mandeville, La.**
November 6,1991	**Belle Chasse, La.**
November 7,1991	**New Orleans, La.**

The October-November 1991 scoping meetings were the first stage in the process identifying coastal wetlands problems and developing basin-by-basin solutions. The process continued with a series of basin plan formulation meetings, held in February through May 1992 (Table 4). These meetings were attended by representatives of the Task Force agencies, members of the scientific community, representatives of the Citizen Participation Group, parish officials, private consultants, and members of the general public. These meetings were intense planning sessions, consisting of four three-day meetings with a two-day followup for each. Each set of meetings began with a description of the geology, hydrology, and biological resources of the basins followed by projections for the future. Finally, the coastal wetlands problems and their causes were discussed in detail, and strategies were developed for dealing with those problems on a basin-by-basin basis. These strategies were molded into conceptual plans that would serve as a guide in selecting and evaluating projects both for Priority Project Lists and for the Restoration Plan.

Table 4
Plan Formulation Meetings

Date	Location	Hydrologic Basins
February 4-6,1992	**Baton Rouge**	**Pontchartrain**
February 12-13,1992 (follow up)	**New Orleans**	
March 17-19, 1992	**St, Francisville**	**Barataria, Breton Sound, Mississippi R. Delta**
March 25-26,1992 (follow up)	**New Orleans**	
April 7-9, 1992	**Baton Rouge**	**Terrebonne, Atchafalaya, Teche/Vermilion**
April 15-16,1992 (follow up)	**New Orleans**	
April 28-30,1992	**Abbeville**	**Mermentau, Calcasieu** / Sabine
May 6-7, 1992 (follow up)	**New Orleans**	

FORMATION PROCESS FOR THE PRIORITY PROJECT LIST

INTRODUCTION

The planning effort associated with the CWPPRA is proceeding simultaneously along two tracks. Section 303(b) of the act calls for the development of a comprehensive restoration plan for Louisiana's coastal wetlands. This long term plan is being developed over a three-year period, with the report to be submitted to the Congress in November 1993. Section 303(a), on the other hand, deals with projects which can be implemented within a short period of time. This section requires that any project selected for a Priority Project List be substantially complete within five years of its appearance on a list. The intent of this section is to provide a rapid response to the loss of coastal wetlands. The first Priority Project List was to be submitted within one year of enactment of the CWPPRA, with subsequent lists to be prepared annually through 1995.

The one-year time limit associated with developing a Priority Project List necessitated a deviation from the usual plan formulation process. Rather than beginning with a clean slate, it was preferable to begin with projects which were already developed to some degree-if possible, projects on which some planning had already been done. The projects on the Priority Project List submitted in November 1991 fell into this category.

Preparation of the second (submitted in November 1992) and third list, which involved somewhat more lead time than did the first list, employed a more traditional approach. This section describes the process by which the third list was developed.

IDENTIFICATION OF PROJECTS

Projects considered for the third list were derived from several sources, the principal one being the scoping meetings held in October and November 1991. The hundreds of problems and proposals which came out of those meetings are listed in Appendix E. An identification number was assigned to each project to help keep track through the screening and evaluation process. Each project received a two-letter code to identify its basin; these codes are shown below.

PO	Pontchartrain	AT	Atchafalaya
BS	Breton Sound	TV	Teche/Vermilion
MR	Mississippi River Delta	ME	Mermentau
BA	Barataria	c s	Calcasieu/ Sabine
TE	Terrebonne		

Projects which are part of the State's Coastal Wetlands Conservation and Restoration Plan use these two letters followed by a number. Projects which were derived from the scoping meetings are identified by a "P" ("public") preceding the two-letter code (e.g., PPO-52, PTV-18).

The plan formulation meetings held from February through May 1992 were an additional source of projects for consideration for the Priority Project List. Projects

Table 6
Public Meetings
(3rd Priority Project List and Draft Restoration Plan)

Date	Location	Hydrologic Basins
July 27,1993	Larose	Barataria
July 28,1993	Belle Chasse	Breton Sound, Mississippi River Delta
July 29,1993	New Orleans	Pontchartrain
August 9,1993	Houma	Terrebonne
August 10,1993	Morgan City	Atchafalaya and Teche/Vermilion
August 11,1993	New Orleans	Formal Public Hearing on the Draft Restoration Plan and EIS
August 12,1993	Cameron	Calcasieu/Sabine and Mermentau

Summary of the Ponchartrain Basin Team Meeting.

The Ponchartrain basin team met on April 21, 1993, tc select projects to be submitted as candidates for the 3rd Priority Project List. Members of the team were: Sue Hawes (US Army Corps of Engineers, USACE), basin captain; Bill Savant (Louisiana Department of Natural Resources, LDNR); George Townsley (Soil Conservation Service, SCS); Jane Ledwin (US Fish and Wildlife Service, USFWS); Peggy Jones (National Marine Fisheries Service, NMFS); Jeanene Peckham (Environmental Protection Agency, EPA); Richard Boe (USACE); and Dr. Gary Schaffer, academic consultant. In addition, individuals representing the Louisiana Department of Wildlife and Fisheries (LDWF), St. Bernard Parish government, the New Orleans City Planning Commission, St. John the Baptist Parish government, Burk-Kleinpeter Consulting Engineers, the Lake Pontchartrain Basin Foundation, and the Coalition to Restore Coastal Louisiana were present and participated in project discussions.

Preliminary Evaluation Sheets were completed for 39 projects. Criteria from the Preliminary Evaluation Sheets used to eliminate projects from further consideration included: The project must be in the preliminary draft Restoration Plan as of February 17,1993, or had special dispensation from the Planning and Evaluation Subcommittee; the project cost was less than $10,000,000; sufficient information was available on the project so that a WVA could be performed by July 1993; the project provide a significant opportunity or was a demonstration project; and the project was included in the state's restoration plan or had the support of local government. Using these criteria, the basin team eliminated 25 projects from further consideration as candidates for the 3rd PPL.

Screening Information Sheets were prepared for the remaining 14 project projects. Each agency ranked the projects from most favorable to least and a weighted technique was used to choose the top four projects.

xPo-69	Bayou Sauvage NWR, Bayou Chevee Shore Protection
PO-9a	Violet Outfall Management
PO-15	Alligator Point Hydrologic Restoration
XPO-71	MRGO Disposal Area Marsh Protection

NMFS proposed two additional projects, Lake Athanasio Spit Marsh Creation (XPO-83) and St. Malo Hydrologic Restoration (XPO-84); however, they were not in the preliminary draft Restoration Plan by February 17,1993, and were not considered during the initial selection. Subsequent to the meeting NMFS, the landowner, EPA, and members of the academic community requested a reconsideration of these two projects. After receiving guidance from the Planning and Evaluation Subcommittee that allowed the team to reconsider these projects, the team determined that the Lake Athanasio Spit Marsh Creation project (XPO-83) was worthy of submission as a candidate for the 3rd PPL.

which were proposed during and after these meetings are identified with an "X" (e.g., XTE-41).

SCREENING OF PROPOSED PROJECTS

The tremendous number of proposals submitted called for the development of an easily implemented screening process which would allow winnowing these hundreds of ideas down to a manageable number. These projects could then be evaluated in more detail. Basin captains, one for each of the hydrologic basins, were appointed from among the Task Force agencies to take the lead in screening projects. Each captain had a team with a representative from each agency. The basin teams were responsible for doing preliminary evaluations of all projects submitted and making a recommendation to the Planning and Evaluation Subcommittee for candidate projects to be considered for the 3rd Priority Project List. The subcommittee then put together a list of 41 candidate projects to be evaluated for the third list. These candidates were presented in the public meetings which took place in July and August of 1993.

Basin Teams.

To give some form to the screening process, the Planning and Evaluation Subcommittee developed two tools: a Preliminary Evaluation Sheet (PES) and **a** Screening Information Sheet (SIS).

The PES constituted the first level of screening, and was designed to evaluate a proposal's fitness for the CWPPRA and a Priority Project List. If the purpose of the project was not long term protection, restoration, enhancement, or creation of coastal wetlands, or the project did not meet the objectives set for its particular basin as outlined in the Draft Restoration Plan, the project was dropped from consideration. The PES also screened out projects which could not be constructed within the five year time frame prescribed by the CWPPRA for priority list projects. In addition, because of the time constraints involved with developing the Restoration Plan and the 3rd list, projects that were not in the preliminary draft of the Restoration Plan as of February 17, 1993 or was not sufficiently developed to perform a Wetland Value Assessment by July, 1993, were not considered for the 3rd list. Any project which was judged capable of meeting the timing criterion was evaluated according to whether it: possessed local support; was a critical project in the overall restoration plan; did not cost over $10,000,000; provided a significant opportunity to preserve, improve, or build coastal wetlands; and had regional impacts or was a small demonstration project. Projects which met the criteria were elevated to the next level of screening.

The SIS was used as the next step in the screening process. Each Task Force agency made a rough estimate of the cost of the projects for which it was responsible. An estimate was also made of the acres to be created, protected, or enhanced **by a** project. The cost per acre **was used to compare projects, serving as the main** criterion each basin team used to select approximately four projects in each basin for further evaluation.

This section contains **a** summary of the screening process in each basin.

Summary of the Breton Sound Basin Team Meeting.

The Breton Sound Basin Team met on April 19, 1993, to begin the initial screening of projects for the 3rd Project Priority List. Members of the team were: Donna Keller Bivona (USACE), basin captain; Carrol Clark (LDNR); George Townsley (SCS); Gerry Bodin (USFWS); Peggy Jones (NMFS); Jeanene Peckham (EPA); and Mike Saucier (USACE). In addition, John Boatman of the SCS Belle Chasse office and Allen Bolotte of the SCS New Orleans office took part in the meeting.

A brief overview of the Preliminary Evaluation Sheets (PES) for the list of projects proposed in this basin was given by the basin captain. The complete list of proposed projects in this basin consisted of 20 projects: six sediment or freshwater diversion projects, 11 hydrologic restoration projects, and three marsh protection or creation projects.

As a result of the preliminary evaluation of the projects (see Screening of Proposed Projects, Basin Teams) and the discussion of the team, 10 of the 20 projects were deferred from consideration as potential 3rd list candidates. These projects (PBS-l, PBS-2, PBS-4, PBS-5, PBS-7, PBS-B, PBS-9, PBS-IO, PBS-14, and PBS-15) will require further analysis and may be considered on a subsequent priority list and will be included in the Restoration Plan.

Four additional projects were not considered further. Projects PBS-3 and PBS-12 targeted the same area as BS-6a/b (Pump Outfall Management North of Lake Lery), and therefore were not evaluated. Project PBS-11, Caernarvon Freshwater Diversion Operation Modification, was determined to be beyond the scope of the CWPPRA and best pursued under USACE authority. Finally, project BS-3a, Caemarvon Diversion Outfall Management South of Big Mar, was already selected by the Task Force-for funding on the 2nd Project Priority List.

The Basin Team then reviewed the Screening Information Sheets for the five remaining projects (excluding PBS-13, Oyster Reef Demonstration) being considered as potential candidates for the 3rd list. Since only five projects remained after the initial review, the information provided on the Screening Information Sheets was instrumental in ranking the potential projects by the basin team members.

A vote by each member of the six agencies was taken to rank these projects. A weighted technique was used to select the top candidates. Each agency was allowed to vote for four projects, with their first choice being given four points, their second choice three points, etc. The order of preference by the basin team was: Grand *Bay* Crevasse (PBS-6); Bayou Lamoque Outfall Management (BS-5); White's Ditch Outfall Management (BS-4a); and Pump Outfall Management North of Lake Lery (BS-3b/6a). The the Oyster Reef Demonstration Project (PBS-13) was submitted as a demonstration project.

Table 7
Summary of Screening Information Sheets
Pontchartrain Basin Projects

No.	Project Name	Acres Created	Aaes Protected	Inaeased Aquatic Veg (Acres)	Aaes Enhanced	Total Benefited Acres	TotaI cost ($)	Cost per Benefited Acre ($/acre)
XP0-47	Amite River Diversion Canal Bank Modification		340	109	148	597	533,000	900
XPO-50a	Lake Maurepas Shore Protection, BIayhut Canal	23	139	290	180	609	1,728,000	2,800
XPO-51	Manchac WMA Hydrologic Restoration		454	198	510	1,162	1,021,000	900
PO-13	Tangipahoa/Pontchartrain Shore Protection	41	101	464	21	586	4,850,000	8,300
PO-14	Green Point/Goose Point	36	213	380	397	990	3,252,000	3,300
PP-07	La Branche Shore Protection, East	17	507	236	323	1,066	1309,000	1,200
PO-12	La Branche Wetland Management, West		20	32	192	244	299,000	1,200
PO-7	North Shore Wetland		22	473	718	1213	488,000	400
PO-15	Alligator Point Marsh Restoration		219	528	742	1,489	1,951,000	1,300
XPO-69	B. Sauvage NWR, B. Chevee Shore Protection	23	572	448	324	1,344	1,765,000	1,300
PO-11	Cutoff Bayou Hydrologic Restoration		103	220	180	503	722,000	1,400
PPO-4	Eden Isles East Marsh Restoration	1,092	0	334	68	402	8,856,000	22,000
XPO-71	MRGO Disposal Area Marsh Protection		1,500			1,500	1,746,000	1,200
PO-9a	Violet Outfall Management		185	354	523	1,062	1,960,000	1,800
XPO-83*	Lake Athanasio Spit Marsh Creation •		2	16	104	122	521,000	4,300

* Added after initial recommendation

Summary of the Mississippi River Delta Basin Team Meeting.

The Mississippi River Delta Basin Team met on April l. , 1993, to select the projects to be submitted as candidates for the 3rd Priority Project List. Members of the basin team in attendance were: Tim Axtman (USACE), basin captain; Jeanene Peckham (EPA); Peggy Jones (NMFS); John Radford(LDNR) and Phil Bowman (LDWFS); George Townsley and John Boatman (SCS); and Kim Mitchell and James Harris (USFWS). The following projects were brought forth for the team's consideration: (MR-2) Pass a Loutre Sediment Fencing, (FMR-4) Tiger Pass Dredged Material Disposal, (PMR-8) Pass A Loutre Sediment Mining, (XMR-9) Pass A Loutre Crevasse, and (XMR-10) Channel Armor Gap Crevasse.

Three of these projects-MR-2, FMR-4 and PMR-8--had been considered as candidates for previous Priority Project Lists. Both FMR-4 (PPL1) and PMR-8 (PPL2) had achieved deferred status on an approved priority list.

John Radford informed the other members of the team that, with the aid of oil company mitigation funds, the Louisiana Department of Wildlife and Fisheries (LDWF) had undertaken the placement of sediment fences on the Pass **a** Loutre Wildlife Management Area. He noted that at that time approximately 50 percent of the sediment fence structures proposed in the MR-2 project had been completed under the LDWF's effort. As a result, it was recommended that the MR-2 project be dropped from consideration under the CWPPRA. The basin team concurred with this recommendation and encouraged the possibility of locating an alternate site for future consideration.

The primary items for discussion at this meeting were the XMR-9 and XMR-10 projects. These two crevasse proposals were developed as a result of the comprehensive restoration plan. At the time of this meeting the screening information on these two projects was completed with the exception of the preliminary cost estimates. The basin team assembled a very rough cost for the XMR-9 project based on data from the Screening Information Sheet for that project and those of previously submitted projects. The purpose of this effort was to make a comparison of the cost per acre between the mining and crevasse projects in this same area. This initial estimate indicated a substantially lower cost per acre for the crevasse project. In addition it was determined that the construction of the crevasse channel would involve the excavation of approximately 50 percent of the volume of material specified in the sediment mining project. Beneficial placement of this material would provide a significant gain in wetlands which had not been claimed in the initial XMR-9 proposal.

As a result of these comparisons, the basin decided team that the concepts for both PMR-8 and XMR-9 should be combined under the title Pass a Loutre Crevasse with project number PMR-8/9a. The separate project PMR-8, Pass a Loutre Sediment Mining, would not be considered for inclusion on the 3rd PPL. A location of an alternate site would be pursued for future consideration of this project under its deferred status.

As a last item of business, the submission of FMR-4 for consideration for the 3rd list was discussed. Owing to the past performance of the project on a cost per acre basis and the fact that it had already achieved a deferred status on the 1st PPL, the basin team agreed that this project would not be re-submitted at this time.

As a result of this meeting the team's recommendations for candidates for the 3rd PPL were: (PMR-8/9) Pass A Loutre Crevasse, and (XMR-10) Channel Armor Gap Crevasse.

Table 8
Summary of Screening Information Sheets
Breton Sound Basin Projects

No.	Project Name	N e tAcres Created	Net Acres Protected	Net Acres Enhanced	Total Benefited Acres	Total cost ($)	cost per Benefited Acre ($/acre)
BS-l	Bohemia Diversion Restoration and Outfall Mgmt		124	534	658	1,642,000	2,495
BS-4A/B	White's Ditch Outfall Management		378	562	940	5,639,000	5,999
BS-5	Bayou Lamoque Diversion Outfall Management		350	205	555	317,000	571
BS-6A/B	Pump Outfall Management N. of Lake Lery		169	577	746	2,241,000	3,004
PBS-6	Grand Bay Crevasse	364		437	801	1,563,00	1,951
PBS13	Oyster Reef Demonstration		3	1	4	348,000	87,000

Summary of Barataria Basin Team Meeting.

The Barataria Basin Team met on April 27, 1993, to select candidate projects for the 3rd Priority Project List. Members of the team were: Sam Hold, Minerals Management Service, basin captain; Jeanene Peckham (EPA); Gerry Bodin (USFWS); Micheal Nichols (SCS); Bill Savant (LDNR); Bruce Baird (USACE); and Charles Sasser, academic advisor.

The basin team had met previously to initial screen 63 projects being considered for the 3rd list using the criteria set forth in the Preliminary Evaluation Sheets and reduced the list of projects to 25 which would be evaluated further. The distribution of projects by project type was:

Hydrologic Restoration	10
Marsh Creation	4
Freshwater Diversion	10
Sediment Diversion	5
Marsh Management	3
Outfall Management	5
Shoreline/Bank Protection	15
Barrier Island Restoration	11

To select four projects from the list of 25, each agency representative selected six preferred project and assigned one to six points to each of the selected projects. The most preferred project received six points and the least preferred one point. The four projects with the most points were submitted to the Planning and Evaluation Subcommittee as candidates for the 3rd PPL. In order of descending preference, the four projects were: West Point a la Hache Outfall Management (BA-4c), Marsh Restoration Between Bayou Perot and Bayou Rigolettes (XBA-65), Grand Pierre Island Restoration (XBA-lc), and Dupre Cut/Bayou Dupont Bank Protection (XBA-70).

Table 9
Summary of Screening Information Sheets
Mississippi River Delta Basin Projects

No.	Project Name	Net. Acres Created	Net Acres Protected	Net Acres Enhanced	Total Benefited Acres	Total Estimated cost ($)	Cost per Benefited Acre ($/acre)
PMR8/9a	Pass a Loutre Crevasse	800	500	450	1,750	1,450,000	860
XMRlO	Channel Armor Gap Crevasse	800	300	88	1,188	1,200,000	1,010

Summary of the Terrebonne Basin Team Meeting.

The Terrebonne Basin Team met on April 7, 1993, to screen projects for the 3rd Priority Project List. Members of the team were: Norm Thomas (EPA), basin captain; Peggy Jones (NMFS); Gerry Bodin (USFWS); Britt Paul (SCS); Darryl Clark(LDNR); Glen Montz (USACE); and Dr. Don Davis, academic advisor. Numerous other representatives of the participating agencies, local government, academia, and consultants participated in the presentation and discussion of projects. However, only basin team members participated in the final selection process.

Initially, 14 projects (3 of which were subsections of one project), and 7 demonstrations were to be considered by the team. However, LDNR removed one subsection of one project (TE-7A) and two other projects (TE-8 and XTE-40) from consideration, and an additional project (XTE-67) was submitted for consideration by the Lafourche Parish Council. This left 12 projects and 7 demonstrations that were reviewed by the basin team. The sponsoring agency or other knowledgeable persons presented a summary of each project or demonstration being considered, including information on acres of benefit anticipated and estimated cost, if available. This information is presented in Table 11, Summary of Screening Information Sheets, as it was known at the time of the basin team meeting.

The basin team agreed unanimously that, although a goal of 4 projects per basin had been set for submittal as 3rd PPL candidates, the extent of problems and need for demonstration projects in the Terrebonne Basin warranted submittal of 6 candidate projects and 3 demonstrations. Based on the information available, each team member submitted a ranking of projects and demonstration projects. The consensus of this ranking led to the basin team submitting the following projects to the P&E Subcommittee as candidates to be further evaluated for possible inclusion on the 3rd PPL:

PTE-15b	Isles Dernieres Restoration
PTE-26b	Brady Canal Hydrologic Restoration
TE-l0 / XTE-49	Grand Bayou Freshwater Diversion / Cutoff Canal Structure
PTE-23 / 26a / 33	Lake Chapeau / Locust Bayou Hydro Rest and Dredging
XTE-65	Spray Dredging West of Locust Bayou
XTE-67	Restoration of East Timbalier Island
Demonstration Projects	
XTE-54b	Flotant Marsh Creation and Enhancement using Fencing
XTE-66	Sediment Conveyance
XTE-43	Red Mud

Table 1
Summary of Screening Information Sheets
Barataria Basin Projects

No.	Project Name	Project Type	Acres Created, Restored or Protected	Net Benefited Acres	cost Per Benefited Acre ($)	Estimated cost ($)	
XBA-lc	Grand Pierre Island Restoration	BI	85	485	3,000	1,440,000	
XBA-ld	Cheniere Ronquille Refurbishment	BI	144	153	15,500	2,368,000	
PBA-lf	Bay Champagne - Gulf Shore Refurbishment	SP	90	90	20,000	1,798,000	
PBA-12	Shoreline Prot, Bara.Ww. Below Bayou Rigolettes	SP	138	190	9,300	1,763,000	
PBA-16	Shoreline Prot., NE Shore of the Pen	SP	62	114	20,408	2,324,000	
PBA-34	**Maintain** Bayou L'ours Ridge	HR	780	2,781	800	2,327,000	
XBA-55	Jetty Modifications at Empire Canal	SP	79	134	32,200	4315,000	
XBA-56	jetty Modifications at Belle Pass	SP	9	28	154,100	4315,000	
PBA-58	Little Lake Canal Closures	HR	575	1,122	1,200	1387,000	
PBA-60	Barataria Drainage Pump Outfall Management	OM	19	83	1,200	97,000	
XBA-63a	Central Basin Tidal Drage Enhancement	HR	*	29,790	300	7,731,000	
XBA-63b	Central Basin Tidal Drage En		*	29,790	300	9568,000	
X BA-65a	Restore Perot Peninsula Marsh, Spray Dredge	MC	590	780	2,500	1,912,000	***
XBA-65b	Restore Perot Peninsula Marsh, Berm & Dredge	MC	590	780	3,400	2,689,000	***
PBA-66	Use Bara. Bar Channel Dredged Mat. on W.Grand Terre	BI	•	164	18,500	3,027,000	
XBA-67a	Siphoned Sediment Enrichment of Davis Pond Diversion	SD	*	7,458		173,000	****
XBA-67b	Siphoned Sedi. Enrichment of Naomi Diversion (BA-3)	SD	*	1,637		173,000	****
XBA-67c	Siphoned Sedi. Enrich. of W. P-a-1-Hache Diver.tBA-4)	SD	·	7,753		52,000	****
XBA-69	Stabilize or Refurbish Grand Pierre Island	BI	*	485		**	
XBA-70	Dupre Cut & Bayou Dupont Shoreline Protection	SP	200	713	5,500	3,930,000	
BA-3c	Naomi (LaRussite) Diversion Siphon Outfall Mngt	OM	842	1,637	700	1,124,000	
BA-4c	West Point a la Hache Outfall Management		*	2724	100	371,000	
BA-8	Lake Cataouatche Shoreline Protection		•	69	8,300	576,000	
BA-9	Salvador WMA Gulf Canal		*	70	12,100	844,000	
BA-14	Little Lake Marsh Management	MM	265	663	1,700	1,118,000	

• Information not avialable at the time of the Basin Team meeting
** Not evaluated because project performs the same function as XAB-lc
*** Combined into one project XBA-65
**** Pursued as a demonstration project

Summary of the Atchafalaya Basin Team Meeting.

The Atchafalaya Basin Team met on April 1,1993, to select the candidate projects for the 3 PPL. Member of the team in attendance were: Nancy Powell (USACE), basin captain; Gerry Bodin (USFWS); John Radford (LDNR); and Peggy Jones (NMFS). Other interested parties in attendance were: Greg Linscombe (LDWF), Rodney Adams (Louisiana Sea Grant), and Derhyl Hebert (St. Mary Parish government).

The basin team decided that because of the significant changes to the delta that will take place with the implementation of the Big Island Mining project (XAT-7) and the Atchafalaya Sediment Delivery project (PAT-2) as well as the USACE's plans to relocate the navigation channel to God's Pass, short term projects in the basin should be limited in number and scope. The team agreed to wait before recommending projects with greater scope. The team decided to pursue only two project for the 3rd list: Booster Pumps (XAT-6) and a demonstration project for the Delta Management project (XAT-12), Effective Dredged Material Disposal (XAT-12a). The demonstration project would be small cost $100,000 to $200,000, and involve the use of flexible pipe, or plastic pipe, with marsh buggies to dispose material in shallow water with minimal damage to the existing delta and wetlands. The project can be added to dredging projects in the navigation channel. If successful, the techniques developed could be used throughout coastal Louisiana.

As details of the candidate projects were developed, it became apparent that the features of the demonstration project discussed could be incorporated into other projects, specifically PTE-23/26a/33. Therefore, the demonstration project was not pursued further and the team recommended only XAT-6 to the Planning and Evaluation Subcommittee as a candidate for the 3rd PPL.

Summary of the Teche/Vermilion Basin Team Meeting.

The Teche/Vermilion Basin Team meet on AprIl 13,1993, to select the candidates for the 3rd PPL. Members of the team in attendance were: Dennis 'emcheck (US Geologic Survey), basin captain; Ronny Paille (USFWS); Faye Talbot (SCS); Karl Vincent, John Radford, and Loland Broussard (LDNR); Bob Bosenberg (USACE); and Rick Hartman (NMFS).

Discussion centered around those projects with sufficient information on cost and benefits. A vote was taken (one vote per agency) to rank the eight projects shown in Table 12, Summary of Screening Information Sheets. Each agency assigned a value of 8 to the most favorable project through 1 for the least favorable. This resulted in the following 4 projects being recommended to the Planning and Evaluation Subcommittee as candidates for the 3rd PPL:

TV-4 Cote Blanche Hydrologic Restoration
PTV-19 Cote Blanche (Jaws)/Little Vermilion Bay Sediment Trapping
XTV-25 Oaks Canal/Tigre Lagoon Shoreline Protection
XTV-26 Two Mouth Bayou Freshwater Diversion

Table 11
Summary of Screening Information Sheets
Terrebonne Basin Projects

No.	Project Name	Acres Created	Acres Protected	Acres Enhanced	Total Benefited Aaes	Total cost ($)	Cost per Benefited Acre ($/acre)
TE-7c	Bayou Grand Calliou Management		108	178	286	1388,000	4,900
TE-7d	Lake Bourdeaux Watershed Plan		1,492	4,396	5,888	9,364,000	1,600
TE-9	Bully Camp Marsh Management		43	192	235	638,000	2,700
TE-10 /XTE-49	Grand Bayou Diversion/Cutoff Canal		1,825	3,104	4,929	5515,000	1,100
PTE-10	Point au Fer Spoil Bank Restoration	6		69	75	13,000	200
PTE-15b	Isles Demieres Restoration (Whiskey & Raccoon)	657	954	405	2,016	7,748,000	3,800
PTE-15bi	Isles Demieres Restoration (Whiskey Island)						
PTE-15bii	Isles Demieres Restoration (Raccoon Island)						
PTE-23	Lake Chapeau-Locust Bayou		242	1,189	1,431	1,629,000	1,000
PTE-26a	Lake Chapeau-Locust Bayou		458	1,395	1853	1,998,000	1,100
PTE-26b	Brady Canal		575	548	1,123	2592,000	2,300
XTE-33	Point au Fer Sediment Input	241		210	451	1,190,000	2,600
XTE-43a	Red Mud Demonstration	190			190	2,041,000	10,700
XTE-53	Point au Fer Spray Dredging	n a	na	na	1,500	800,000	500
XTE-54a	Flotant Marsh Creation/Enhancement Demo	na	na	na	na	674,000	na
XTE-54b	Flotant Marsh Creation/Enhancement Demo	na	na	na	na	813,000	na
XTE-64	Avoca Island Diversion	165	248	617	1,038	922,000	900
xTE-65	Spray Dredge West of Locust Bayou	na	na	na	1,300	3318,000	2,600
XTE-66	Sediment Distribution System Demo	20	640	340	1,300	1,228,000	900
xTE-67	East Timbalier Island Restoration	76	58		134	1,606,000	12,000

na--Information not availavble at the time of the basin team meeting

Summary of the Mermentau Basin Team Meeting.

The Mermentau Basin team met on April 15, 1993, for the purpose of selecting projects for the 3rd Priority Project List. Members of the team in attendance were: Joe Conti (SCS), basin captain; Darryl Clark (LDNR); Bob Bosenburg (USACE); Jeanene Peckham (EPA); Ronnie Paille (USFWS); Rick Hartman (NMFS); and Dr. Robert Chabreck, Louisiana State University, academic advisor. Others in attendance were Tina Horn and Miles Hebert, Cameron Parish Police Jury; Karl Vincent, Ralph Libersat, and Carrol Clark, LDNR; Faye Talbot, Ron Marcantel, Mike Nichols, Clay Midkiff, and Marty Floyd, SCS; and Judge Edwards, Vermilion Parish Police Jury.

Basin team members were requested to submit candidate projects to the basin captain two weeks prior to the meeting. Copies of all candidate projects were mailed to the individual team members for review prior to the selection meeting. Thirteen projects and three demonstration projects were submitted for consideration. These projects are shown in the Summary of the Screening Information Sheets, Table 13.

The Mermentau Basin team selected four restoration projects and two demonstration projects as candidates for the 3rd list as per the Planning and Evaluation Subcommittee's request. The selected projects are as follows:

CS-16	Black Bayou Water Control Structure
ME-5	White Lake Shore Protection
ME-7	Deep Lake Marsh Creation & Protection
XME-28	GIWW/Freshwater Bayou Bank Protection
Demonstration Projects	
PME-6	SW Shoreline White Lake
XME-35	Umbrella Bay Shoreline

At the May 11, 1933, Planning and Evaluation Subcommittee meeting, NMFS requested special consideration of XME-22, Pecan Island Terracing; it was subsequently included on the candidate list.

Table 12
Summary of Screening Information Sheets
Teche/Vermilion Basin Projects

No.	Project Name	Acres Created, Restored, Protected	Net Benefited Acres	Estimated Cost ($)	Cost Per Benefited Acre ($)
TV-1	Shark Island Shore Protect/Hyd. Rest	457	591	7559,000	12,790
TV4	Cote Blanche Hyd. Restoration	2,231	4,744	4579,000	965
TV-5/7	Marsh Island Canal Plug/Shore. Stab./Hyd. Rest	512	1,090	2,328,000	2,136
TV-8	Redfish Pt. Shoreline Protect./Hyd. Restoration	58	95	530,000	5,579
TV-10	Weeks Bay/GIWW Shoreline Prot./Hyd. Rest	406	1,422	4,993,000	3311
PTV-19	Cote Blanche (Jaws)/Little Vermilion Bay Sed. Trap	27	505	600,000	1,188
XTV-25	Oaks Canal/Tigre Lagoon Shoreline Protection	120	125	1,069,000	8,552
XTV-26	Two Mouth Bayou Freshwater Diversion	87	162	438,000	2,704

Table 13
Summary of Screening Information Sheets
Mermentau Basin Projects

Project No.	Project Name	Acres Created, Protected,' or Restored	Acres Enhanced	Total Benefited Acres	Total cost ($)	Cost per benefi ted Acre ($/Acre)
CS-16	Black Bayou Water Control St.	115	l,546	1,661	4,600,000	2,800
ME-5	White Lake Shoreline Prot.	39	104	143	650,000	4500
ME-6	Big Burn Marsh Creation (Alt. 1)	24	175	199	981,000	4,900
ME-6	Bi Burn Marsh Creation (Aft. 2)	24	175	199	1/	1/
ME-7	Deep Lake Marsh Creation/Prot	127	399	526	3,600,000	6,800
PME4/7	White Lake Diversion	355	2,011	2,366	4,500,000	1,900
PME-5/6	Grand/White Lake Shoreline Prot	113	17	130	1,080,000	8,300
PME-14	Sawmill Canal	229	257	486	1,100,000	2300
PME-17	GIWW Bank Protection Mermentau R. to North Canal	221	20	241	6,300,000	26,100
XME-19/20	Schooner Bayou Bypass Structure	1/	1/	1 /	1 /	1 /
XME-22	Pecan Island Terracing		-	220	800,000	3,500
XME-28	GIWW Freshwater Bayou Bank Prot	7	40	47	700,000	14,900
XME40	N. Little Pecan Marsh Rest.	117	650	767	2,000,000	2,600
PME-6	SW Shoreline White Lake	39	5	44	100,000	2300
XME-35	Umbrella Bay Shoreline	57	12	75	1 ,000,000	13300
XME-36	Tebo Point Shoreline	9	2	11	200,000	18,200

1/ Information not available

Summary of the Calcasieu-Sabine Basin Team Meeting.

The Calcasieu-Sabine Basin team met on April 15, 1993, to screen projects for the 3rd Priority Project List. Members of the team were: Ed **Hickey (SCS),** basin captain; Bob Bosenburg (USACE); Darryl Clark (LDNR); Jeanene Peckham (EPA); Rick Hartrnan (NMFS); and Ronny Paille (USFWS). Dr. Paul Kemp, academic advisor, was not present. Others in attendance were Ron Marcantel (SCS); Tina Horn, Faye Talbot, and Myles Hebert (Cameron Parish); and Karl Vincent and Carrol rk (LDNR).

About four weeks prior to the team meeting, basin team members were requested to submit candidate projects for the 3rd PPL **A** total of 19 projects were submitted. There were seven duplications, leaving 12 projects as shown on the Summary of Screening Information Sheets, Table 14.

The basin team had been instructed by the Planning and Evaluation Subcommittee to select four candidate projects for the 3rd PPL. The remaining 12 projects were voted on and the four projects submitted for consideration

XCS-47,48i, j, & p	Replace Hog Island, West Cove, and Headquarta Canal Water Control Structures
CS4a	Cameron-Creole Maintenance
CS-11b	Sweet Lake / Willow Lake Shoreline Protection
cs-14	Tripod Bayou Structure

Table 14
Summary of Screening Information Sheets
Calcasiu /Sabine Basin Projects

Project No.	Project Name	Acres Created, Protected, Restored	Acres Enhanced	Total Benefited Acres	Total cost ($)	Cost per Benefited Acre ($/Acre)
CS-4a	Cameron-Creole Maintenance	2,036	10,029	12,065	5400,000	448
CS-5a/12	Sabine Freshwater Intro/GIWW	3,064	1,247	4,311	1,109,000	257
CS-6	Black Lake South Shore Prot.	2		2	27,000	13,500
CS-7	West Black Lake Levee Prot.	120	520	640	743,000	1,161
CS-8	Black Lake North Marsh Mgt.	14	284	298	994,000	3,336
CS-10	Grand Lake Ridge Restoration	672	170	842	277,000	329
CS-11b	Sweet Lake/Willow Lake Rest.	294	4,182	4,476	2,626,000	587
CS-13	Back Ridge Freshwater Introd.		25	27	772,000	28,603
CS-14	Tripod Bayou Structure	5:	139	190	610,000	3,213
CS-15	Boudreaux/Broussard Marsh Creation/Protection	68	228	296	842,000	2,845
XCS-47, 48i,j,&p	Hog Island, W. Cove & Headquaters Canal Structures	706	6,167	6,873	4,696,000	683
xcs-54	Goose Lake Marsh Restoration	19	500	519	552,000	1,064

Planning and Evaluation Subcommittee

The Planning and Evaluation Subcommittee met on May 11, 1993, to hear the recommendations of the basin teams and develop the List of candidate projects for the 3rd Priority Project List. Each basin captain presented the results of his or her team's screening, recommending four projects (in most cases) for inclusion on the candidate list. The subcommittee accepted the recommendations of the basin teams with the exceptions noted in the section "Summary of Basin Team Meetings." Table 15 is the candidate list approved by the subcommittee. The subcommittee also decided to evaluate demonstration projects separately. Each agency would develop fact sheets on their proposed demonstration projects and submit them for consideration at a later date.

The Planning and Evaluation Subcommittee met again on July 13, 1993, to evaluate the proposed demonstration projects. Each agency presented its projects to the subcommittee, outlining the critical project information, including what information would be learned by performing the demonstration and the need for such a project. **A** total of 12 projects were presented, but because of the time constraints in evaluating projects and a previous Task Force decision to limit spending on demonstration projects to approximately $2,000,000 per priority list, the subcommittee limited the number of projects to 5. Each agency ranked the projects, assigning a value of 5 to the most favored project and 1 to the least preferred. "able 16 shows the projects considered and the corresponding ranking as a result of the meeting.

Table 15
Candidate Projects for
3rd Priority Project List

Project No.	Name	Sponsor
XPO-69	Bayou Sauvage National Wildlife Refuge, Bayou Chavee Shore Protection	USFWS
PO-9a	Violet Freshwater Distribution, No Pumps	SCS
PO-15	Alligator Point Marsh Restoration	SCS
XPO-71	MRGO Disposal Area Marsh Protection and Restoration	USACE
XPO-83	Lake Athanasio Spit Marsh Creation	USACE
PBS-6	Grand Bay Crevasse	USACE
BS-5	Bayou Lamoque Outfall Management	scs
BS-4	White's Ditch Outfall Management	scs
BS-3b & 6	Pump Outfall North of Lake Lery	scs
PMR-9b	Pass-A-Loutre Crevasse	USACE
XMR-10	Channel Armor Gap Crevasse	USACE
B A-4c	West Pointe A La Hache Outfall Management	scs
XBA-65a	Restore Marsh Between Bayou Perot and Bayou Rigolets	NMFS
XBA-lc	Grand Pierre Island Restoration	NMFS
XB A-70	Dupree Cut and Bayou DuPont Shoreline Protection	scs
ME-15b 1/	Isles Dernieres Restoration	EPA
PTE-26b	Brady Canal Hydrologic Restoration	scs
TE-lO/XTE-49	Grand Bayou Freshwater Diversion/Cutoff Canal	scs
PTE-23/26a/33	Lake Chapeau-Locust Bayou-Point Au Fer	NMFS
XTE-65	Hydrologic Restoration West of Locust Bayou	NMFS
XTE-67	East Timbalier Island	NMFS
XAT-6	Booster Pumps	USACE
XTV-26	Two Mouth Bayou Freshwater Diversion	scs
TV-4	Cote Blanche Wetland Management	scs
PTV-19	Little Vermilion Bay Sediment Trapping	NMFS
XTV-25	Oaks Canal/Tigre Lagoon Shoreline Protection	scs
CS-16	Black Bayou Water Control Structure	USACE
ME-5	White Lake Shoreline Protection	scs
ME-7	Deep Lake Marsh Creation and Protection	scs
XME-28	GIWW/Freshwater Bayou Bank Stabilization	USACE
XME-22	Pecan Island Terracing	NMFS
XCS-47, 48i 48j, & 48p	Replace Hog Island, West Cove, and Headquarters Water Control Structures	USFWS
CS-4a, 7	Cameron-Creole Maintenance	scs
CS-llb	Sweet Lake/Willow Lake Shoreline Protection	scs
cs-14	Tripod Bayou Structure	scs

I/ At the request of the EPA, project PTE-15b, Isles Dernieres Restoration, was divided into separate projects: PTE-15bi, Whiskey Island Restoration and PTE-15bii, Raccoon Island Restoration.

Table 16
Ranking of Potential Candidate Demonstration Projections for the
3rd Priority Project List
13 July 93

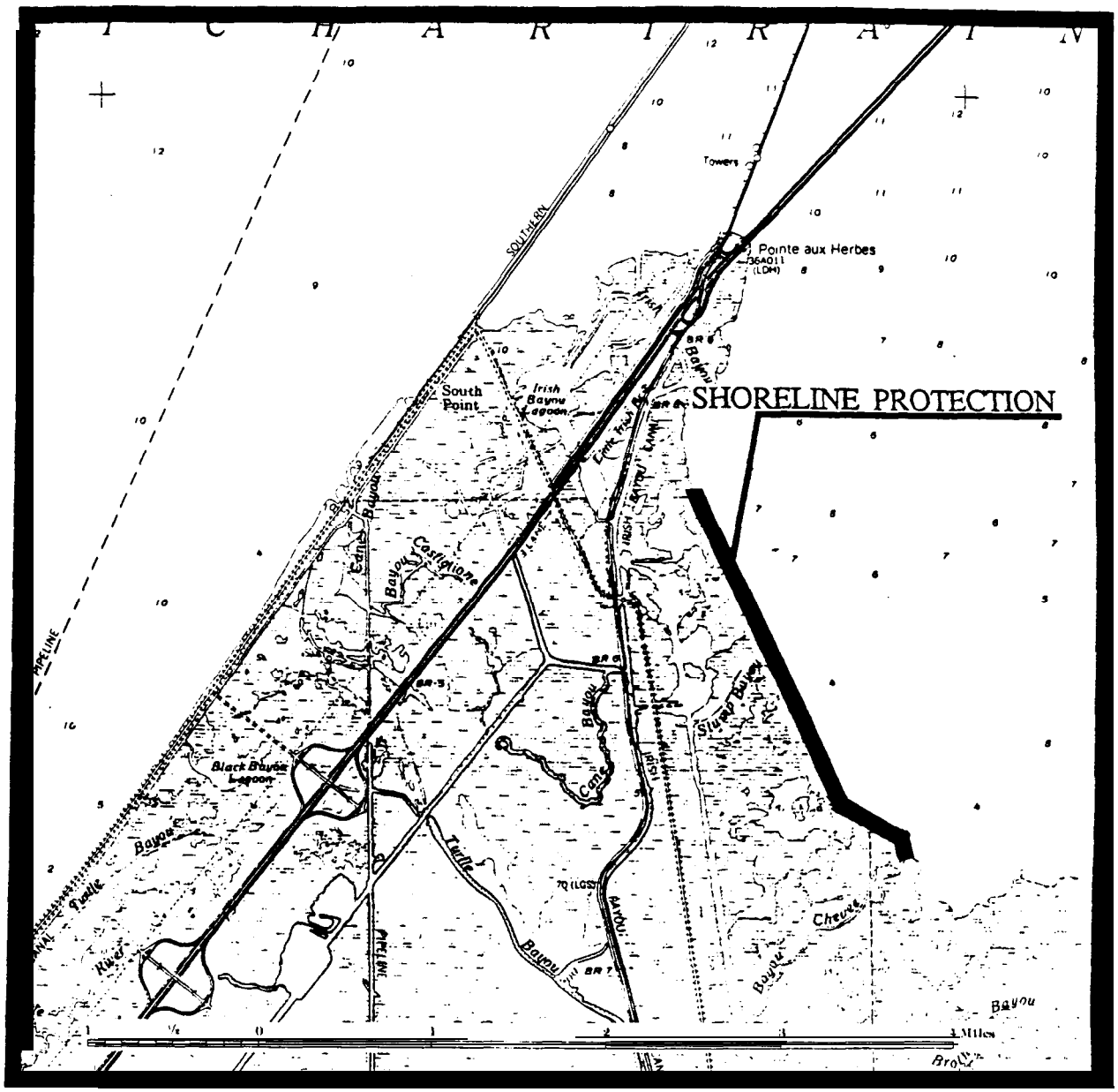
Project No.	Project	Sponsor	Total	Ranking
PBS-13	Oyster Reef Lake Jean Louis Robin	NMFS	6	
BA-15	Lake Salvador Shoreline Protection	NMFS	18	1
PBA-50	Oyster Reef Bay Rambo	NMFS	0	
XTX-39	Oyster Reef Lake Barre	NMFS	0	
TE-54a	Flotant Marsh Creation Canals	SCS	4	
TE-54b	Flotant Marsh Creation Fencing	SCS	17	3
PTE-10	Marsh Rest by Spoil Bank Mgmt	EPA	2	
XTE-66	Sediment Distribution System	EPA	12	4
xl-E-43	Red Mud Coastal Restoration	EPA	18	1
PTV-19	Sediment Trapping W Cote Blanche Bay	NMFS	6	
XME-35	Umbrella Bay Shoreline Protection	SCS	1/	1/
PME-6	SW White Lake Shoreline Protection	SCS	7	5

1/ Withdrawn by SCS
Each agency ranked the demonstration projects in order of preference, 5 being the most preferred and 1 the least preferred.
Total cost of the top 5 demonstration projects is approximately $3,350,000.

Public Input.

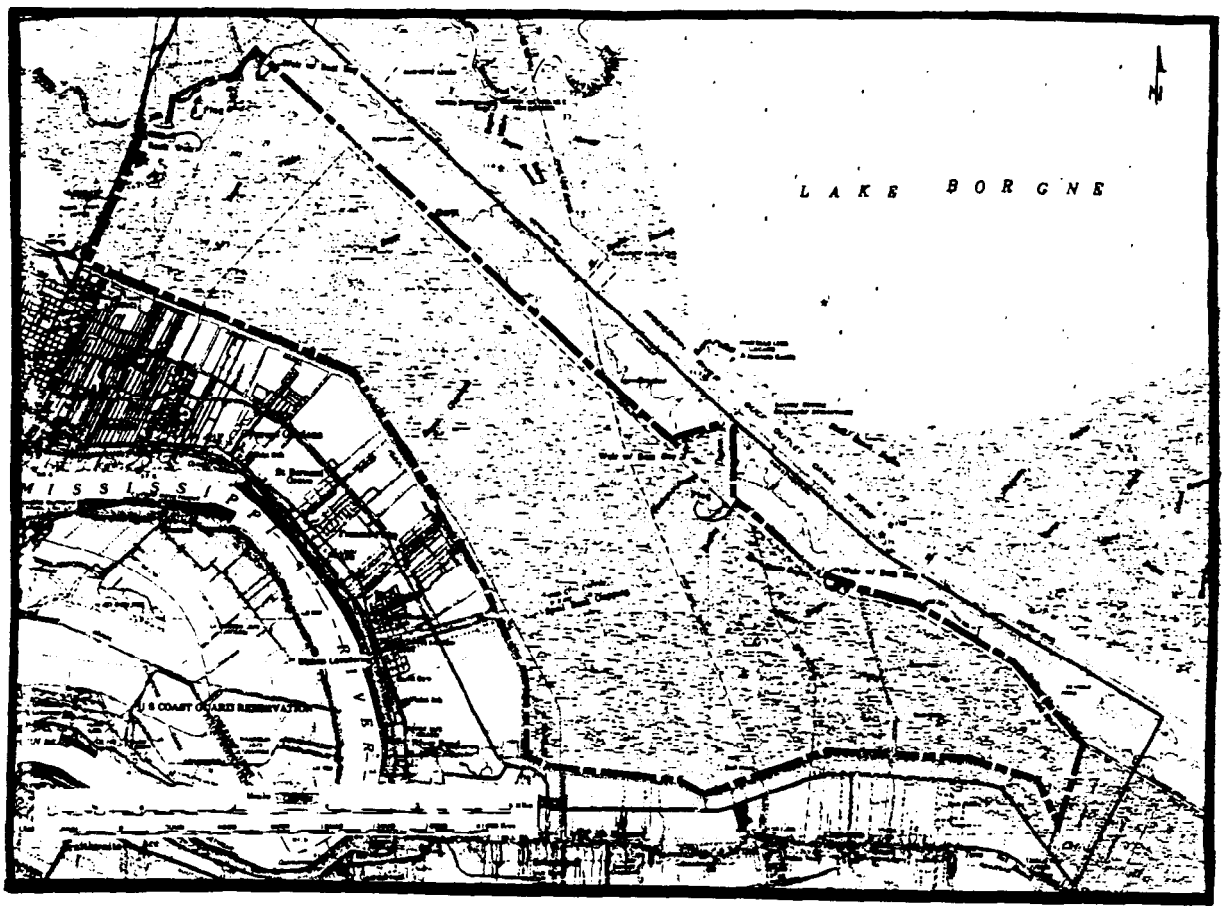
Public meetings-were held following the development of the list of candidate projects for 3rd Priority Project List consideration. The purpose of these meetings was for Task Force representatives to present the candidate projects to the public and to receive comments on the candidate projects. These meetings allowed public input into the selection process prior to detailed evaluation of the projects and final selection of the 3rd Priority Project List. Meetings were held at six locations across coastal Louisiana. Announcements were made in the local media at each location and by mass mailing, using lists established during the scoping and plan formulation phases of the process, as well as lists developed as a result of previous studies. The dates and locations of the public meetings for specific hydrologic basins were given in the Public Involvement section of this report.

Descriptions of Candidate Projects.



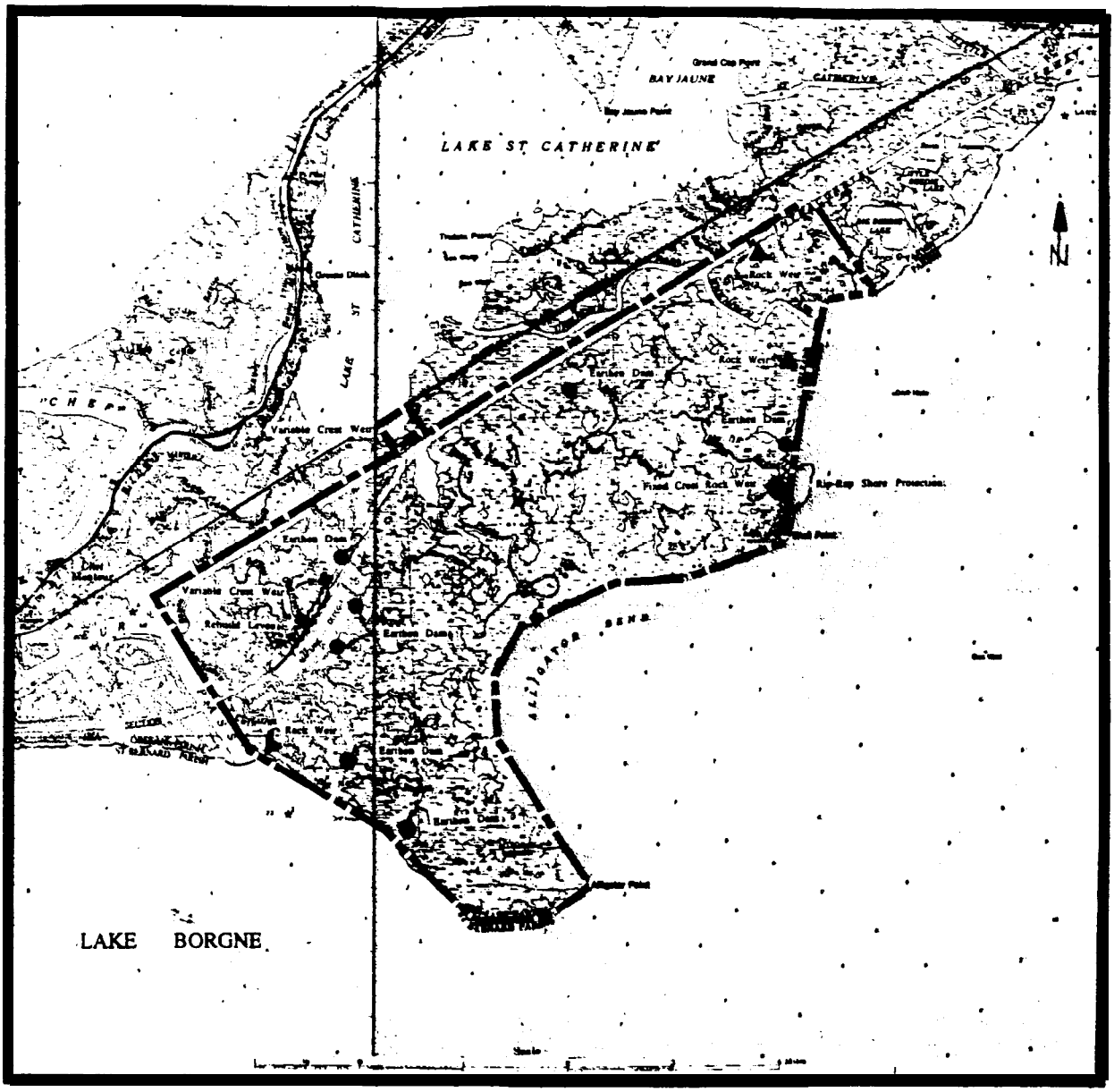
Bayou Sauvage National Wildlife Refuge, Bayou Chevee Shore Protection (XPO-69)

The project area is a 5,100-acre brackish marsh located in Orleans Parish. Wave action from Lake Pontchartrain is eroding the shoreline of the refuge at a rapid rate (25 feet per year from 1990 to 1992). In addition, if the thin strip of land between the ponds and Lake Pontchartrain erodes away, erosion around a pond protected by the lake shoreline will increase substantially. A 22,000-foot segmented breakwater will be constructed along the Lake Pontchartrain shoreline. The project will provide 150 average annual habitat units (AAHU' s) at a cost of $2,989,000. The project's cost effectiveness is $l,856/AAHU.



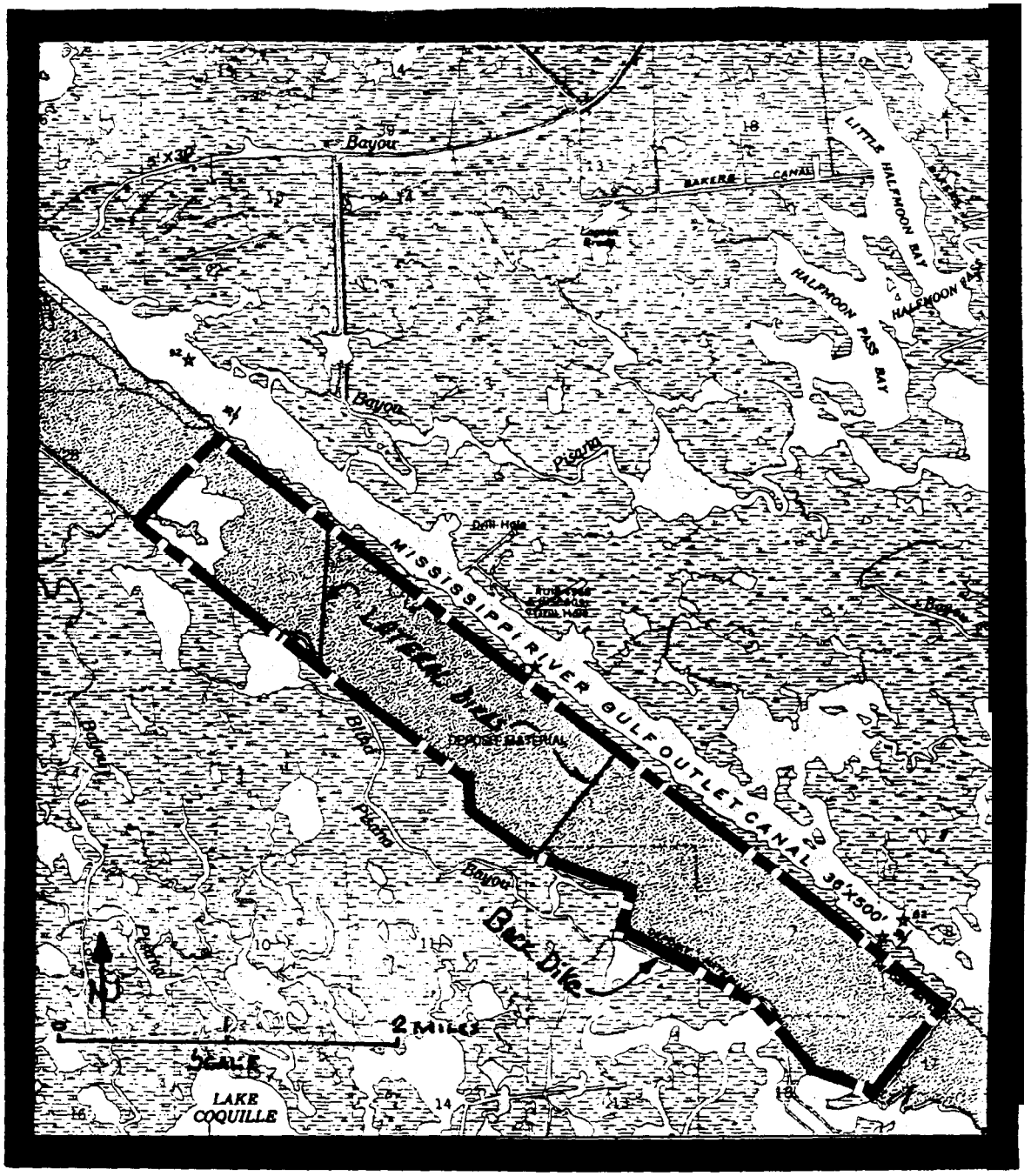
Violet Freshwater Distribution (PO-9a)

This 18,000 acre brackish marsh project area is located in St. Bernard Parish between the Mississippi River Gulf Outlet MRGO) and the back protection levee extending from Bayou Bienvenue to Bayou Verret Currently, due to a lack of water control, the project area is subject to rapid and extreme fluctuations in salinity and water levels th a tresult in reduced marsh productivity. The object of the project is to manage the freshwater inflow from the existing Violet Siphon and reduce saltwater intrusion from the MRGO. This will be accomplished by gapping the spoil bank along the Violet Canal and by plugging and constructing weirs in bayous and pipeline canals. The project will provide 38 average annual habitat units (AAHU's) at a cost of $1,82l,000. The project's cost effectiveness measured in average annual cost per AAHU is 3,305.



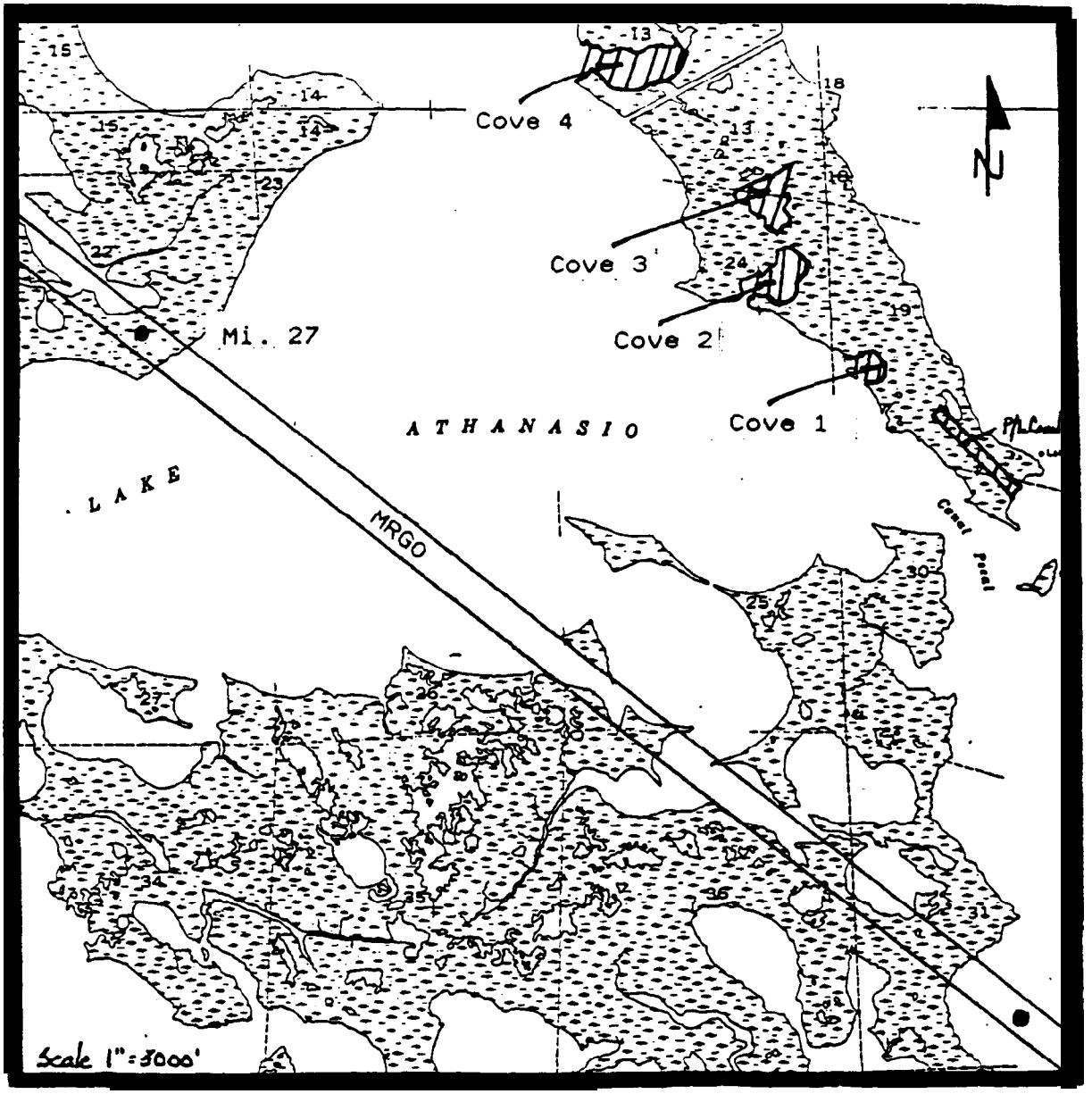
Alligator Point Marsh Management (PO-151

The project, located in Orleans Parish, will manage approximately 12,000 acres of brackish marsh. The principal hydrologic changes in the area involve restoring spoil banks on the alternate route of the GIWW and plugging breaches and installing weirs in channel intersecting the GIWW and the GIWW alternate route as well as other bayous. Management of the area will insure retention of the freshwater in the marshes. Shoreline stabilization along Lake Borgne will prevent breaches and blow outs of shallow ponds adjjt to the lake. The project will provide 59 average annual habitat units (AAHUs) at a cost of $1,927,000. The project? cost effectiveness measured in average annual cost per AAHU is 2,608.



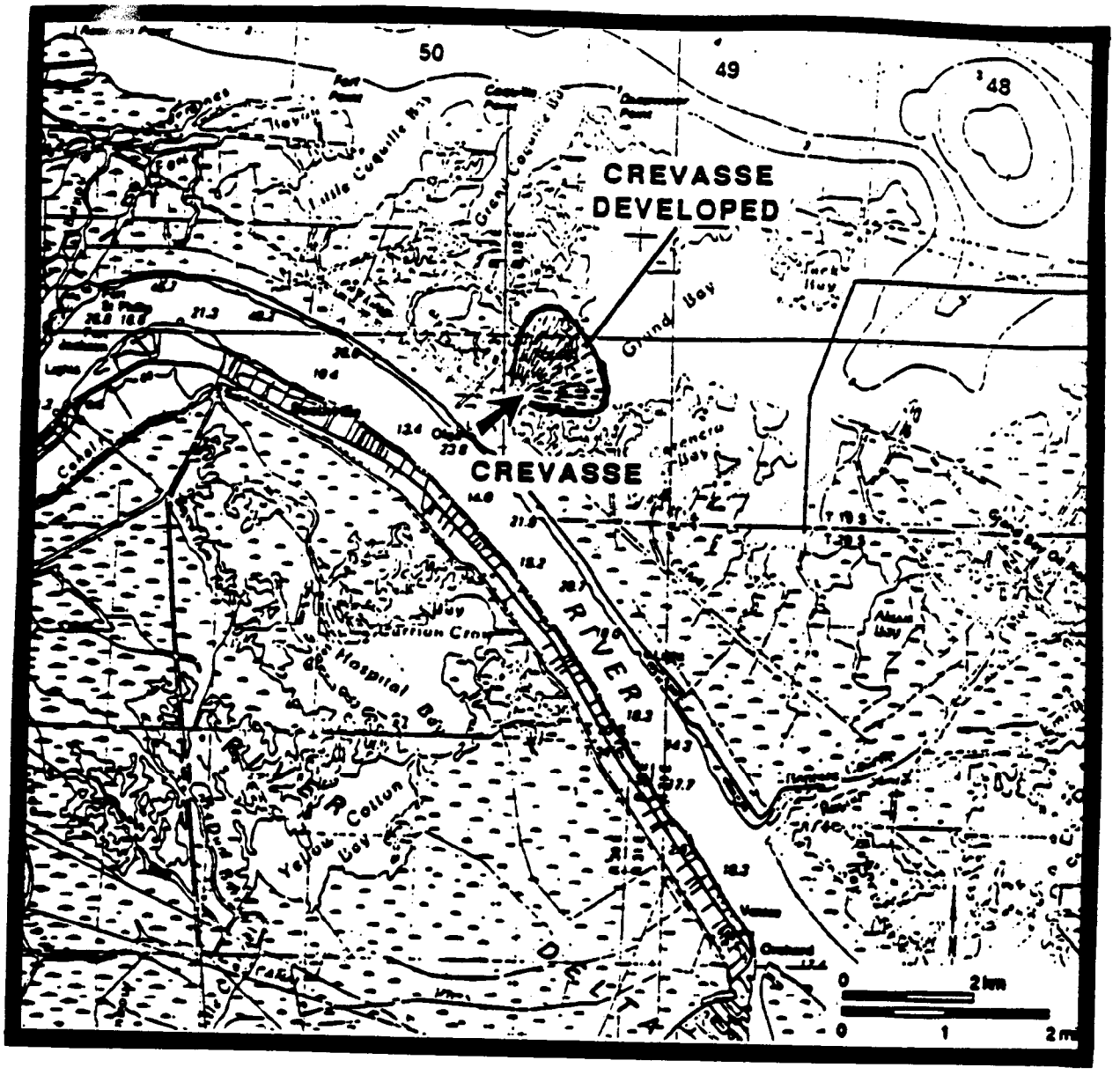
Mississippi River Gulf Outlet (MRGO) Disposal Area Marsh Protection (XPO-71)

The project is located in St. Bernard Parish on the existing south bank disposal area for the **MRGO, south** of the La Loutre Ridge, from approximate mile 36.0 to mile 30.0 along the MRGO. The project area consists of a 4,000-foot-wide diked disposal area originally utilized for placement of dredged material during construction of the MRGO in the early 1960's During maintenance dredging operations, only the 2,000 feet nearest the waterway has been used. The rear, or back, 2,000 feet has reverted to a high fresh marsh, especially south of the La Loutre Ridge. This wetland area is extremely valuable for waterfowl. The project, repairing the original earthen dikes along the interior (lateral) and rear of the disposal areas south of the La Loutre Ridge, would prevent the perched marshes from draining, thus preserving over 885 acres of valuable wetland. The objective of the project is to protect and preserve vegetated wetlands by repairing the lateral and rear dikes of the MRGO disposal areas. The project will provide 435 average annual habitat units (AAHU's) at a cost $512,000. The project's cost effectiveness is $99/AAHU.



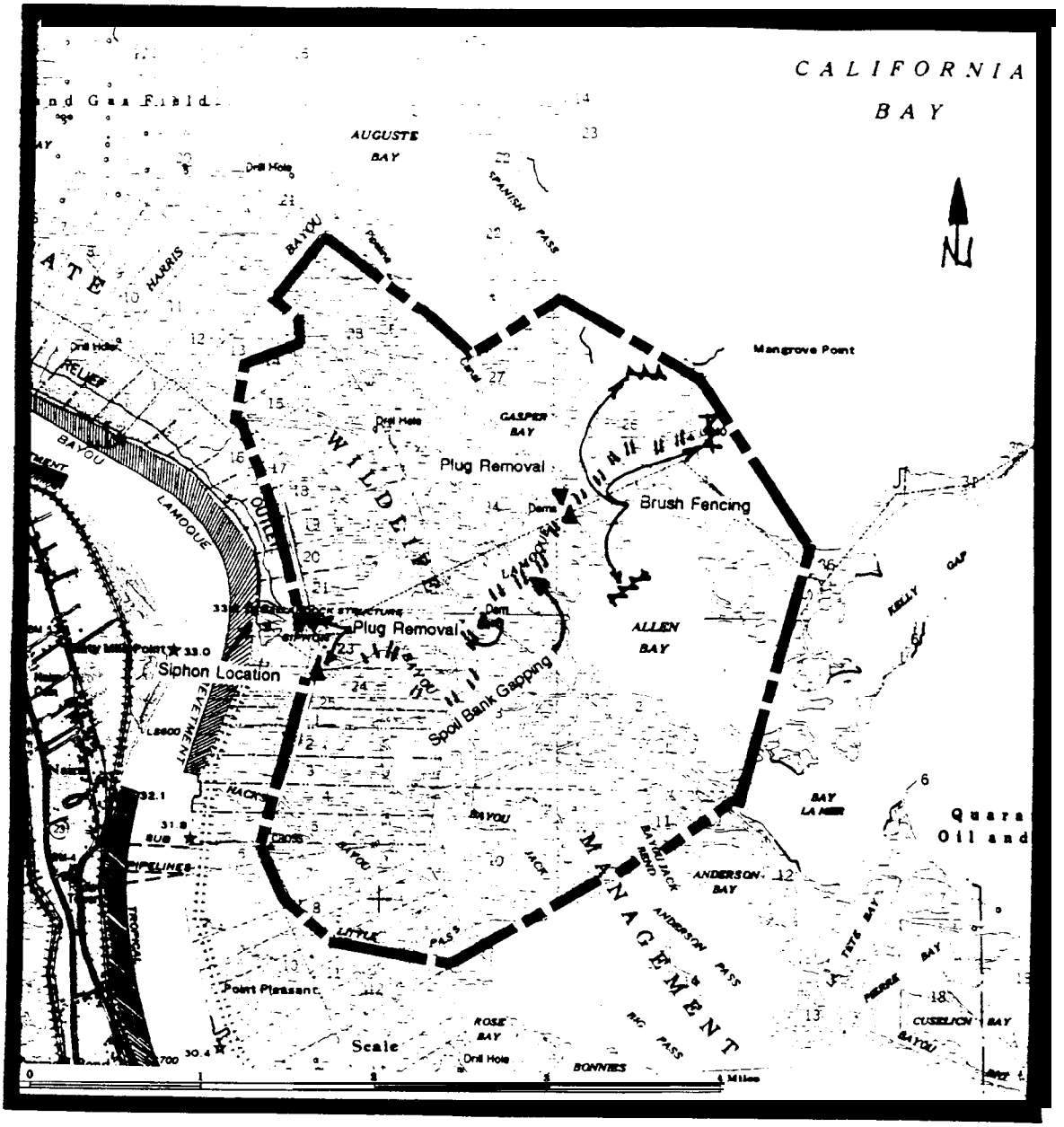
Lake Anthanasio Spit Marsh Creation (XPO-83)

The project is located on the eastern shore of Lake Athanasio in St. Bernard Parish. During the period between 1974 and 1983, land loss in the area of the spit was 50 percent per year. The object of the project is to preserve the spit by utilizing dredged material from maintenance of the Mississippi River Gulf Outlet (MRGO) Approximately 1,400,000 cubic yards of material will be dredged from the **MRGO** and pumped 2 miles to fill shallow ponds and a pipeline canal. The project will create over 100 acres of marsh and provide 54 average annual habitat units (AAHU's) at a cost of $1,040,000. The project's cost effectiveness is $l,869/AAHU.



Grand Bay Crevasse (PBS-61

The project is located in the Jurjervich Canal near Mississippi River mile 16.3 AHP in Plaquemines Parish. **The object of the project is to create, restore and protect wetlands in the Grand Bay area by** removing a rock dike which isolates the Jurjervich Canal from the river and allowing sediment-laden Mississippi River water to flow into the area and create a delta splay. In addition to the removal of approximately 1,500 tons of rock, three pipelines will be relocated. The project will provide 155 average annual habitat units (AAHU's) at a cost $1,777,000. The project's cost effectiveness is $1,133/AAHU..

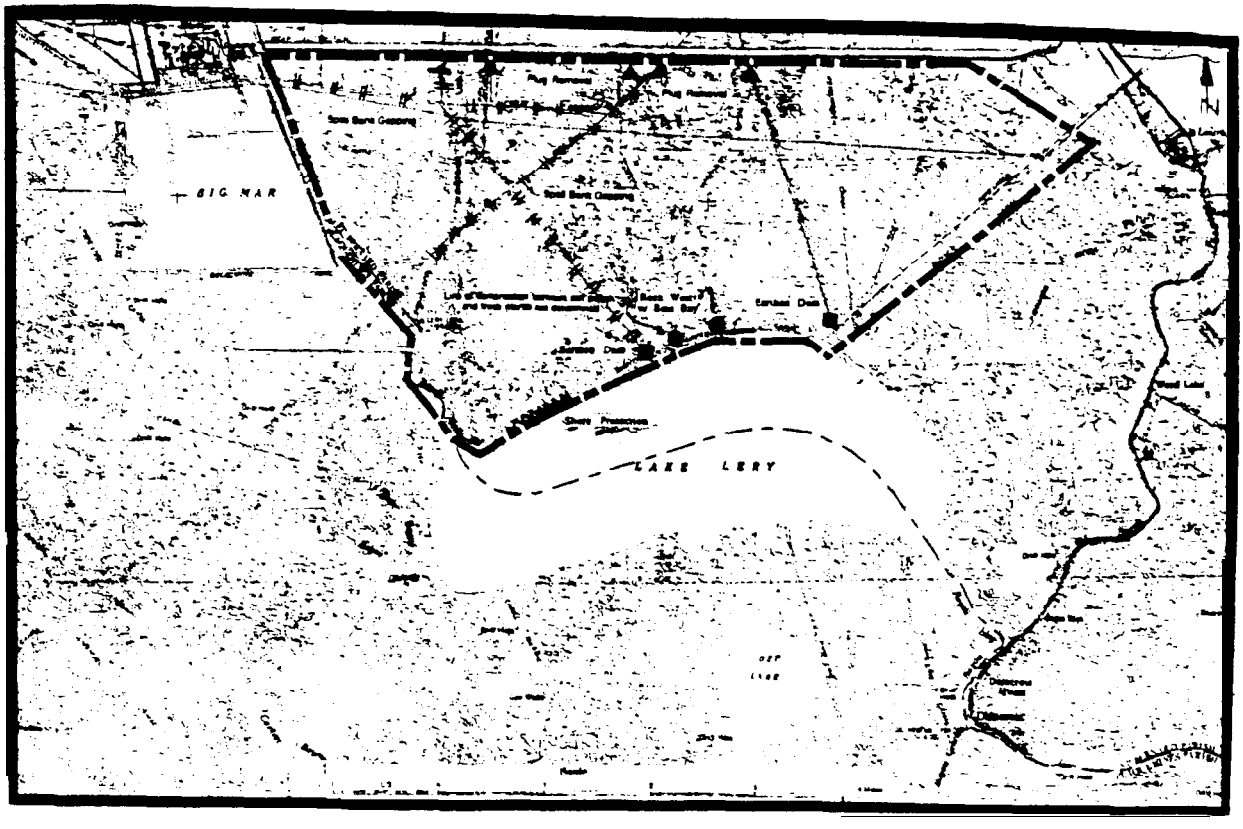


Bayou Lamoque Outfall Management (BS-5)

Located on the east bank of the Mississippi River across from the town of Narin in Plaquemines Parish, the existing Bayou Lamoque diversion consists of four 10- by IO-foot and four 12- by 12-foot box culverts. The structures are operated by the Louisiana Department of Wildlife and Fisheries and are open between the months of January and August. This project calls for the management of an approximately 6,300-acre saline marsh outfall area. The plan will use spoil bank gapping, brush fencing, and plug removal to more effectively distribute the diverted water. The project will provide 106 average annual habitat units (AAHU's) at a cost of $534,000. The project's cost effectiveness measured in average annual cost per AAHU is 357.

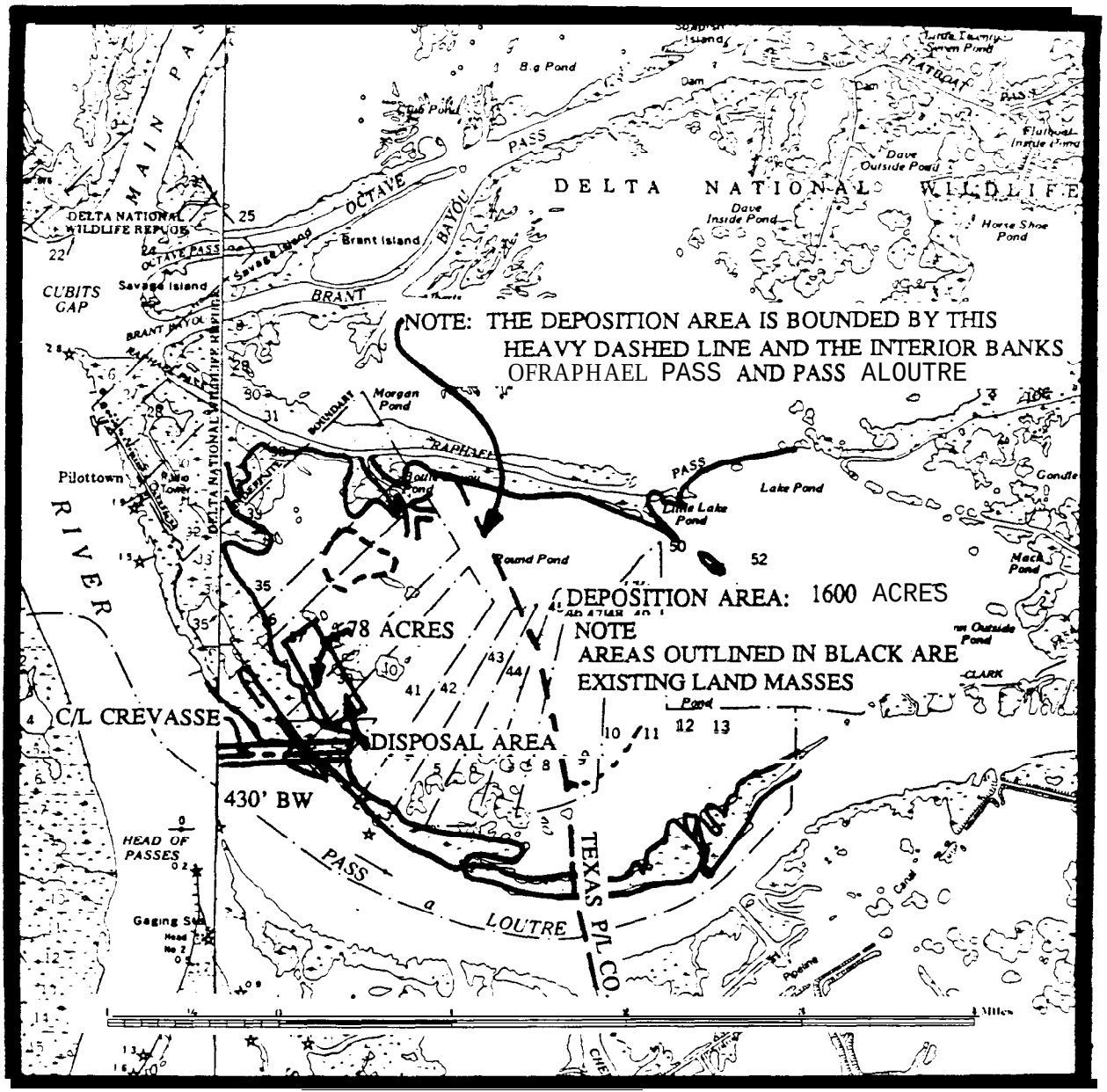
White's Ditch Outfall Management (BS-4a)

The project is located on the east bank of the Mississippi River between the communities of Belair and Carlisle. The existing siphon (two 50-inch diameter pipes) discharges a maximum of 250 cfs during normal high river stages through the Belair Canal into River aux Chenes. The objective of this project to manage the outfall area between the Mississippi River levee and River aux Chenes. Management of the outfall will be accomplished by widening existing ditches, spoil bank gapping, and constricting River aux Chenes with a rock weir. The project will provide 68 average annual habitat units (AAHU's) at a cost of $756,000. The project's cost effectiveness measured in average annual cost per AAHU is 781.



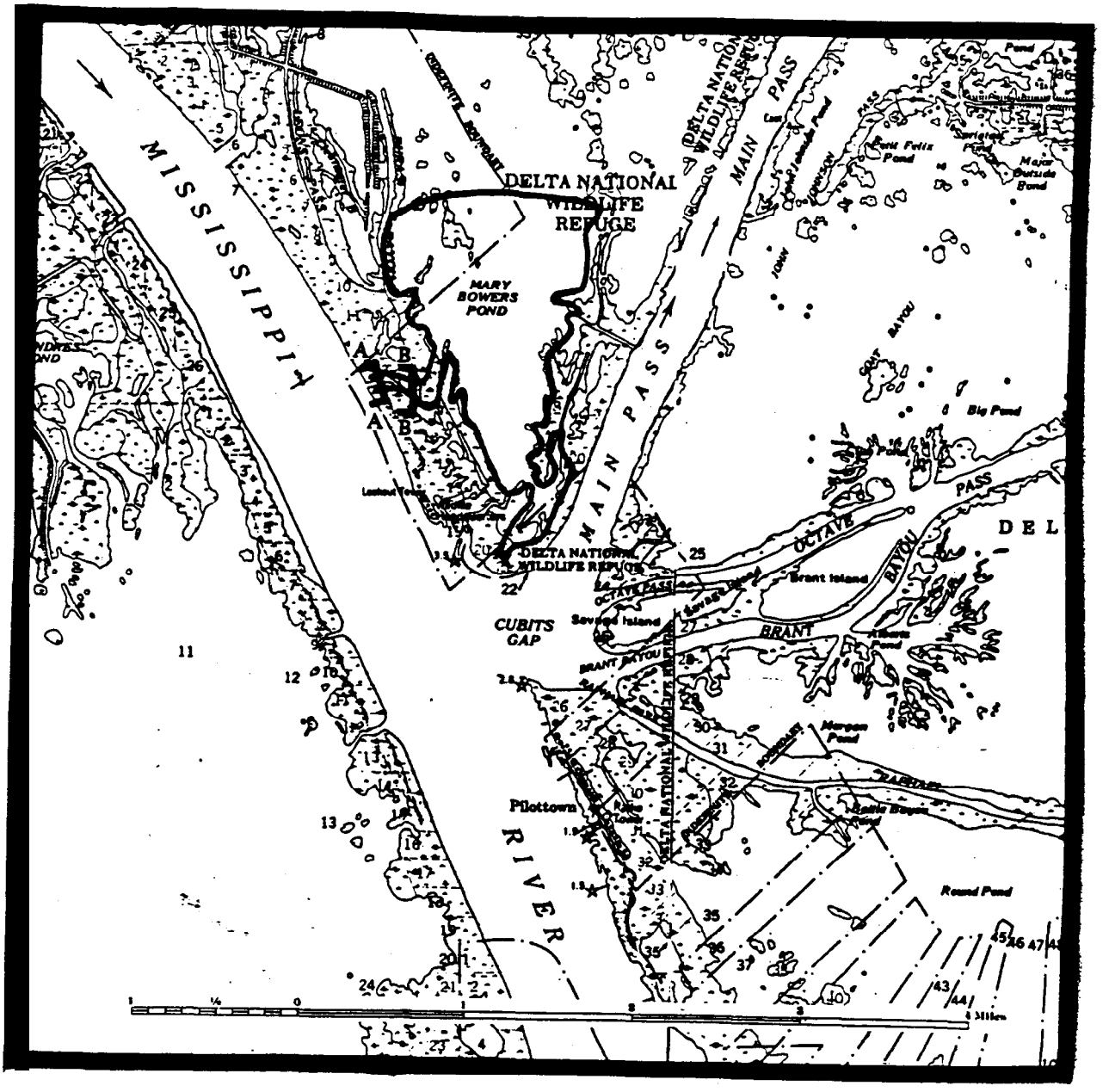
Pump Outfall Management North of Lake Lery (BS-6)

This approximately 12,000-acre brackish marsh project area is located immediately east of Big Mar. The project objective is to manage the outfall of a proposed pumping station to be constructed by the Lake Borgne Levee Board. The outfall management plan will effectively distribute the freshwater by using spoil bank gapping, removing in existing borrow canals, and constructing weis, earthen dams, and rip rap protection along a critical eroding shoreline of Lake kuy. The project would contribute 1,000,000 toward construction of the pumping station. The project will provide 50 average annual habitat units (AAHU's) at a cost of $3,039,000. The project's cost effectiveness measured in average annual cost per AAHU is 5,070.



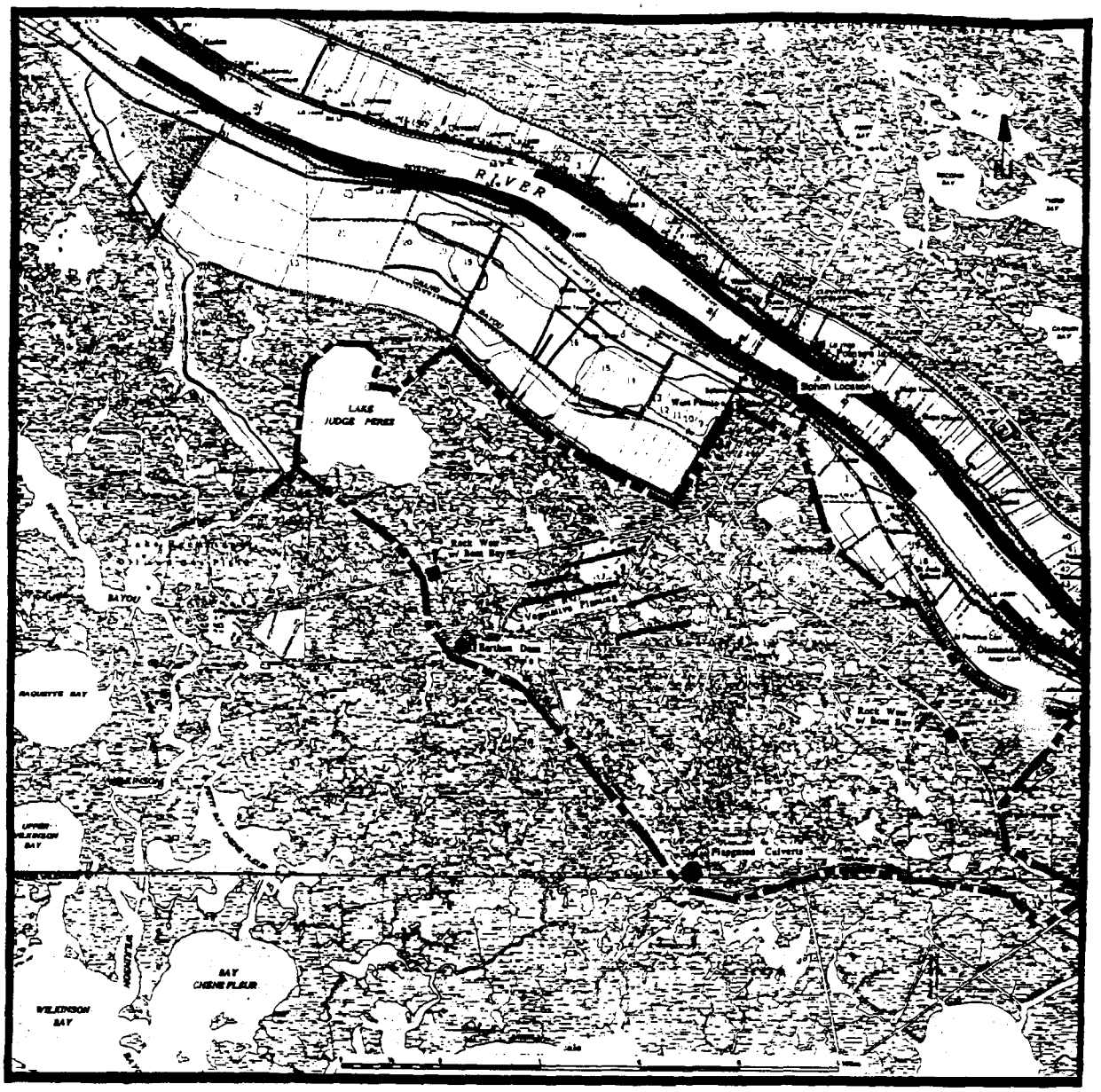
Pass a Loutre Crevasse (PMR-8/9a)

The project is located on Pass a Loutre in the Mississippi River delta in Plaquemines Parish. The object of the project is to create wetlands by constructing a crevasse (430-foot bottom width at elevation -6 NGVD) with a design flow of 2,500 cubic feet per second. The freshwater and sediments diverted into the shallow open water of the area will create 800 acres of emergent marsh over the 20-year project life and will provide 455 average annual habitat units (AAHU's) at a cost of $2,858,000. The project's cost effectiveness is $439/AAHU.



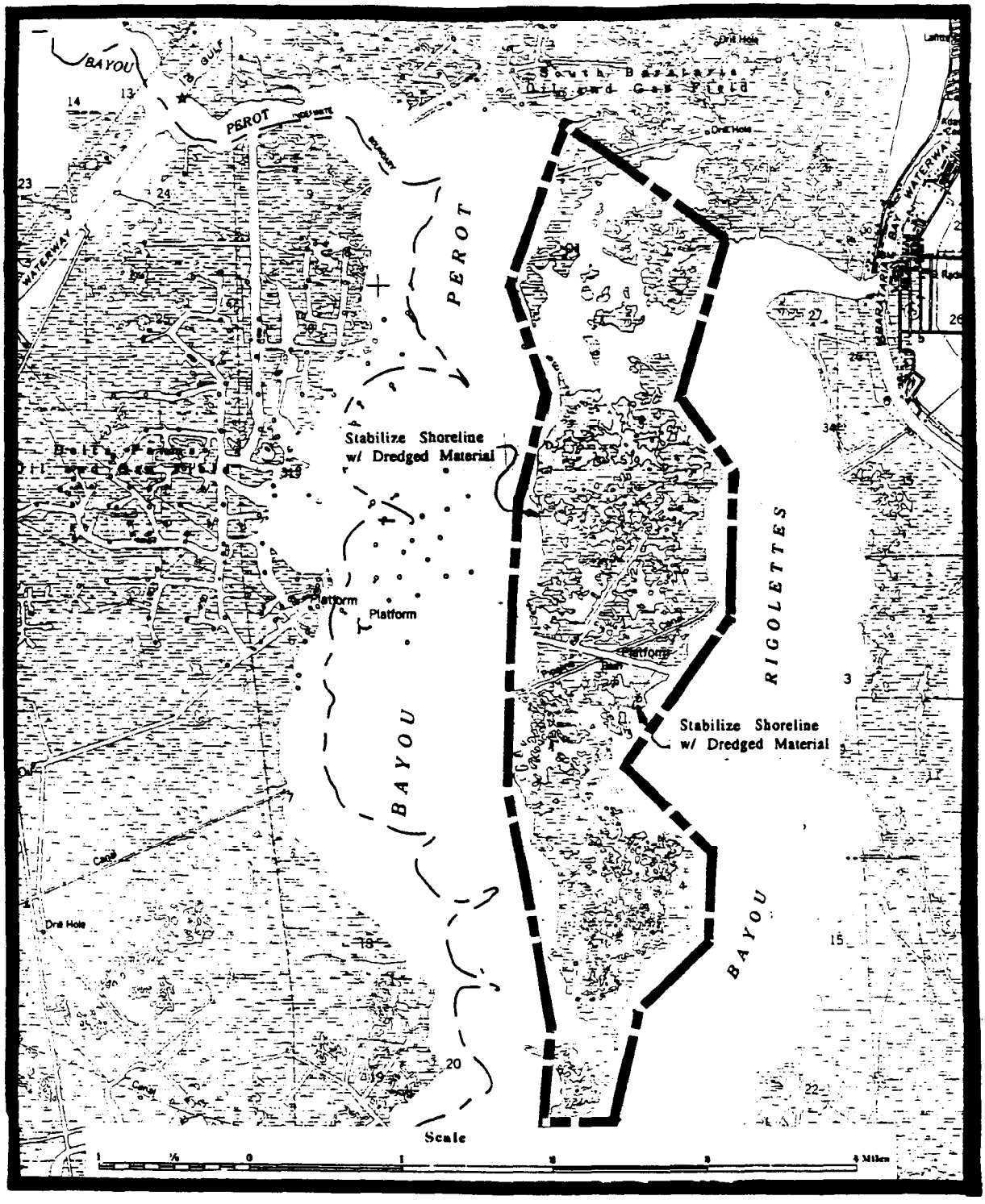
Channel Armor Gap Crevasse (XMR-10)

The project is located in the Mississippi River delta in Plaquemines Parish on the left descending bank of the river at approximate river mile 4.7 AHP. By deepening the invert of the existing gap in the channel bank armor, freshwater and sediment will be introduced into a 1,500-acre area at a rate of 2,500 cubicfeetpersecond. Over the 20 year project life, 800 acres of emergent marsh will be created. The project will provide 234 average annual habitat units (AAHU's) at a cost of $808,000. The project3 cost effectiveness is $286/AAHU.



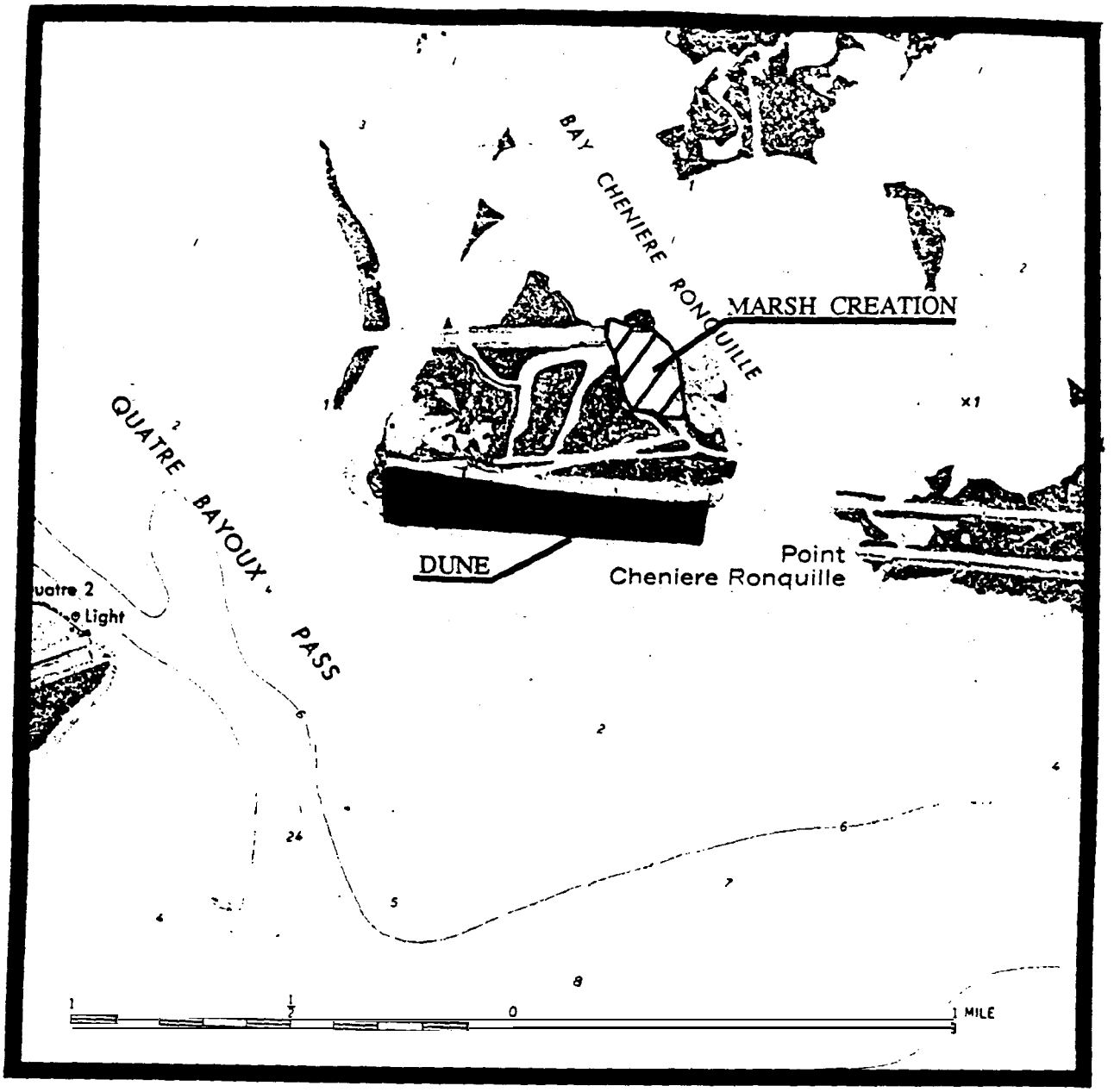
West Pointe a la Hache Outfall Management (BA-4c)

This project will manage the outfall of the existing eight 72-inch diameter siphons located on the west bank of the Mississippi River in Plaquemines Parish. The siphons, which became operational in April 1992, have a maximum discharge of 2,100 cfs. This project will insure that the diverted water will pass through existing marshes for maximum retention. The outfall management plan calls for constructing two rock weirs with boat bays, an earthen plug, four 48-inch flapgated culverts, and approximately 35 miles of vegetative plantings. The project will provide 429 average annual habitat units (AAHU's) at a cost of $881,000. The projects cost effectiveness measured in average annual cost per AAHU is 140.



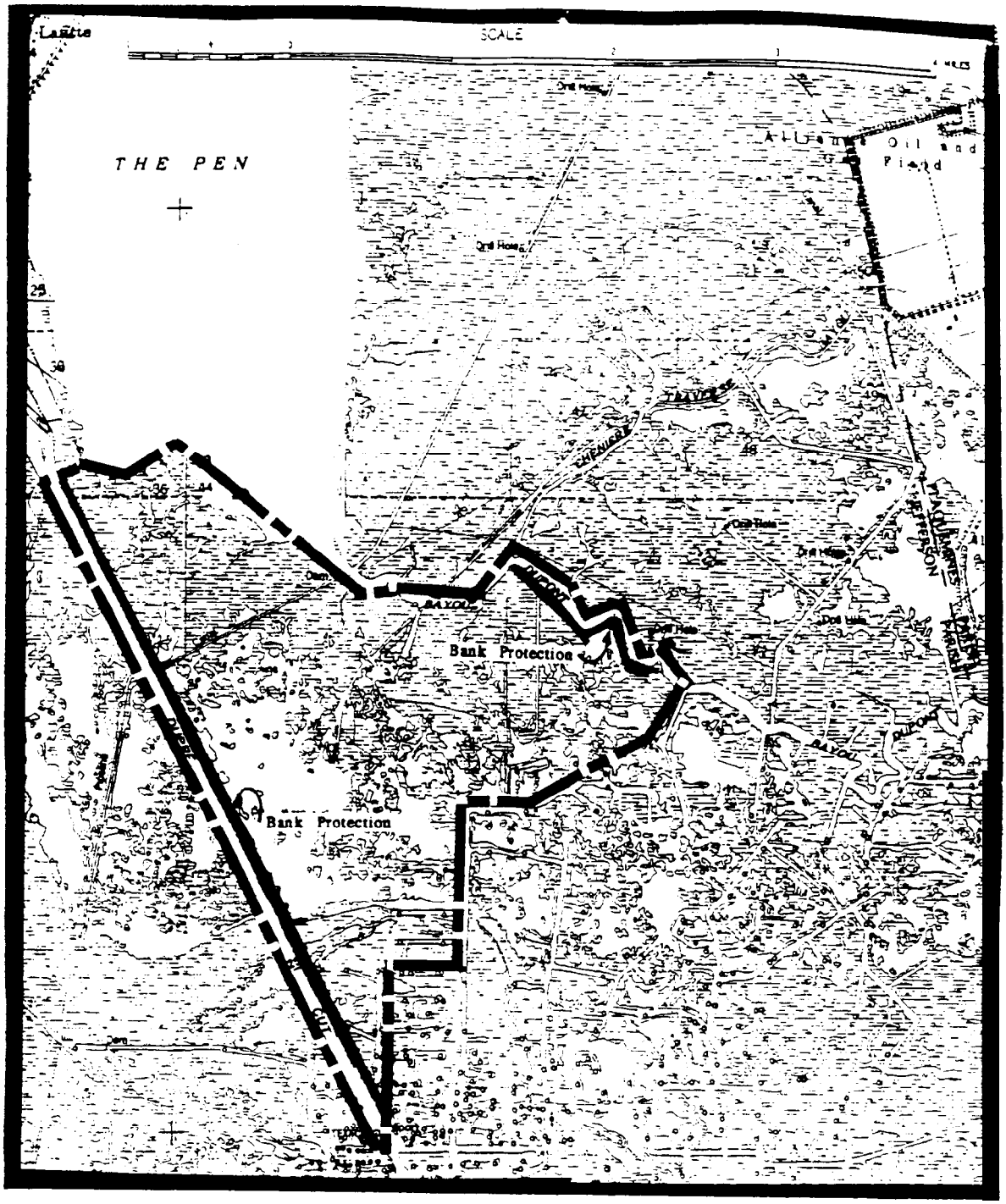
Restoration of Bayou Perot/Rigolettes (XBA-65a)

The project area, located in Jefferson Parish, covers about 3,800 acres on a peninsula between Bayous Perot and Rigolettes, and consists of equal amounts of brackish marsh and open water. The peninsula suffers heavily from subsidence and shoreline erosion. The project involves spraying material dredged **from the adjacent bayous over a 250-foot width along the shoreline.** Much **of this material will be moved inland as the shoreline erodes over time. The project will produce 498 average annual habitat units (AAHU's) at a cost of $1,835,000; its effectiveness is estimated at $380/AAHU.**



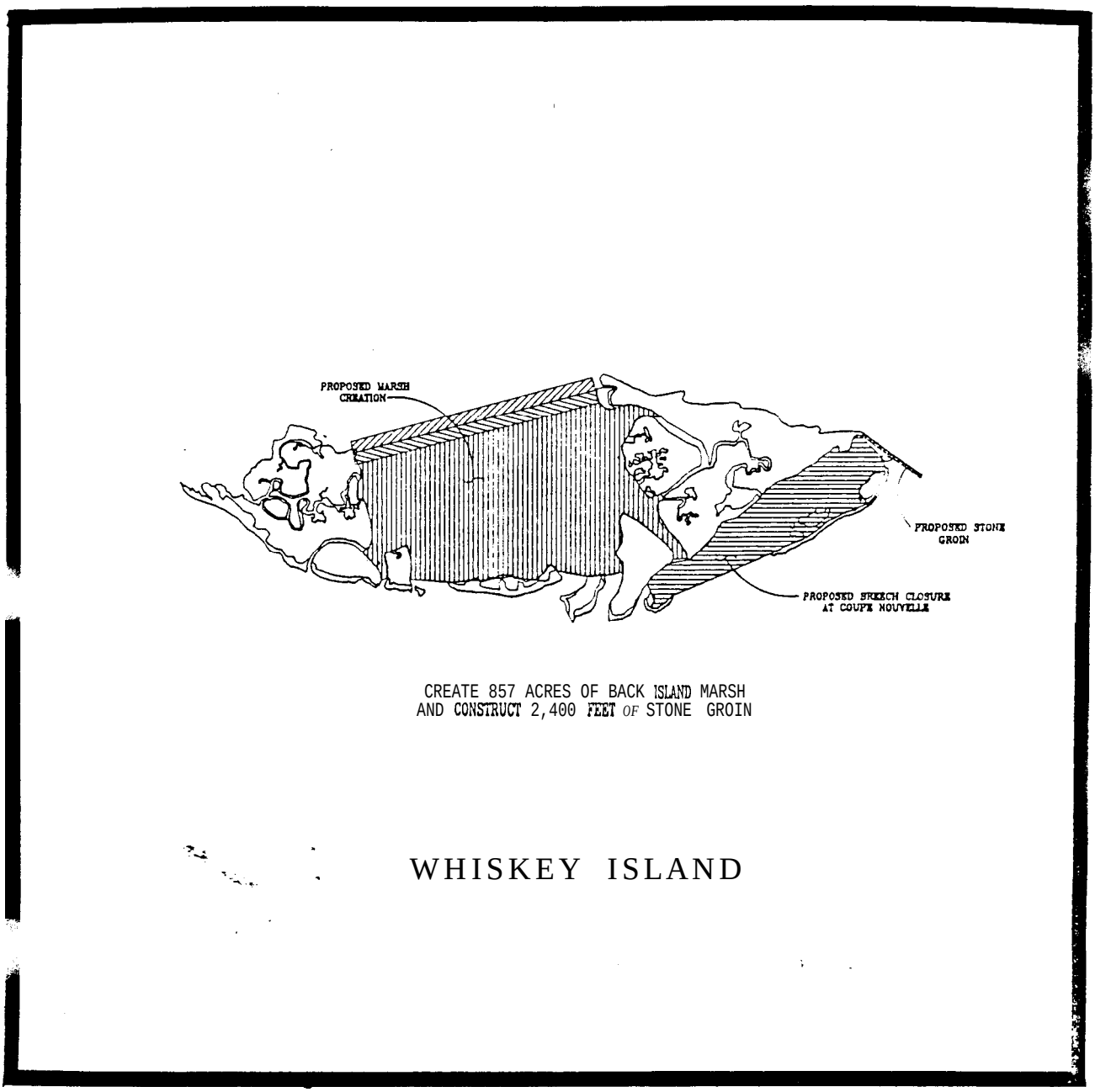
Grand Pierre Island Restoration (XBA-lc)

Grand Pierre Island is a 140 acre barrier island located in Plaquemines Parish. The island has moved northward and eastward while accreting a spit on the northeast side since 1978. In order to increase the life of the island, dredged material will be used to increase the island's elevation to 6 feet NGVD. In addition, **80** acres of marsh will be created in the shallow bay area on the back side of the island. The project will provide 46 average annual habitat units (AAHU's) at a cost of $3,301,000. The project's cost effectiveness is $7,441 / AAHU.



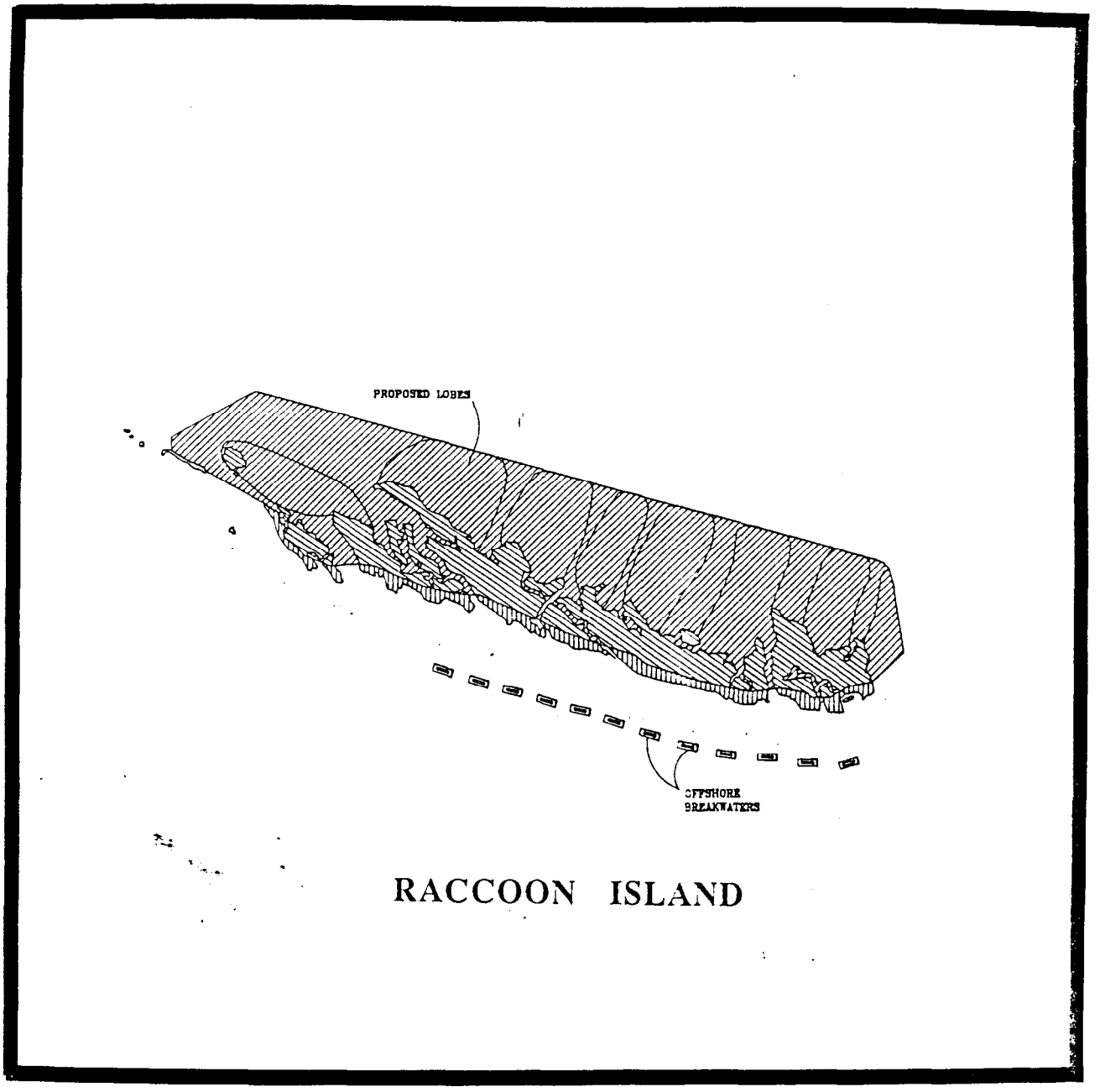
Dupree Cut/Bayou DuPont Shoreline Protection (XBA-70)

This 4,000 acre brackish marsh project area is located in Jefferson Parish. The project will protect the eroding bank long the Dupree Cut by constructing approximately 23,000 feet of riprap protection and restoring about 6,000 feet **of natural overflow bank** along Bayou Dupont. The Wetland Value Assessment determined that the project decreased the marsh productivity. The approximate cost of the project is $4255,000.



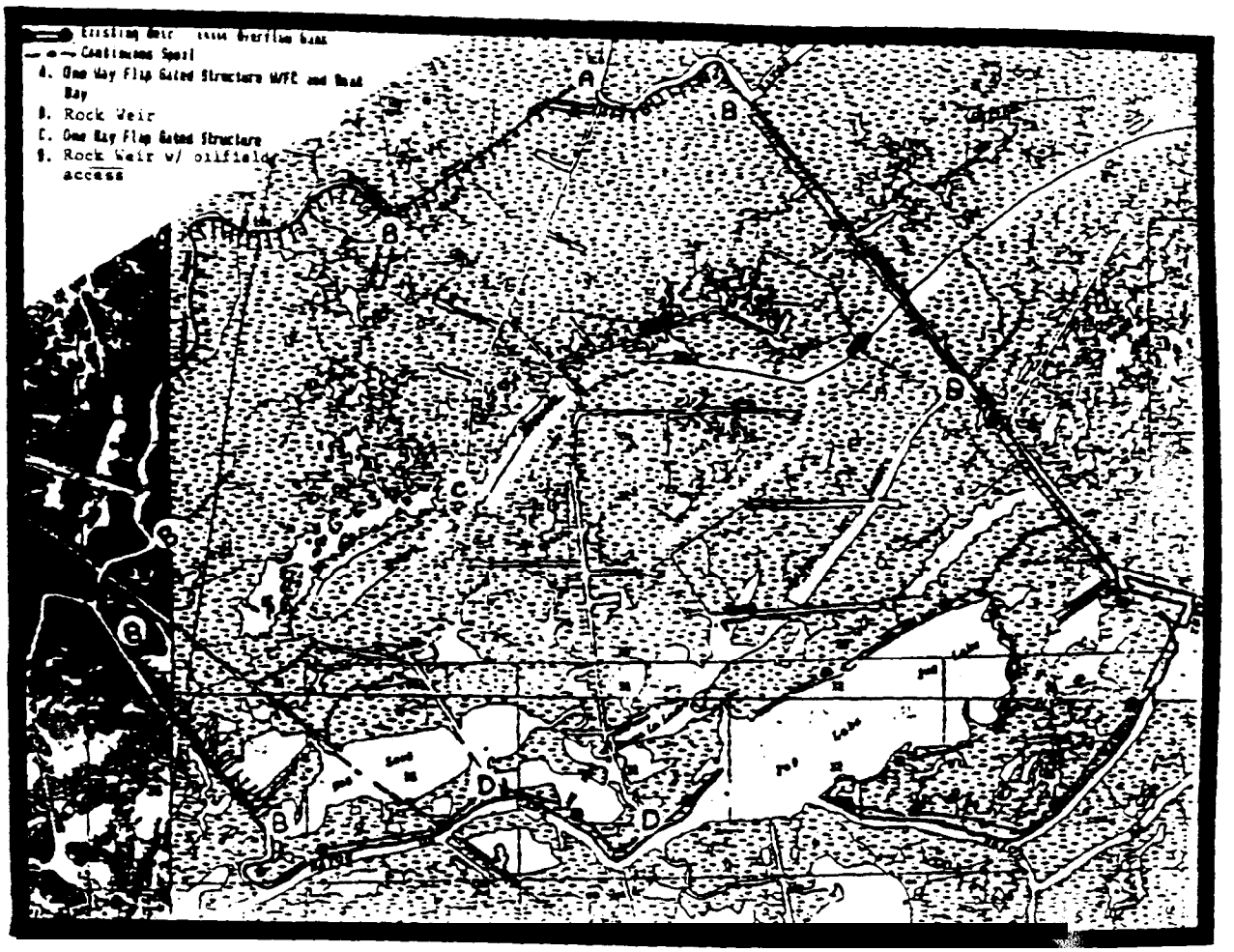
Whiskey Island Restoration (PTE-15bi)

The project is located on Whiskey Island, which is part of the Isles Dernieres chain of barrier islands in Terrebonne Parish. The rapid erosion and breaching of the island reduces its effectiveness in preventing storm surges from reaching lands adjoining the estuary, opens up bay areas to direct wave attack from the Gulf of Mexico, and increases the frequency and residence time of saline water incursions and the impact of tidal cycles. The result is an accelerated conversion of estunrine areas to a less productive open gulf habitat. On Whiskey Island, 657 acres of back island marsh will be created and a 2,400-foot stone groin constructed on the east end of the island. The project will provide 549 average annual habitat units (AAHU's) at a cost of $4844,000. The project's cost effectiveness is $921/AAHU.



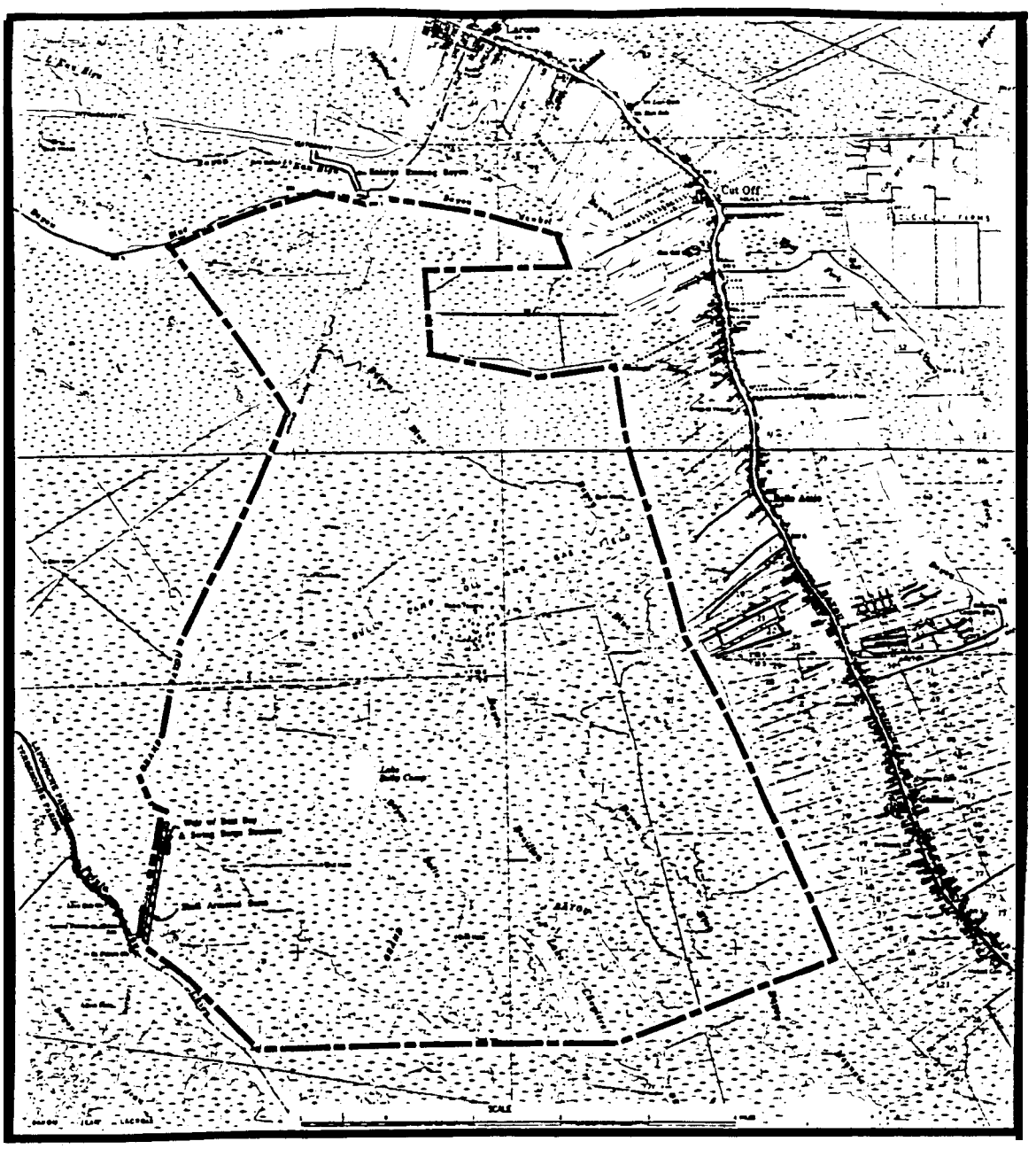
Raccoon Island Restoration (PTE-15bii)

The project is located on Raccoon Island which is part of the Isles Demieres chain of barrier islands in Terrebonne Parish. The rapid erosion and breaching of the island reduces its effectiveness in preventing storm surges from reaching lands adjoining the estuary, opens up bay areas to direct wave attack from the Gulf of Mexico, and increases the frequency and residence time of saline water incursions and the impact of tidal cycles. The result is an accelerated conversion of estuarine areas to a less productive open gulf habitat. The project calls for constructing one mile of **segmented** offshore breakwater and placing 840,000 cubic yards of dredged material on Raccoon Island. The project will provide 53 average annual habitat units (AAHU's) at a cost of $3,325,000. The project's cost effectiveness is $6,492/AAHU.



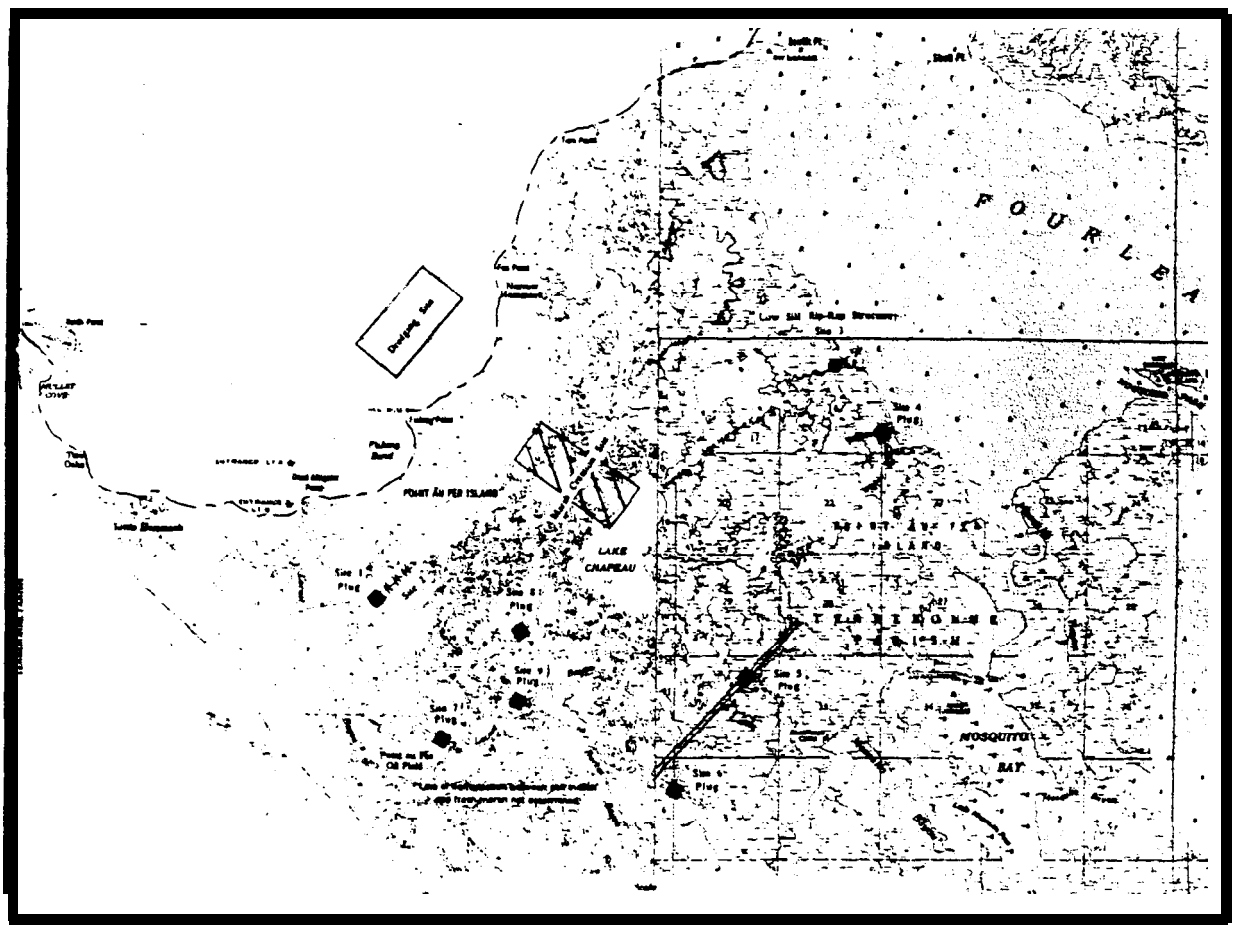
Brady Canal Hydrologic Restoration (PTE-26b)

This 7,700-acre project area, located in Terrebonne Parish, consists of fresh, intermediate, and brackish marsh. The objective of the project is to maintain the marshes by enhancing freshwater, sediment, and nutrient delivery into the fragile, highly fragmented transitional **area** between the fresh and estuarine zones. Three 60-inch flapgated structures will be installed at the existing Brady Canal structure. To facilitate overbank flow, 9,600 feet of bank modification and rock weirs will be constructed. In the lower portion of the project area, 21,500 feet of bank will be maintained and three outlets will be sized and armored with rock to accommodate oil field navigation and tidal exchange. The project will provide 337 average annual habitat units (AAHU's) at a cost of $4,718,000. The project's cost effectiveness measured in average annual cost per AAHU is 1,017.



Grand Bayou/GIWW Diversion (TE-l0/XTE-49)

This intermediate and brackish wetland is located in Lafourche Parish just west of Galliano and south of Larose and includes part of the Pointe au Chien Wildlife Management Area. The objective of the project is to introduce additional freshwater into the marshes to the east of Grand Bayou Canal and Cutoff Canal by enlarging the existing channel on Bayou L'EauBleu Constricting Cutoff Canal with a weir will increase the retention time of the freshwater. The project will provide 689 average annual habitat units (AAHU's) at a cost of $3,899,000. The project's cost effectiveness measured in average annual cost per AAHU is 406.

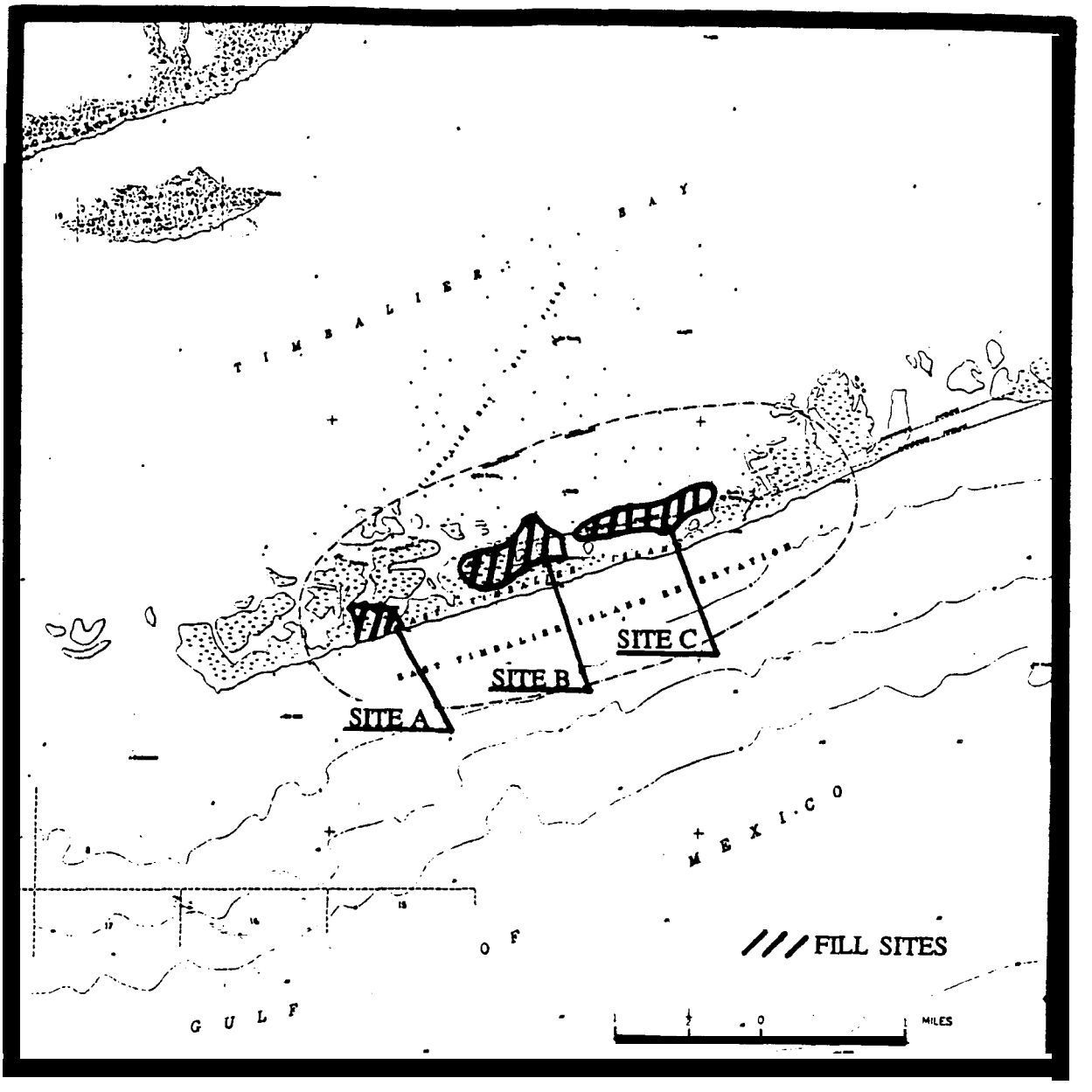


Lake Chapeau Sediment Input and Hydrologic Restoration, Point au Fer Island (PTE-23/26a/33)

The project area located in Terrebonne Parish, incorporates portions of Point au Fer Island and Atchafalaya Bay. Point au Fer Island has lost about 30 percent of its land area since the 1930's due to subsidence, erosion, and construction of oil and gas canals. The project will restore marshes west of Lake Chapeau, reestablish the hydrologic separation of the Locust Bayou and Alligator Bayou watersheds, and reestablish natural drainage patterns within the Lake Chapeau area. Approximately 500,000 cubic yards of material will be mined from Atchafalaya Bay and jetted across an 1,800-acre area. Hydrology will be restored by plugging canals and gapping spoil banks. The project will provide 468 average annual habitat units (AAHU's) at a cost of $4,149,000. Its cost effectiveness is estimated at $876/AAHU.

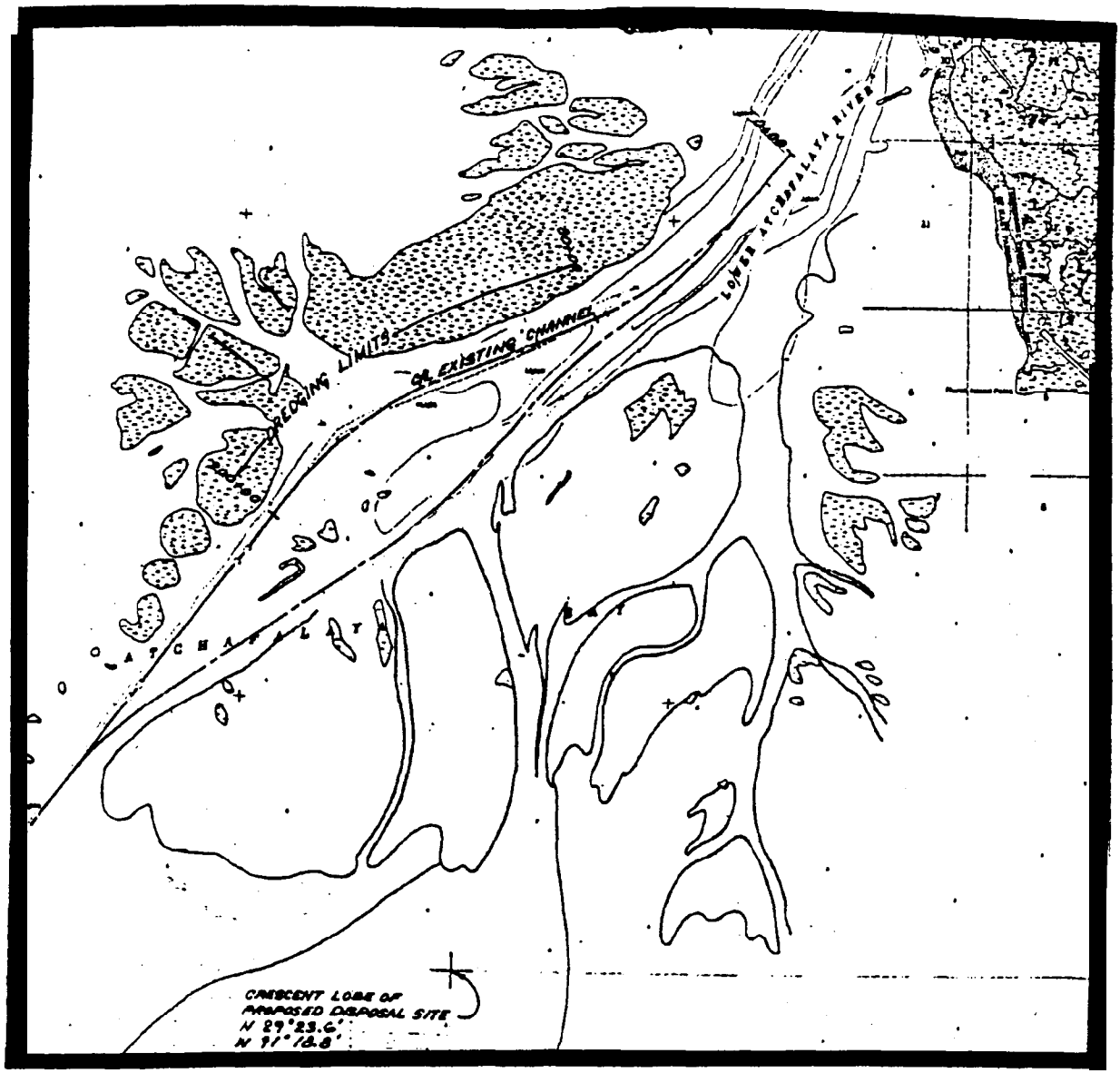
Locust Bayou Marsh Nourishment, Point au Fer Island (XTE-65)

The project area consists of 1,300 acres of broken brackish marsh on Point au Fer Island in Terrebonne Parish. Canal spoil banks prevent sediment-rich waters from reaching the project site via Locust Bayou. In addition, the changing tidal regime in Atchafalaya Bay deprives the area of sediments **from the Atchafalaya River. The project calls for mining** 1,000,000 **cubic yards of sediment** from **Atchafalaya Bay and spreading this material in the project area. The project will provide 28 average annual habitat units (AAHU's) at a cost of $1,477,000. The project's cost effectiveness is estimated** at **$5,450/AAHU.**



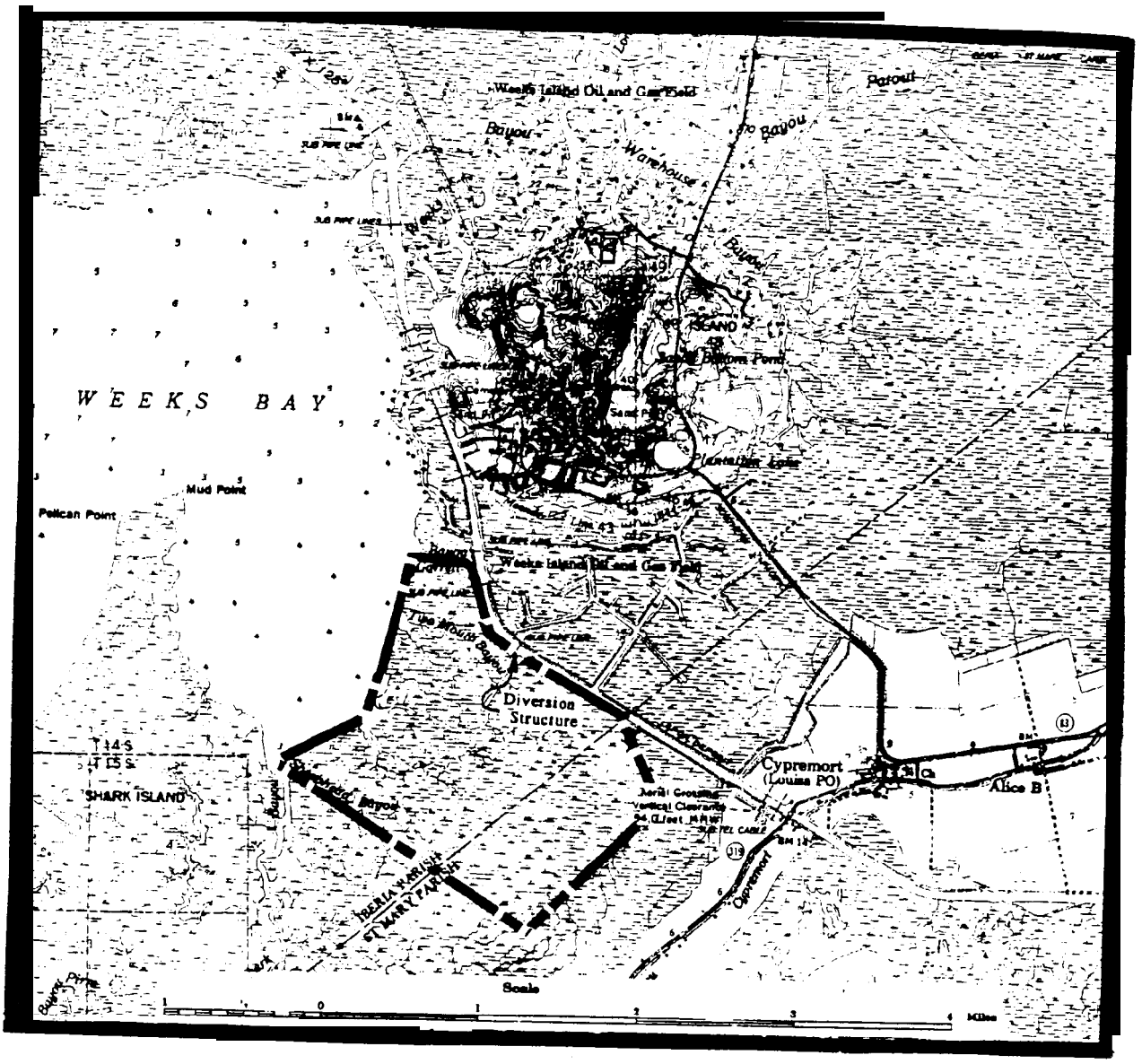
East Timbalier Island Sediment Restoration (XTE-67)

East Timbalier Island covers 400 acres in Iafourche Parish, and is part of an island chain that fronts Terrebonne and Timbalier Bays. Louisana's barrier islands are experiencing landward migration and land loss as **a result** of natural and man-induced processes The continued loss of barrier islands will result in the collapse of the estuaries and wetlands they protect This project will increase the life expectancy of East Timbalier Island by placing 890,000 cubic yards of dredged material in three embayments along the landward shoreline. The project will create 86 acres of vegetated wetland and enhance the island's approximately 200 acres of existing marsh, as well as prolong the island's ability to protect inland marshes. The estimated cost of the project is $2,047,000, and its effectiveness is estimated at $686/AAHU (average annual habitat unit).



Atchafahya Bay Booster Pump Marsh Creation (XAT-6)

The proposed project is located in the Atchafalaya Bay in St Mary Parish. The planned work consists of using sediments dredged for maintenance of the Atchafalaya Bay Channel between **C/L Station 80+00 and** C/L Station 200+00 to create new vegetated wetlands within a shallow open water disposal site. Project implementation would initially create approximately 78 acres at elevation +3.0 feet NGVD, and an additional 72 acres between +3.0 feet NGVD and -1.0 foot NGVD. The project will provide 86 average annual habitat units (AAHU's) at a cost $1,091,000. The project's cost effectiveness is $12694/AAHU.

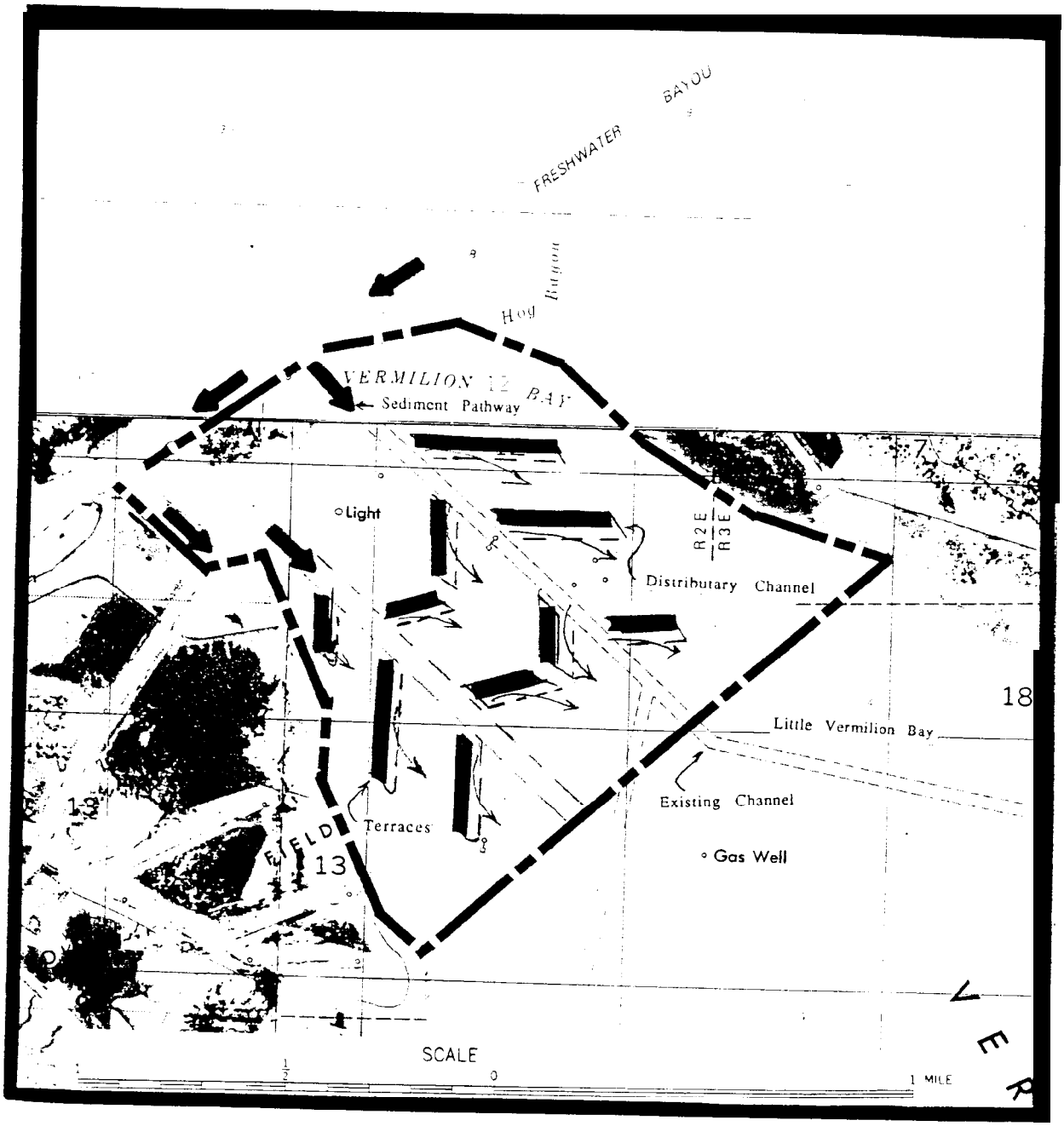


Two Mouth Bayou Freshwater Diversion (XTV-26)

This 1,600 acre project area is an intermediate marsh located in Iberia and St. Mary Parishes. The objective of the project is to introduce freshwater and sediments into the marshes south of the **GIWW and east** of Weeks Bay. The GlWW provides an excellent source of freshwater during high Atchafalaya River stages. The project will include a multiple, fixed crest weir structure with flap gates to allow freshwater flow into the project area. The project will provide 16 average annual habitat units (AAHU's) at a cost of $615,000. The project's cost effectiveness measured in average annual cost per AAHU is 2,706.

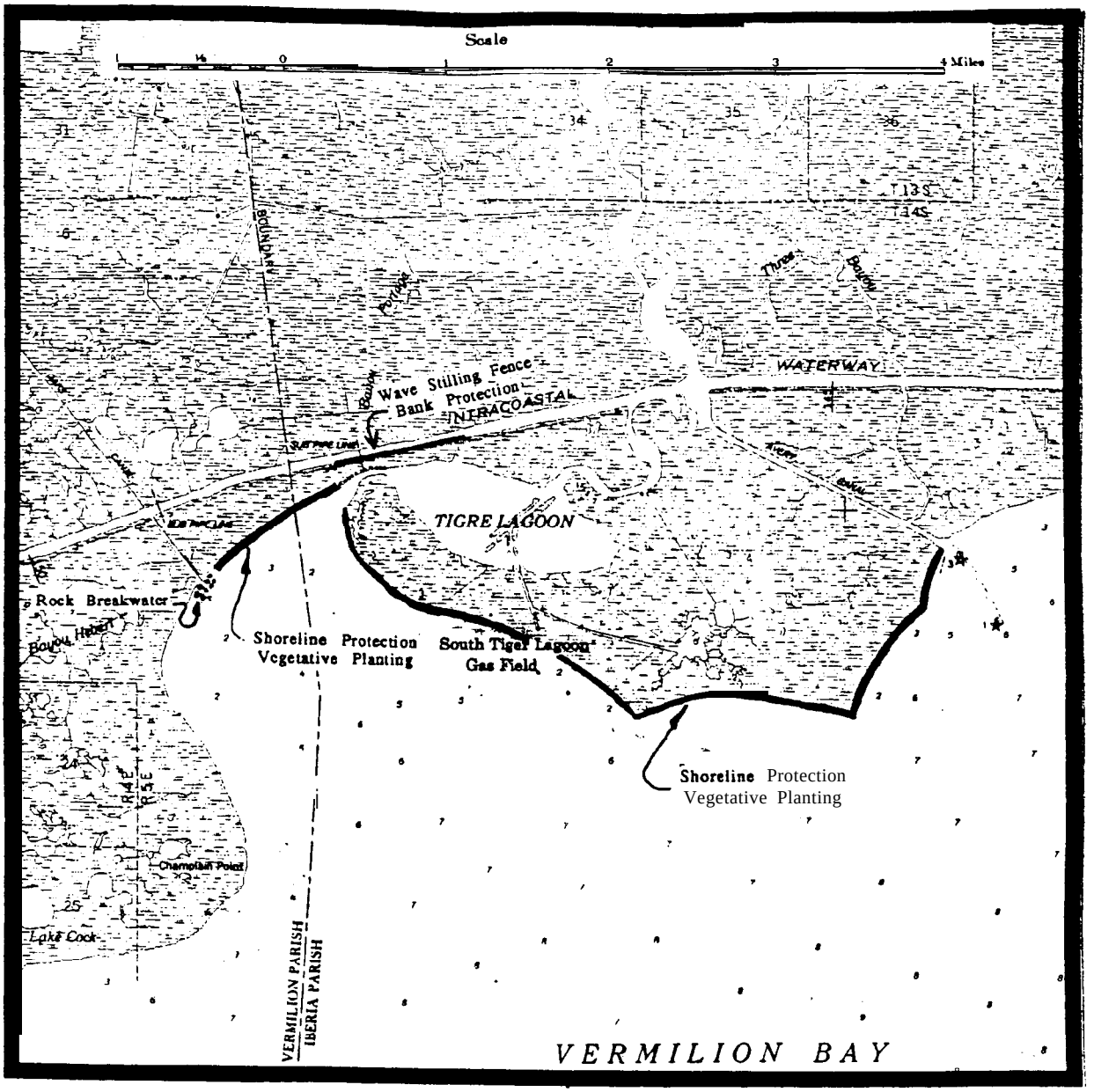
Cote Blanche Hydrologic Restoration (TV-4

The Cote Blanche wetland is located in St. Mary Parish and is bounded by the GlWW, Highway 317, and East and West Cote Blanche Bays. The objective of the project is to reduce shoreline erosion, reduce excessive tidal fluctuations and rapid tidal exchange to prevent the loss of interior marsh, develop a hydrologic regime conducive to sediment and nutrient deposition, and reestablish vegetation in eroded areas. These objectives will be accomplished by constructing 10,000 feet of shoreline protection, rock weirs on major openings to the bays, and flapgated structures at two major openings to the GIWW. The project will provide 1,200 average annual habitat units (AAHU's) at a cost of $5,173,000. The project's cost effectiveness is $3711AAHU.



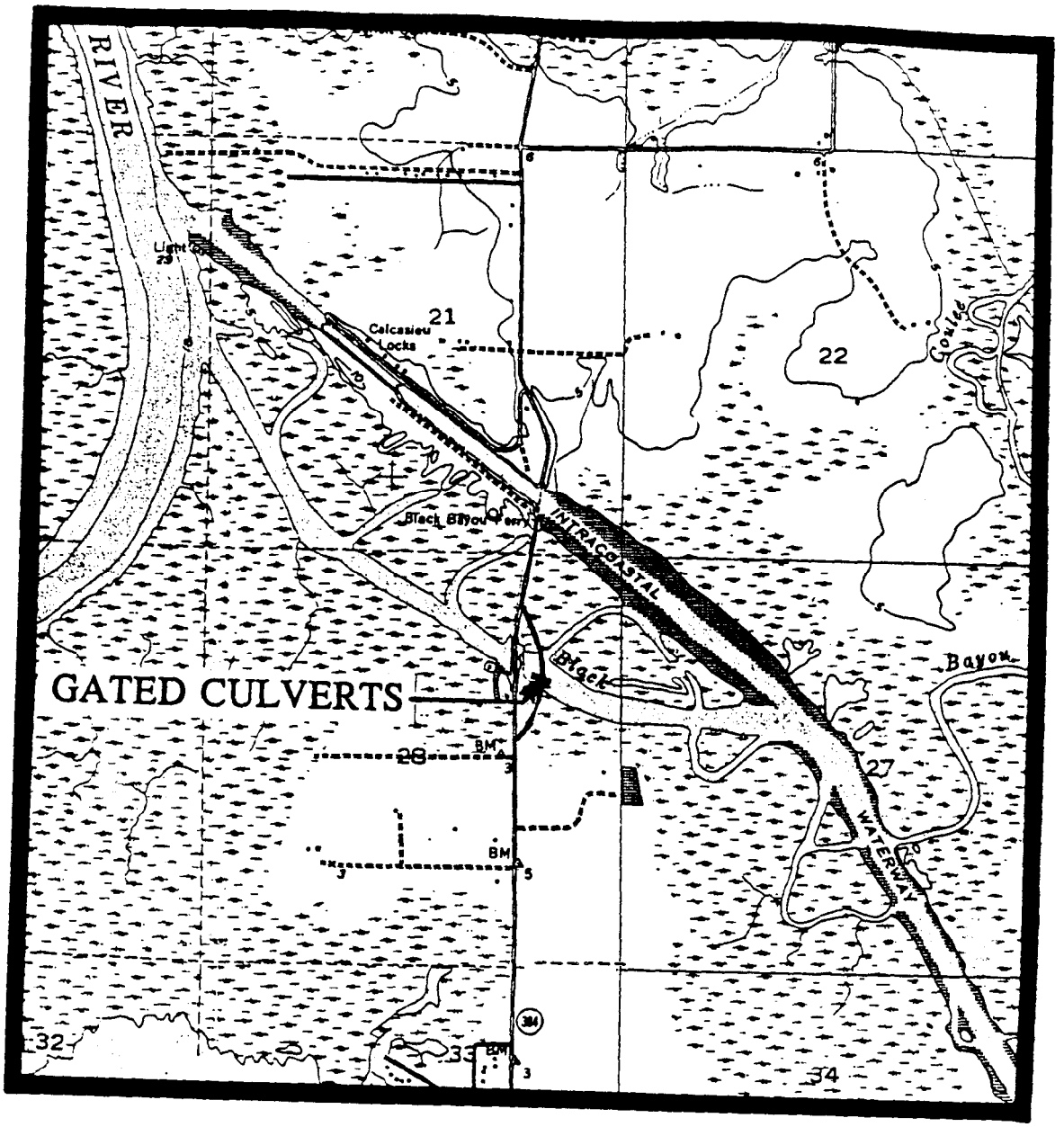
Little Vermilion Bay Sedimentation Project (PTV-19)

The project area covers about 900 acres in Little Vermilion Bay, a shallow arm on the western end of Vermilion Bay in Vermilion Parish. There are two connections between Little Vermilion Bay and the Gulf Intracostal Waterway, a source of sediment-laden flows from the Wax Lake Outlet. The project involves construction of a distributary channel to facilitate spreading the existing sediment load over a wide area. Dredged material will be placed as a low-elevation levee or terrace to protect the area from wind-induced wave erosion. The project benefit will consist of 182 average annual habitat units (AAHUs) at a cost of $1,516,000. The cost effectiveness is estimated at $780/AAHU.



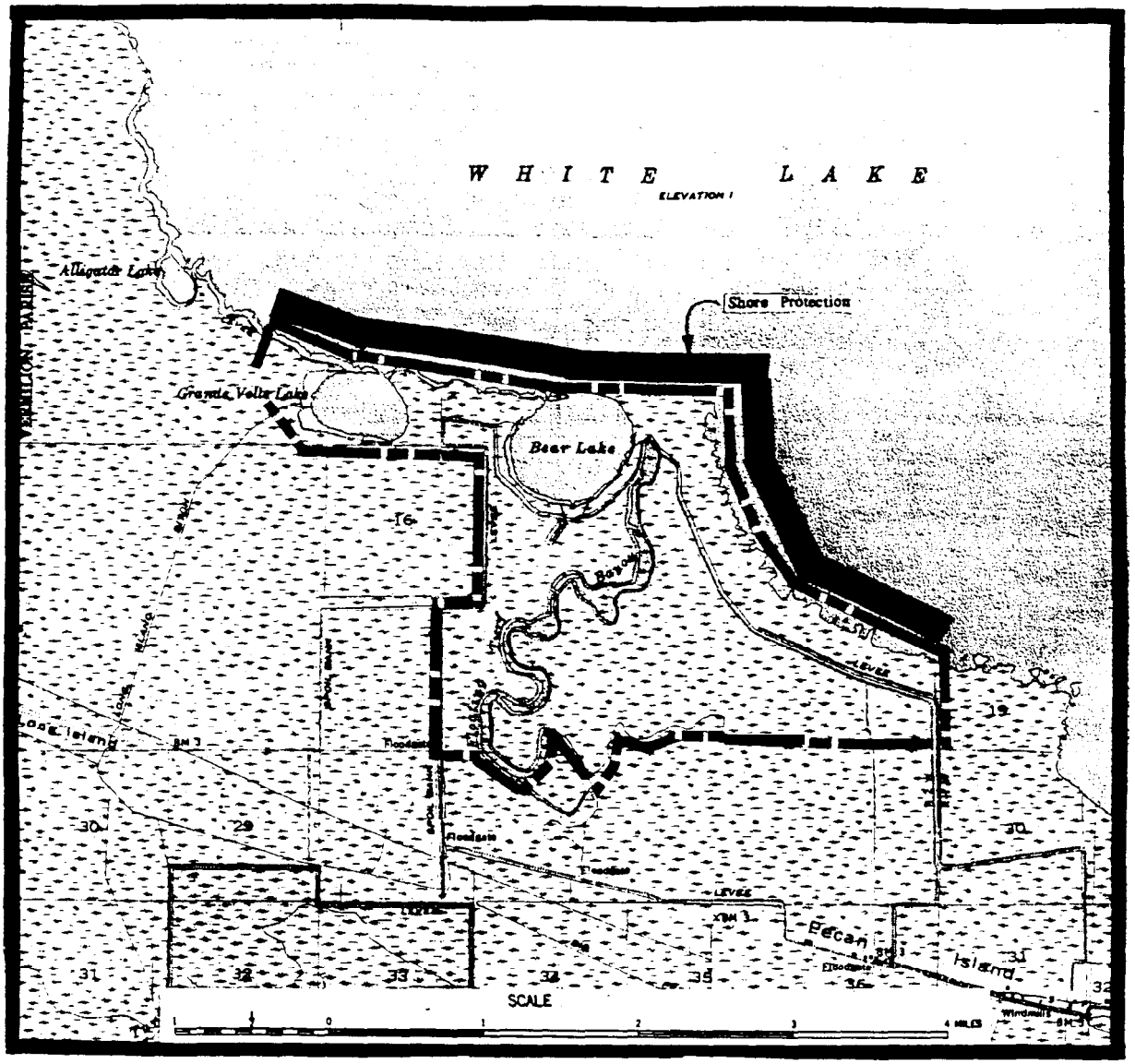
Oaks Canal/Tigre Lagoon Shoreline Protection (XTV-25)

This 1,200 acre project area is located in Vermilion and Iberia Parishes. The object of the project is to reduce shoreline erosion along Vermilion Bay and Oaks Canal. Wave stilling along the GIWW will prevent possible breaching into Tigre Lagoon and protect interior marshes from the rapid water exchange rates of the GIWW Rip-rap bank protection along with sediment fencing will be constructed along both banks of Oaks Canal with associated vegetative plantings. Wave stilling fencing will be placed along 4,000 feet of the GIWW to prevent breaching. Vegetative planting along 32,000 feet of shoreline in Vermilion Bay will also be included. The project will provide 53 average annual habitat units (AAHU's) at a cost $2,710,000. The project's cost effectiveness is $4,798/AAHU.



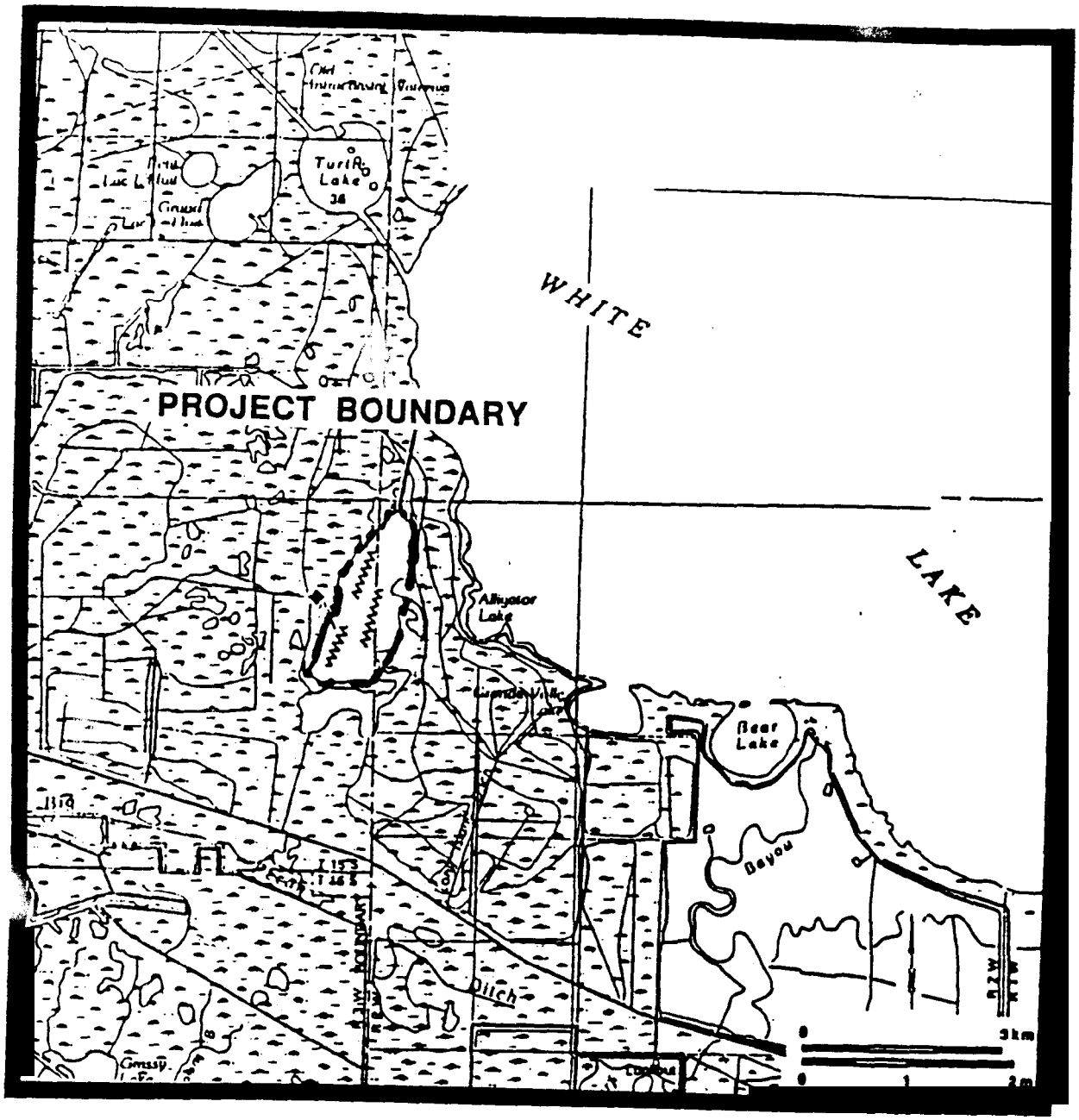
Black Bayou Culverts Hydrologic Restoration (CS-16)

The project is located on Black Bayou in Calcasieu Parish, near the Calcasieu Lock on the **Gulf** Intracoastal Waterway. Black Bayou is closed by a dam where Highway 384 crosses the bayou. The project area extends east into Cameron Parish as far as Grand Lake. Prolonged high water levels in the Grand and White Lakes area exarcebate the problem of wind-induced wave erosion and cause stress to marsh grasses. The proposed project consists of five 10-foot by 10-foot gated box culverts under Hwy. 384 to facilitate drainage from the basin. The outfall from the culverts will provide fresh water nutrients, and some sediments to brackish marshes to the west. The project will provide 650 aver&e annual habitat units (AAHU's) at a cost of $9,639,000. The project's effectiveness is estimated at $1,363/AAHU.



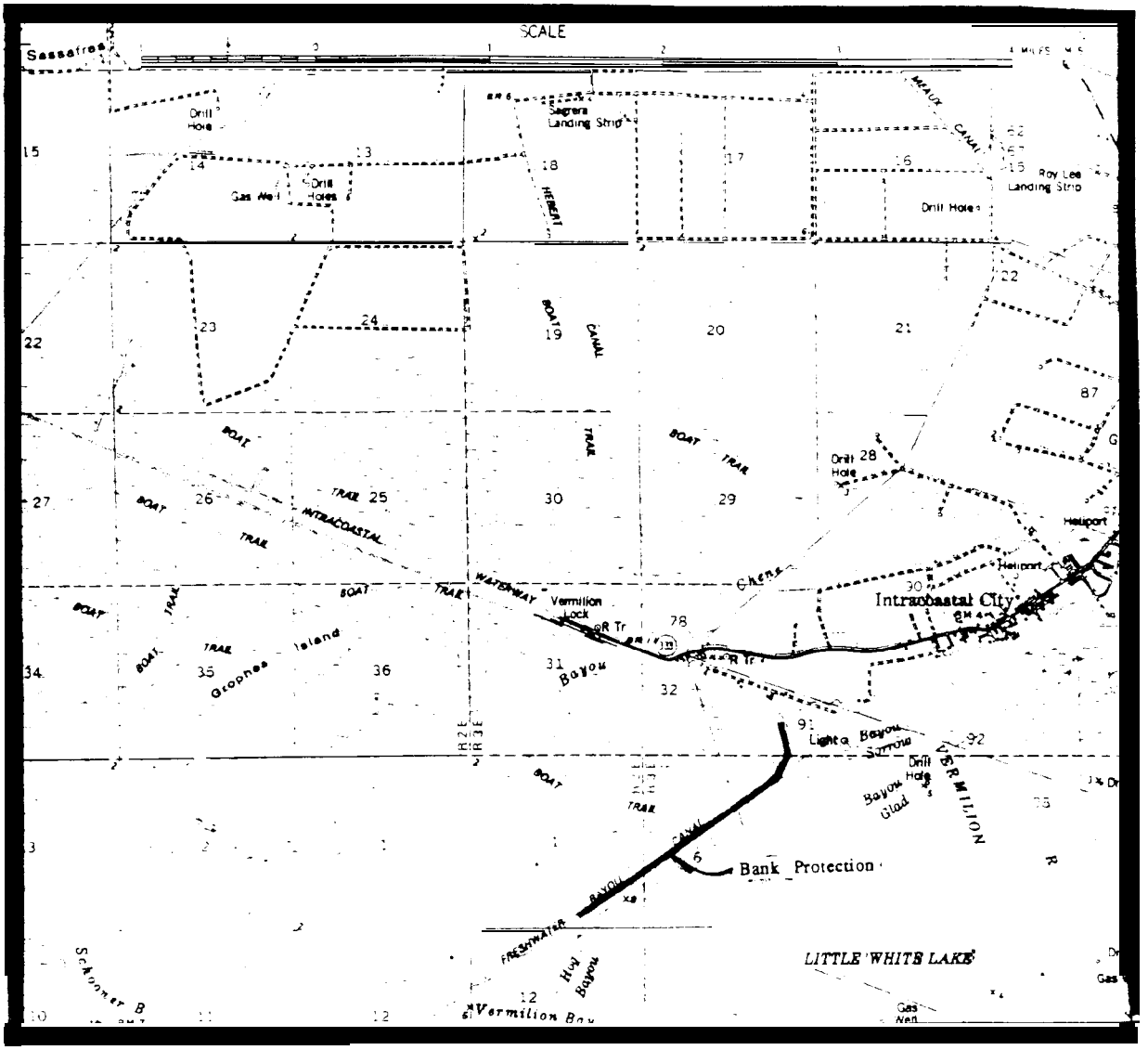
White Lake South Shoreline Protection (ME-5) .

Located in Vermilion Parish, the project area includes a strip of approximately 1,400 acres of fresh and intermediate marsh along 5.5 miles of the southern White Lake shoreline and a 2,000 acre fresh marsh impoundment. The object of the project is to halt shoreline erosion and protect these areas. Approximately 5.5 miles of of segmented rock breakwaters will be constructed along the 2 foot contour in White Lake. Suitable emergent marsh plant species will be planted along the edge of the shoreline for stabilization purposes. The project will provide 248 average annual habitat units (AAHU's) at a cost of $3,717,000 The project's cost effectiveness measured in average annual cost per AAHU is 1,470.



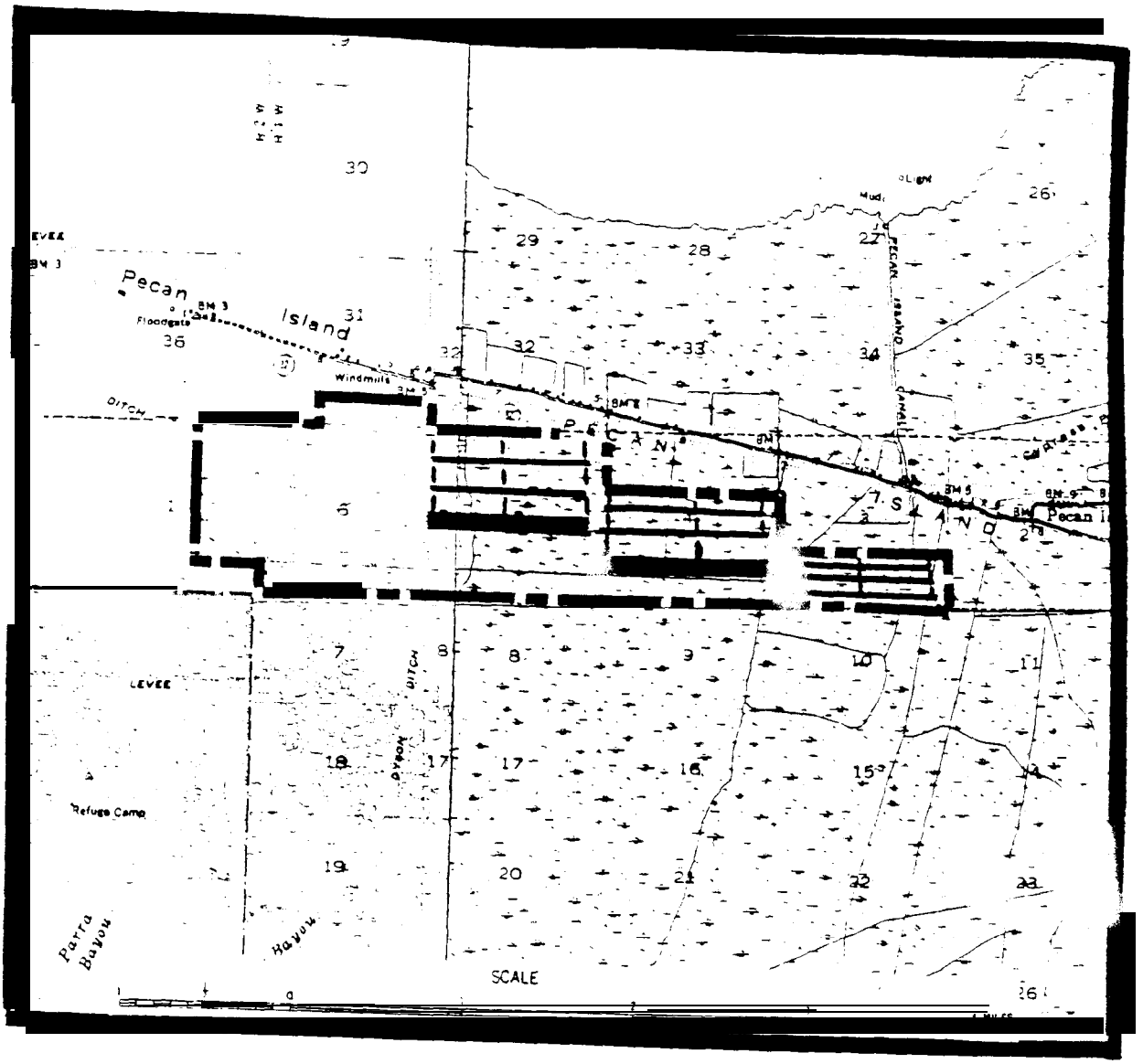
Deep Lake Marsh Creation and Protection (ME-7)

Deep Lake is located on the Cameron/Vermilion Parish line and is just west of White Lake. The project objectives are to break up the fetch to reduce wave erosion along the shoreline of the lake by constructing earthen terraces in the lake. In addition, the project will enhance aquatic plant growth by reducing turbidity, and create and promote the development of emergent marsh on the terraces and adjacent shorelines. The prject will provide 66 average annual habitat units (AAHU's) at a cost of $1,113,000. The project? cost effectiveness is $l,467/AAHU.



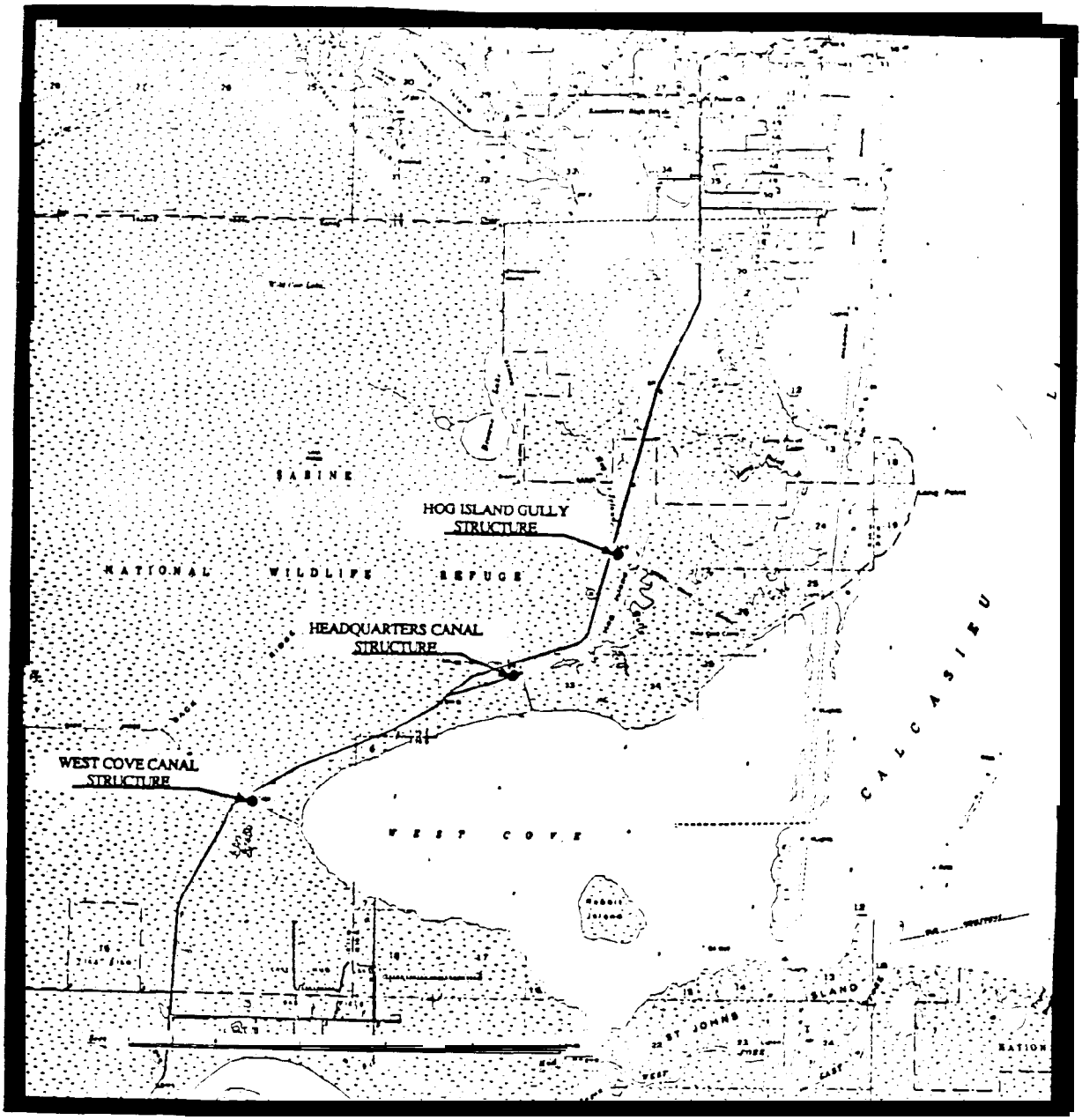
GIWW/Freshwater Bayou Bank Stablization (XME-28)

The project is located along the west bank of Freshwater Bayou at its intersection with the GIWW in Vermilion Parish. The project consist of 7,500 feet of rip rap bank protection to prevent erosion **along** Freshwater Bayou. The project will provide 13 average annual habitat units (AAHU's) at a cost of $2,026,000. The project's cost effectiveness is $l3,292/AAHU.



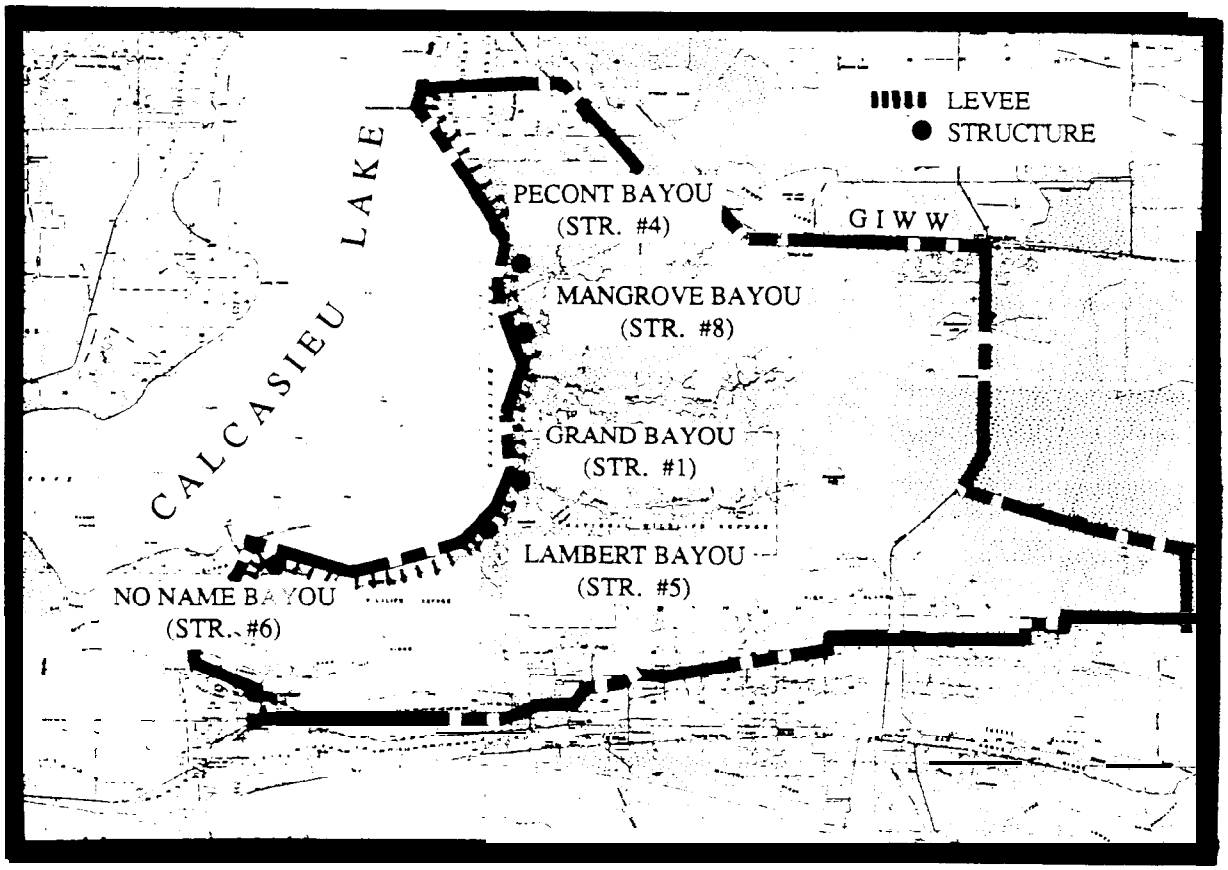
Terrace Creation, Pecan Island Impoundment (XME-22)

The project **area, located south** of Pecan Island in Vermilion Parish, is an impoundment formerly used for agriculture, but which has **since** converted to open water. The project will improve the fish and wildlife productivity of the **area** by building marsh terraces, which will provide habitat and reduce wind-induced wave erosion of shorelines. Approximately 240,000 cubic yards of material will be used construct ridges in the impoundment. The project will produce 89 average annual habitat units (AAHU's) at a cost of $1,231,000. The effectiveness of theis project is estimated at $1,370/AAHU.



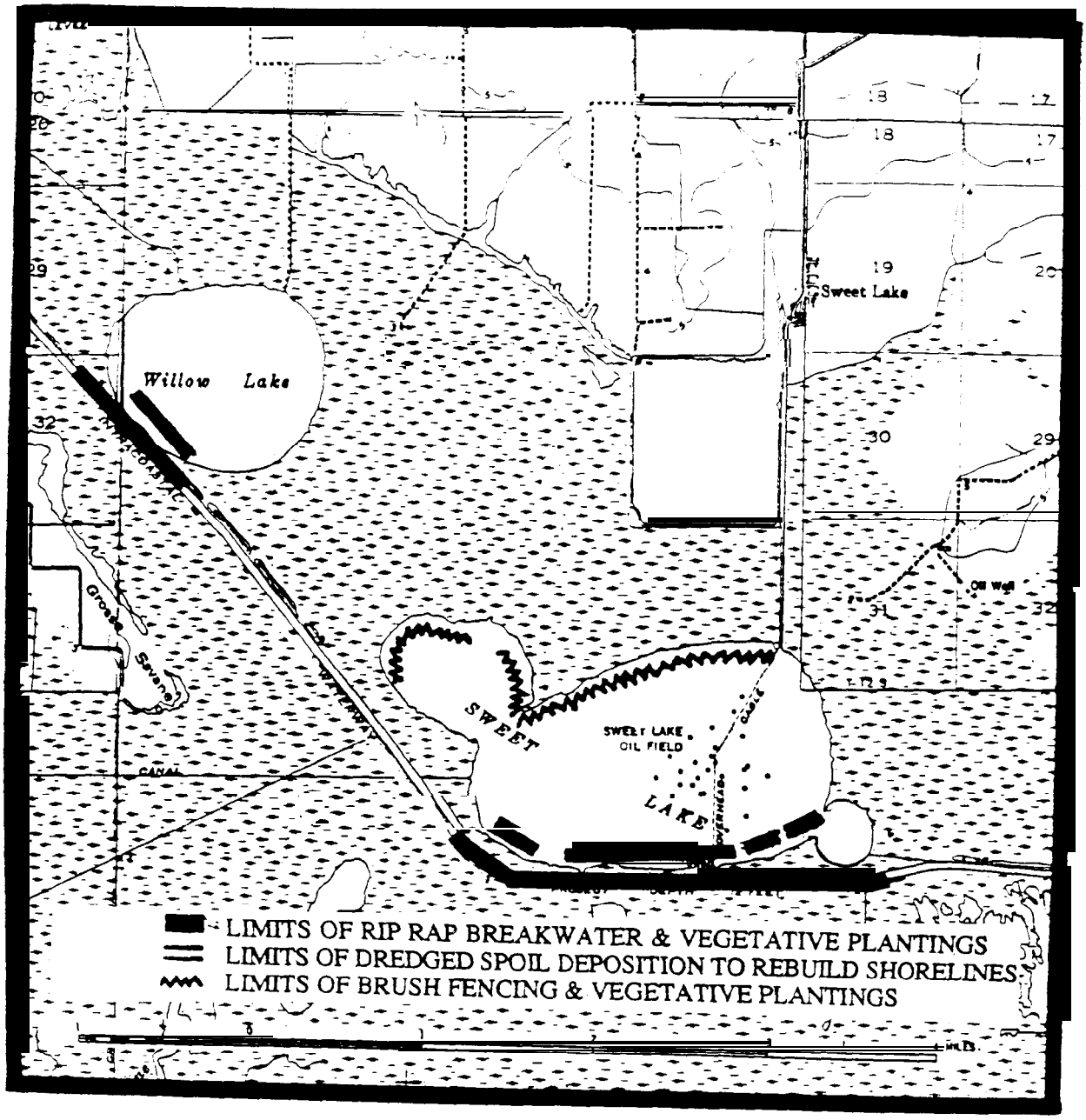
Replacement of Water Control Structures at Hog Island Gully, West Cove, and Headquarters Canals (XCS-47/48i/48j/48p)

The project is located on the Sabine National Wildlife Refuge in Cameron Parish. In 1981 water control structures were installed at Hog Island Gully (fixed crest weir), West Cove (fixed crest weir), and the Headquarters Canal (flapgated culvert) to reduce saltwater intrusion caused by the Calcasieu Ship Channel. These structures are inadequate in that they do not provide enough discharge potential to discharge excess **water and can not be operated to** effectively preclude saltwater intrusion. Replacement **of these structures will** provide greater management flexibility and greater discharge capacity. The project will provide 491 average annual habitat units (AAHU's) at a cost 4,582,000. The project's cost effectiveness is $753/AAHU.



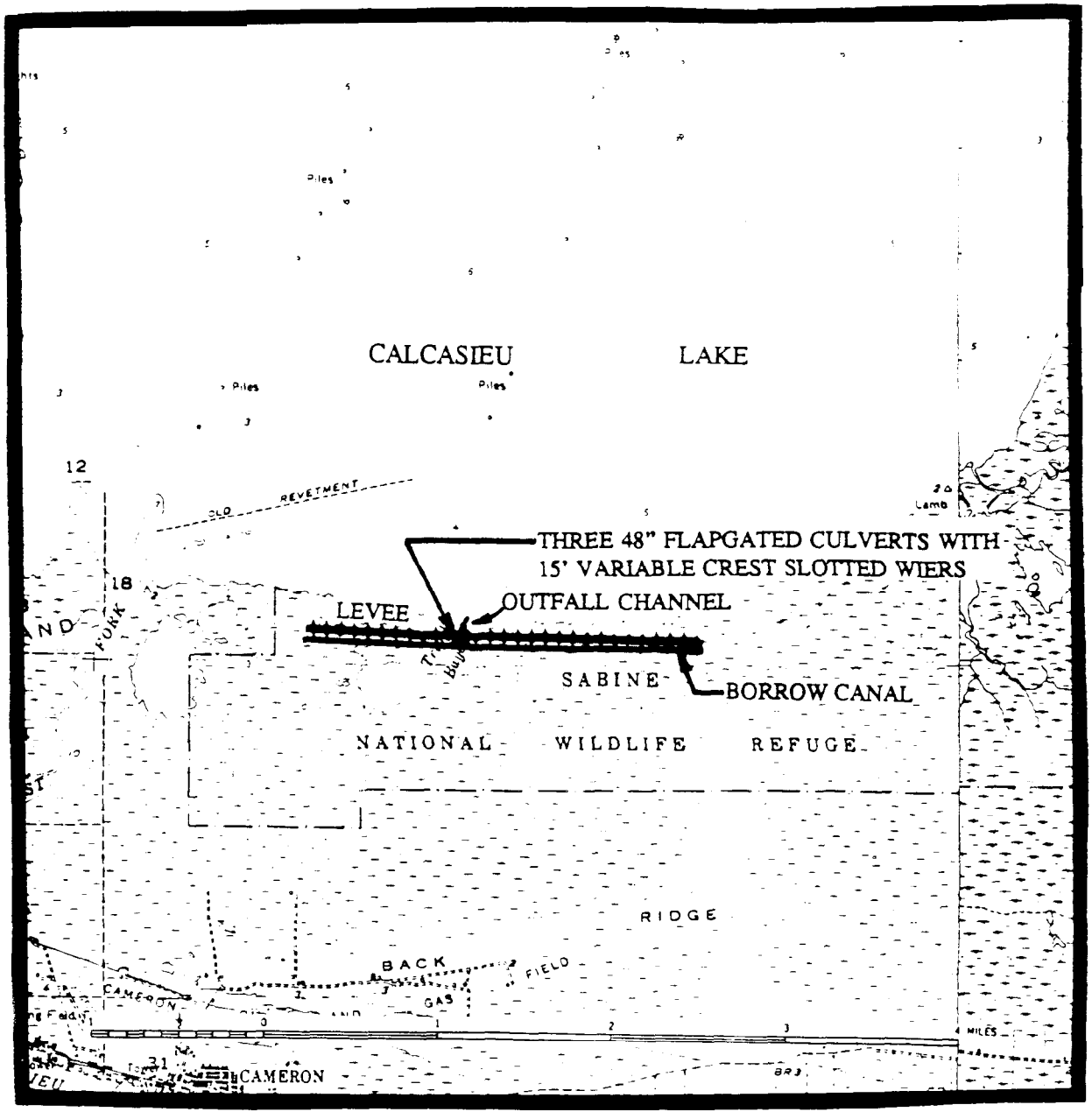
Cameron-Creole Maintenance (CS-4a)

This project, located in Cameron Parish, was initiated in 1961 and completed in 1989 and involves water management of the Cameron-Creole Watershed. Management is achieved through 19 miles of levees and five water control structures. Currently, maintenance responsibility lies with the Cameron Parish Gravity Districts Nos. 3 and 4, which do not possess the financial ability to properly maintain the project. This project call for the funding of future maintenance of the project. The project will provide 454 average annual habitat units (AAHU's) at a cost of $3,720,000. The project's cost effectiveness is $378 / AAHU.



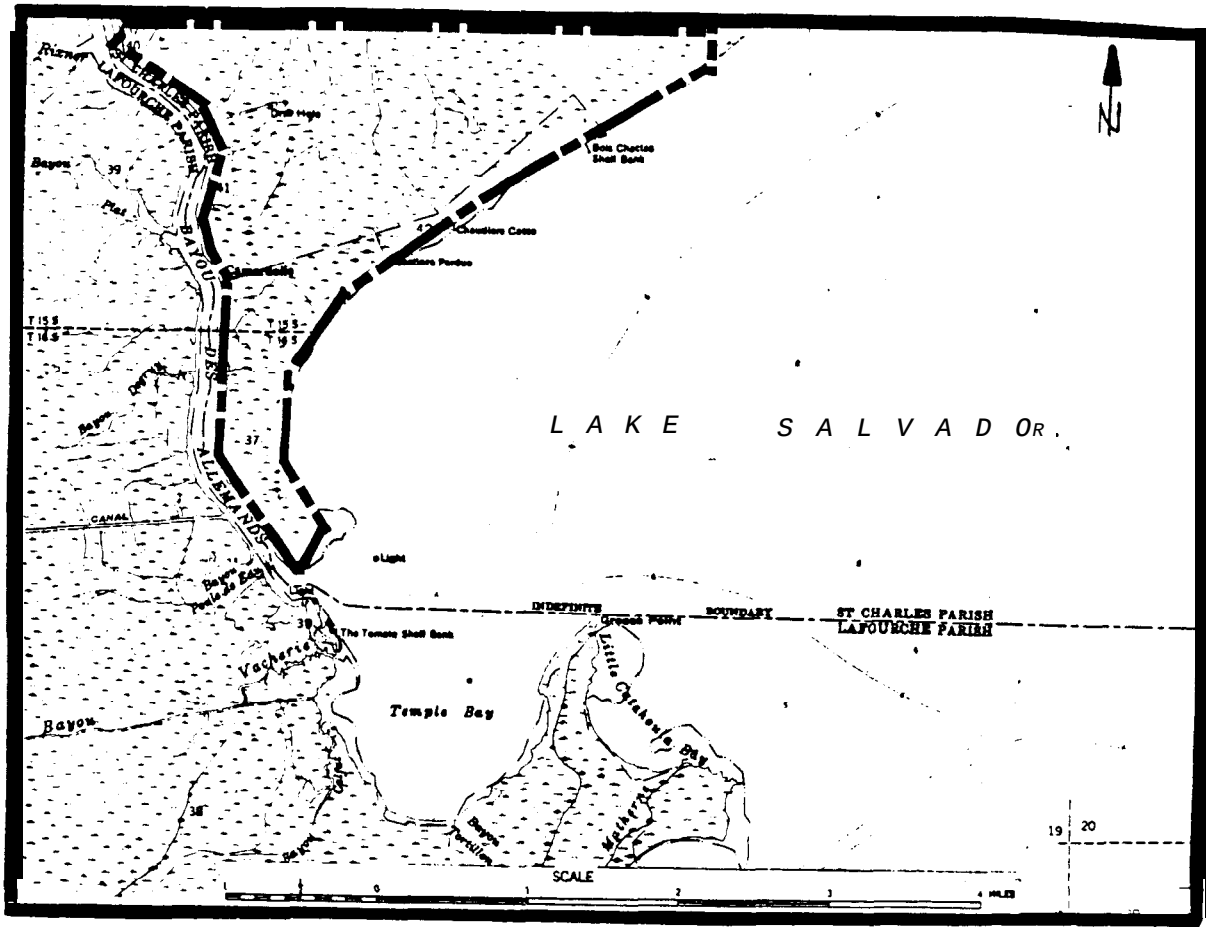
Sweet **Lake/Willow Lake Shoreline** and Bank Protection (CS-11b)

The project area is **a** 7,600-acre fresh marsh located in the area of Sweet and Willow Lakes adjacent to the GIWW in Cameron Parish. The northern bank of the GIWW has eroded into Sweet Lake for approximately 1.3 miles and into Willow Lake for approximately 0.5 miles, increasing turbidity in the waters of the lakes. The project is designed to reestablish the shoreline between the lakes and the GIWW to reduce turbidity and tidal exchange and to rebuild the marsh along the northern and northwest shoreline of Sweet Lake. The project will provide 365 **average annual** habitat units (AAHU's) at a cost of $3,411,000. The project's cost effectiveness is $876/AAHU.



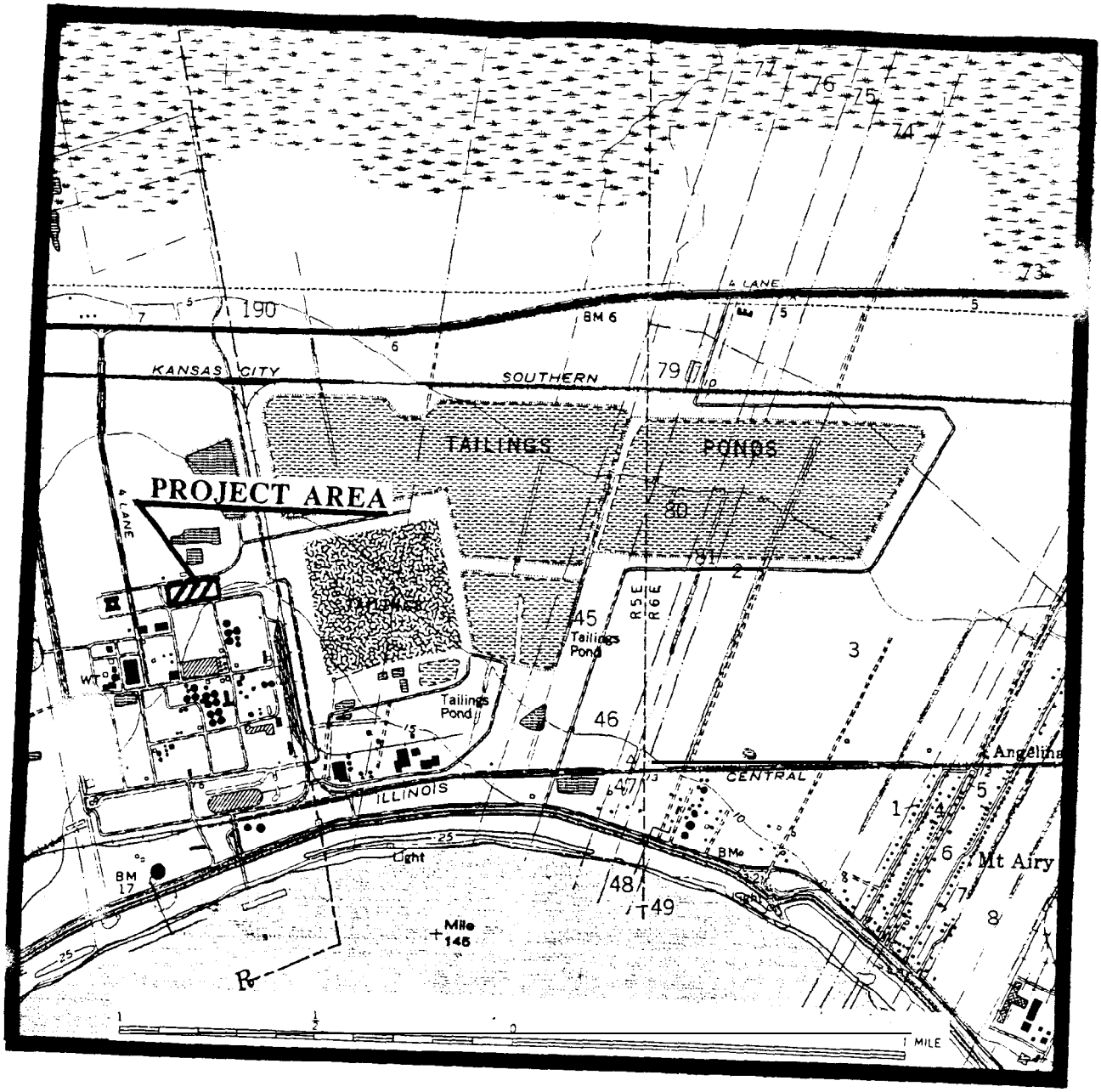
Tripod Bayou Control Structure (C/S-14)

The project is located on the south shore of Calcasieu Lake in Cameron Parish, about 3 miles north of the town of Cameron. The project will provide for gravity drainage of excess water from the marsh south of Calcasieu Lake during periods of low tide. Three 48-inch-diameter flapgated culverts will be installed in the levee separating the lake from the marsh. A 15-foot-wide variable crest slotted weir will be installed on the marsh end of each culvert. The section of Tripod Bayou between the levee and the lake will be dredged to dimensions of 30 feet wide by 6 feet deep. The project will provide 70 average annual habitat units (AAHU's) at a cost of $762,000. The project's effectiveness is estimated at $614/AAHU.



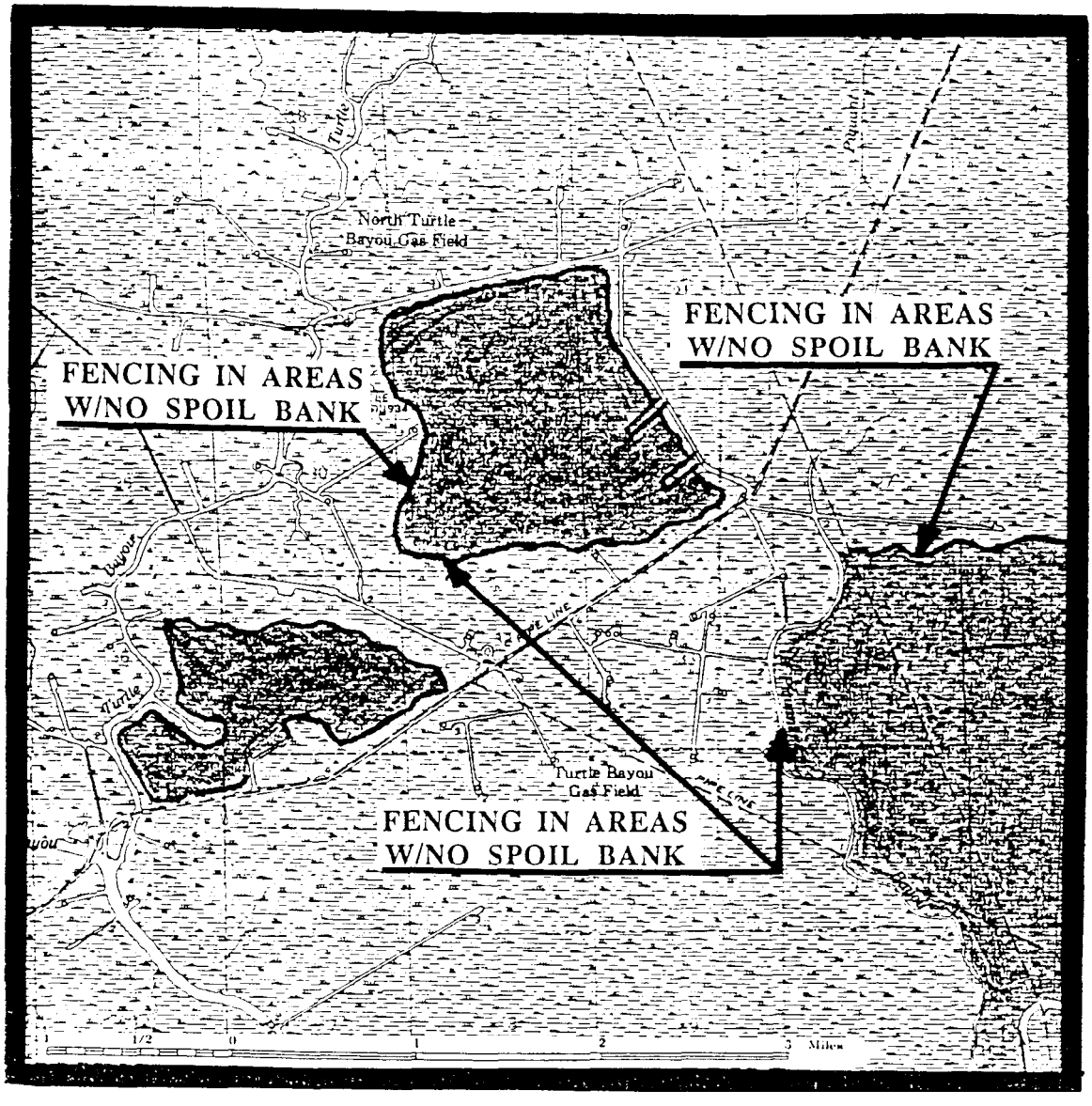
Lake Salvador Shoreline Protection Demonstration (BA-15)

Located on the southwest end of Lake Salvador at Bayou Des Allemands in St. Charles Parish, this project is designed to test the effectiveness of two separate types of segmented timber breakwaters in highly organic, unconsolidated sediments with poor load bearing capacity. Approximately 11,100 feet of a V-shaped and 11,100 feet of a straight timber pylon segmented breakwater will be constructed and their effectiveness analyzed. In addition, one mile of shell armored berm will be placed at existing blowouts. The project will provide 219 average annual habitat units (AAHU's) at a cost of 1,445,000. The project's cost effectiveness is $586/AAHU.



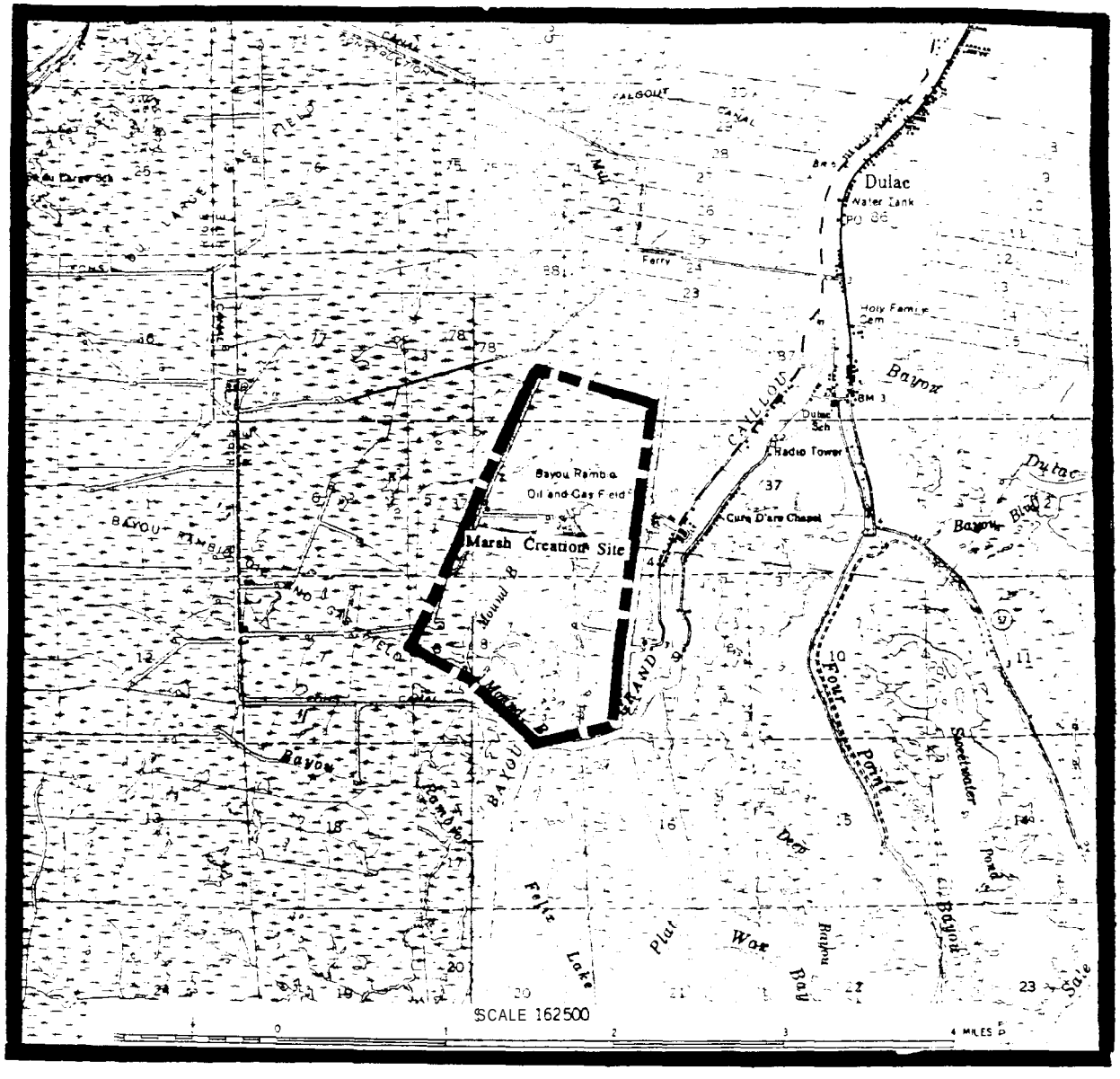
Modified Red Mud Demonstration Project (XTE-43)

Red mud is a byproduct of the refining of bauxite into aluminum. This project will investigate the suitability of red mud as a substrate for marsh creation. A 3-acre test site consisting of four planting beds will be constructed at the Kaiser Aluminum facility at Gramercy. Two of the sites will be planted with marsh vegetation, while two will be left unplanted. One planted site and one unplanted site will be fertilized and one of each will not be fertilized. The fully funded cost of the project is $533,000; Kaiser will contribute $183,000 of that amount.



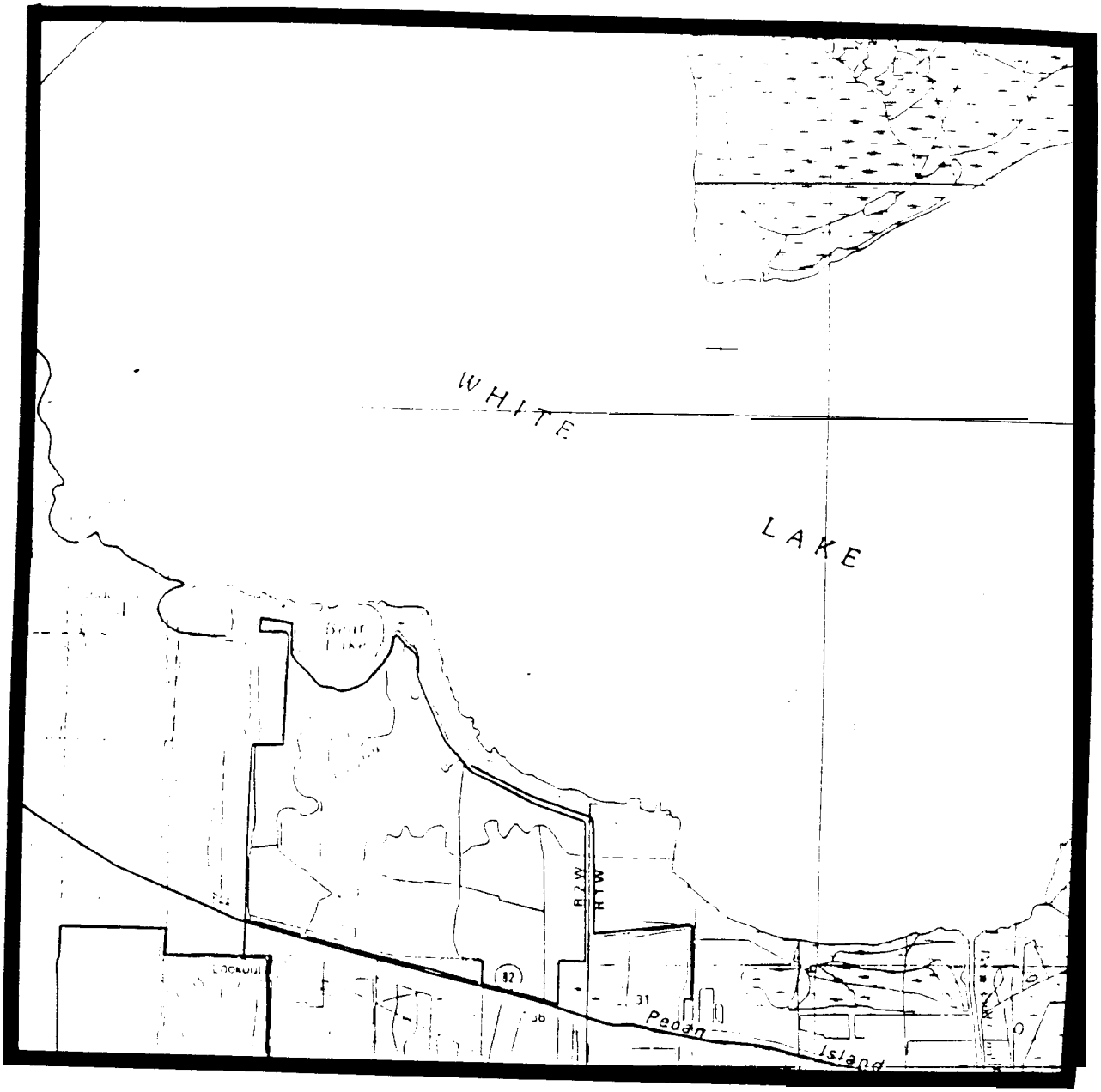
Flotant Marsh Creation and Enhancement (XTE-54b)

The project is located 20 miles west of Houma in Terrebonne Parish. The objective of this project is to demonstrate the effectiveness of various fencing techniques in conserving floating marshes. Three sides of the project area will be enclosed by a spoil bank; the fourth side will be enclosed by different types of fencing materials and supports. The project will provide 43 average annual habitat units (AAHU's) at a cost of $458,000. The project's cost effectiveness is estimated at $812/AAHU.



Sediment Distribution System Demonstration (XTE-66)

The project is located at the intersection of the Houma Navigation Canal and Bayou Grand Caillou in Terrebonne Parish. The project will test the effectiveness of a linear flow system for direct application sediment as a wetland creation and enhancement technique and will evaluate the potential for regional and coast wide application. The project will provide 36 average annual habitat units (AAHU's) at a cost $1,395,000. The project's cost effectiveness is $3,881 / AAHU.



SW Shoreline White Lake Shoreline Protection Demonstration (PME-6)

The project is located two miles north of Louisiana Highway 82 at the Vermilion/Cameron Parish line. The objective is to test the effectiveness of California bulrush *(Scirpus californicus)* at dampening high energy waves. If effective, the project will prevent the White Lake shoreline from breaching into Deep Lake. The project will provide 4 average annual habitat units (AAHU's) at a cost of $126,000. The project's cost effectiveness is $1,85O/AAHU.

COASTAL WETLAND PLANNING, PROTECTION AND RESTORATION ACT

Wetland Value Assessment Methodology and Community Models

I. INTRODUCTION

The Wetland Value Assessment (WVA) methodology is a quantitative habitat-based assessment methodology developed for use in prioritizing project proposals submitted for funding under the **Coastal** Wetlands Planning, Protection, and Restoration Act (CWPPRA) of 1990. The WVA quantifies changes in fish and wildlife habitat quality and quantity that are projected to be brought about as a result of a proposed wetland enhancement project. The results of the WVA, measured in Average Annual Habitat Units (AAHU's), can be combs ed with economic data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU gained.

The WVA was developed by the Environmental Work Group (Group) assembled under the Planning and Evaluation Subcommittee of the CWPPRA Technical Committee; the Group includes members from each agency represented on the CWPPRA Task Force. The WVA was designed to be applied-, to the greatest extent possible, using only existing or readily obtainable data.

The WVA has been developed strictly for use in ranking proposed PPRA projects; it is not intended to provide a detailed, comprehensive methodology for establishing baseline conditions within a project area. Some aspects of the WVA have been defined by policy and/or functional considerations of the CWPPRA; therefore, user-specific modifications may be necessary if the WVA is used for other purposes.

The WVA is a modification of the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1980). HEP is widely used the Fish and Wildlife Service and other Federal and State agencies in evaluating the impacts of development projects on fish and wildlife resources

A notable difference exists between the two methodologies, however, in that HEP generally uses a species-oriented approach, whereas the WVA utilizes a community approach.

The WVA has been developed for application to the following coastal Louisiana wetland types: fresh marsh (including intermediate marsh), brackish marsh, saline marsh, and cypress-tupelo swamp. Future reference in this document to "wetland" or "wetland type" refers to one or more of those four communities.

II. WA CONCEPT

The WVA operates under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted-conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different-variable values, and 3) a mathematical formula that combines Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The Wetland Value Assessment models (Attachments 1-4) have been developed for determining the suitability of Louisiana coastal wetlands in providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. Models have been designed to function at a community level and therefore attempt to define an optimum combination of habitat conditions for all fish and wildlife species utilizing a given marsh type over a year or longer. Earlier attempts to capture other wetland functions and values such as storm-surge protection, flood water storage, water quality functions and nutrient import/export were abandoned due to the difficulty in defining unified model relationships and meaningful model outputs for such

a variety of wetland benefits. However, the ability of a Louisiana coastal wetland to provide those functions and values may be generally assumed to be positively correlated with fish and wildlife habitat quality as predicted through the WVA.

The output of each model (the HSI) is assumed to have a linear relationship with the suitability of a coastal wetland system in providing fish and wildlife habitat.

III. COMMUNITY MODEL VARIABLE SELECTION

Habitat variables considered appropriate for describing habitat quality in each wetland type were selected according to the following criteria:

1) the condition described by the variable-had to be important in characterizing fish and wildlife habitat quality in the wetland type under consideration;

2) values had to be easily estimated and predicted based on existing data (e.g., **aerial** photography, LANDSAT, GIS systems, water quality monitoring stations, and interviews with knowledgeable individuals); and

3) the variable had to be sensitive to the types of changes expected to' be brought about by typical wetland projects proposed under the CWPPRA.

Variables for each model were selected through a two part procedure. The first involved a listing of environmental variables thought to be important in characterizing fish and wildlife habitat in coastal marsh or swamp systems.

The second part of the selection procedure involved reviewing variables used in species-specific HSI models published by the U.S. Fish and Wildlife Service. Review was limited to models for those fish and wildlife species known to inhabit Louisiana coastal wetlands, and included models for 10 estuarine fish and shellfish,

4 freshwater fish, 12 birds, 3 reptiles and amphibians, and 2 mammals (Attachment 7). **The** number of models included from each species group was dictated by model availability.

Selected HSI models were then grouped according to the wetland type(s) used by each species. Because most species for which models were considered are not restricted to one wetland type, most models were included in more than one wetland type group. Within each wetland type group, variables from all models were then grouped according to similarity (e.g., water quality, vegetation, etc.). Each variable was evaluated based on 1) whether it met the variable selection criteria; 2) whether another, more easily measured/predicted variable in the same or a different similarity group functioned as a surrogate; and 3) whether it was deemed suitable for the WVA application (e.g., some freshwater fish model variables dealt with riverine or lacustrine environments). Variables that did not satisfy those conditions were eliminated from further consideration. The remaining variables, still in their similarity groups, were then further eliminated or refined by combining similar variables and/or culling those that were functionally duplicated by variables from other models (i.e., some variables were used frequently in different models in only slightly different format, such as percent marsh coverage, salinity, etc.).

Variables selected from the HSI models were then compared to those identified in the first part of the selection procedure to arrive at a final list of variables to describe wetland habitat quality. That list includes six variables for each of the marsh types and three for the cypress-tupelo swamp (Attachments l-4).

IV. SUITABILITY INDEX GRAPHS

Suitability Index graphs were constructed for each variable selected within a wetland type. A Suitability Index (SI) graph is a graphical representation of how fish and wildlife habitat quality or "suitability" of a given wetland type is predicted to change as values of the given variable change, and allows the model user to numerically describe, through a Suitability Index, the habitat quality of a wetland area for any variable value. Each Suitability

Index ranges from 0.0 to 1.0, with 1.0 representing the optimum condition for the variable in question.

A variety of resources were utilized to construct each Suitability Index (SI) graph, including personal knowledge of Group members, the species HSI models from which the final list of variables was partially derived, consultation with other professionals and researchers outside the Group, and published and unpublished data and studies. An important **non-biological" constraint on graph development was the need to insure that graph relationships were not counter to the purpose of the CWPPRA, that is, the long term creation, restoration, protection, or enhancement of coastal vegetated wetlands. That constraint was most operative in defining SI graphs for Variable 1 under each marsh model (see discussion below).

The process of graph development was one of constant evolution, feedback, and refinement; the form of each Suitability Index graph was decided upon through consensus among Group members.

V SUITABZLITY **INDEX GRAPE ASSUMPTIONS**

Suitability Index graphs were developed according to the following assumptions:

1. Fresh/Intermediate Marsh Model

   Variable V_1- Percent of wetland covered by persistent emergent vegetation (≥ 10 percent canopy **cover)**. Persistent emergent vegetation plays an important role in coastal wetlands by providing foraging, resting, and breeding habitat for a variety of fish and wildlife species; and by providing a source of detritus and energy for lower trophic organisms that form the basis for the food chain. An area with no marsh (i.e., shallow open water) is assumed to have minimal habitat suitability in terms of this variable, and is assigned an SI of 0.1.

   Optimumvegetation coverage in a fresh/intermediate marsh is

assumed to occur at 100 percent persistent emergent vegetation cover (SI=l.0). That assumption is dictated primarily by the constraint of not having graph relationships conflict with the CWPPRA's purpose of long term creation, restoration, protection, or enhancement of coastal vegetated wetlands. The Group had originally developed a strictly biologically-based graph defining optimum habitat conditions at marsh cover values between 60 and 80 percent, and sub-optimum habitat conditions at 100 percent cover. However, application of that graph, in combination with the time analysis used later in the evaluation process, often reduced project benefits or generated a net loss of habitat quality through time with the project. Those situations arose primarily when: existing (baseline) emergent vegetation cover exceeded the optimum (> 80 percent); the project was predicted to maintain baseline cover values; and without the project the marsh was predicted to degrade, with a concurrent decline in percent emergent vegetation cover into the optimum range (60-80 percent). The time factor aggravated the situation when the without-project degradation was not rapid enough to reduce marsh cover values significantly below the optimum range, or below the baseline SI, within the 20-year evaluation period. In those cases, the analysis would show net-negative benefits for the project, and positive benefits for letting the marsh degrade rather than maintaining the existing marsh. Coupling that situation with the presumption that marsh conditions are not static, and that Louisiana will continue to lose coastal emergent marsh; and taking into account the purpose of the CWPPRA, the Group decided that, all other factors being equal, the WVA should favor projects that maximize emergent marsh creation, maintenance, and protection. Therefore, the Group agreed to deviate from a strict biologically-based habitat suitability graph for V_1 by setting optimum habitat conditions at 100 percent marsh cover.

Variable V_2- Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation. Fresh and intermediate marshes often support diverse communities of floating-leaved and submerged aquatic plants that provide important food and cover to a wide variety of fish and wildlife species. A fresh/intermediate open water area with

no aquatics is assumed to have low suitability (SI=0.1). Optimum condition (SI=l.0) is assumed to occur when 100 percent of the open water is dominated by aquatic vegetation. Habitat suitability may be assumed to decrease with aquatic plant coverage approaching 100 percent due to the potential for mats of aquatic vegetation to hinder fish and wildlife utilization; to adversely affect water quality by reducing photosynthesis by phytoplankton and other plant forms due to shading; and contribute to oxygen depletion spurred by warm-season decay of large quantities of aquatic vegetation. The Group recognized, however, that those affects were highly dependent on the dominant aquatic plants species, their growth forms, and their arrangement in the water column; thus, it is possible to have 100 percent cover of a variety of floating and submerged aquatic plants without the above-mentioned problems due to differences in plant growth form and stratification of plants through the water column. Because predictions of which species may dominate at any time in the future would be tenuous, at best, the Group decided to simplify the graph and define optimum conditions at 100 percent aquatic cover.

Variable V_3- Marsh edge and interspersion. This variable takes into account the relative juxtaposition of marsh and open water for a given marsh:open water ratio, and is measured by'. comparing the project area to sample illustrations (Attachment 5) depicting different degrees of interspersion. Interspersion is assumed to be especially important when considering the value of an area as foraging and nursery habitat for freshwater and estuarine fish and shellfish; the marsh/open water interface represents an ecotone where prey species often concentrate, and where post-larval and juvenile organisms can find cover. Isolated marsh ponds are often more productive in terms of aquatic vegetation than are larger ponds due to decreased turbidities, and, thus, may provide more suitable waterfowl habitat. However, interspersion can be indicative of marsh degradation, a factor taken into consideration in assigning suitability indices to the various Interspersion Types.

A relatively high degree of interspersion in the form of stream courses and tidal channels (Interspersion Type 1, Attachment 5) is assumed to be optimal (SI=1.0); streams and

channels offer interspersion, yet are not indicative of active marsh deterioration. Areas exhibiting a high degree of marsh cover are also ranked as optimum, even though interspersion may be low, to avoid conflicts with the premises underlying the SI graph for variable V,. Without such an allowance, areas of relatively healthy, solid marsh, or projects designed to create marsh, would be penalized with respect to interspersion. Numerous small marsh ponds (Interspersion Type 2) offer a high degree of interspersion, but are also usually indicative of the beginnings of marsh break-up and degradation, and are therefore assigned a more moderate SI of 0.6. Large open water areas (Interspersion Types 3 and 4) offer lower interspersion values and usually indicate advanced stages of marsh loss, and are thus assigned SI's of 0.4 and 0.2, respectively. The lowest expression of interspersion (i.e., no emergent marsh at all within the project area) is assumed to be least desirable and is assigned an SI=0.1.

Variable **V_4- Percent of open water area ≤ 1.5 feet deep in relation to marsh surface.** Shallow water areas are assumed to be more biologically productive than deeper water due to a general reduction in sunlight, oxygen, and temperature as water depth increases. Also, shallower water provides greater bottom accessibility for certain species of waterfowl, better foraging habitat for wading birds, and more favorable conditions for aquatic plant growth. Optimum depth in a fresh/intermediate marsh is assumed to occur when 80 to 90 percent of the open water area is less than or equal to 1.5 feet deep. The value of deeper areas in providing drought refugia for fish, alligators and other marsh life is recognized by assigning an SI=0.6 (i.e., sub-optimal) if all of the open water is less than or equal to 1.5 feet deep.

Variable V_5- Mean high salinity during the growing season. It is assumed that periods of high salinity are most detrimental in a fresh/intermediate marsh when they occur during the growing season (defined as March through November, based on dates of first and last frost contained in Soil Conservation Service soil surveys for coastal Louisiana). Mean high salinity is defined as the **average** of the upper 33 percent of salinity readings taken during a

specified period of record. Optimum condition in fresh marsh is assumed to occur when mean high salinity during the growing season is less than 2 parts per thousand (ppt). Optimum condition in intermediate marsh is assumed to occur when mean high salinity during the growing season is less than 4 ppt.

Variable V_6- Aquatic organism access. Access by aquatic organisms, particularly estuarine fishes and shellfishes, is considered to be a critical component in assessing the "quality" or suitability of a given marsh system to provide habitat to those species. Additionally, a marsh with a relatively high degree of access by default also exhibits a relatively high degree of hydrologic connectivity with adjacent systems, and therefore may be considered to contribute more to nutrient exchange than would a marsh exhibiting a lesser degree of access. The Suitability Index for V, is determined by calculating an "Access Value" based on the interaction between the percentage of the project area wetlands considered accessible by estuarine organisms during normal tidal fluctuations, and the type of man-made structures (if any) across identified points of ingress/egress (bayous, canals, etc.). Standardized procedures for calculating the Access Value have been established (Attachment 6). Optimum condition is **assumed to** exist when all of the study area is accessible and the access points are entirely open and unobstructed. A fresh/intermediate marsh with no access is assigned an SI=0.3, reflecting the assumption that, while fresh/intermediate marshes are important to some species of estuarine fishes and shellfish, such a marsh lacking access continues to provide benefits to a wide variety of other wildlife and fish species, and is not without habitat value.

2. **Brackish Marsh** Model

Variable V_1- Percent of wetland covered by persistent emergent vegetation (≥ 10 percent canopy cover). Refer to the V_1 discussion under the fresh/intermediate marsh model for a discussion of the importance of persistent emergent vegetation in coastal marshes. The V_1 Suitability Index graph in the brackish marsh model is identical to that in

the fresh/intermediate model.

Variable V_2- Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation. Like fresh/intermediate marshes, brackish marshes have the potential to support aquatic plants that serve as important sources of food and cover for a wide variety of wildlife. However, brackish marshes generally do not support the amounts and kinds of aquatic plants that occur in fresh/intermediate marshes (although certain species, such as widgeon-grass, can occur abundantly under certain conditions). Therefore, a brackish marsh entirely lacking aquatic plants is assigned an SI=0.3. It is assumed that optimum open water coverage of aquatic plants in a brackish marsh occurs at 100 percent aquatic cover.

Variable V_3- Marsh edge and interspersion. The Suitability Index graph for edge and interspersion in the brackish marsh model is the same as that in the fresh/intermediate marsh model.

Variable V_4- Open water depth in relation to marsh surface. As in the fresh/intermediate model, shallow water areas in brackish marsh habitat are assumed to be important. However, brackish marsh generally exhibits deeper open water areas than fresh marsh due to tidal scouring. Therefore, the SI graph is constructed so that lower percentages of shallow water receive higher SI values relative to fresh/intermediate marsh. Optimum open water depth condition in a brackish marsh is assumed to occur when 70 to 80 percent of the open water area is less than or equal to 1.5 feet deep.

Variable V_5- Average annual salinity. The suitability index graph is constructed to represent optimum average annual salinity condition at between 6 ppt and 10 ppt. Average annual salinities below 3 ppt are not considered on the graph because salinities below that level effectively define an intermediate marsh. Similarly, average annual salinities greater than 16 ppt are assumed to be representative of those found in a saline marsh, and thus are not considered in the brackish marsh model.

Variable V_6- Aquatic organism access. The general rational and procedure behind the V_6 Suitability Index graph for the brackish marsh model is identical to that established for the fresh/intermediate model. However, brackish marshes are assumed to be more important as providers of habitat to estuarine fish and shellfish than fresh/intermediate marshes. Therefore, a brackish marsh providing no access is assigned an SI of 0.1.

3. Saline Marsh Model

Variable V_1- Percent of wetland covered by persistent emergent vegetation (≥ 10 percent canopy cover). Refer to the V_1 discussion under the fresh/intermediate marsh model for a discussion of the importance of persistent emergent vegetation in coastal marshes. The V_1 Suitability Index graph in the saline marsh model is identical to that in the fresh/intermediate and brackish models.

Variable V_2- Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation. Refer to the V_2 discussion under the brackish marsh model for a discussion of persistent emergent vegetation in more saline coastal marshes. The V_2 Suitability Index graph in the saline marsh model is identical to that in the brackish model.

Variable V_3- Marsh edge and interspersion. The Suitability Index graph for edge and interspersion in the saline marsh model is the same as that in the fresh/intermediate and brackish marsh models.

Variable V_4- Open water depth in relation to marsh surface. The Suitability Index graph for open water depth in the saline marsh is similar to that for brackish marsh, where optimum conditions are assumed to occur when 70 to 80 percent of the open water area is less than or equal to 1.5 feet deep. However, at 100 percent shallow water, the saline graph yields an SI= 0.5 rather than 0.6 for the brackish model. That change reflects the increased abundance of tidal channels and generally deeper water conditions prevailing in a saline marsh due to increased

tidal influences, and the importance of those **tidal channels** to estuarine organisms.

Variable **V_5- Average annual salinity.** The Suitability Index graph is constructed to represent optimum salinity conditions at between 12 ppt and 21 ppt. Average annual salinities below 9 ppt are not considered on the graph because average annual salinities below that level define a brackish marsh.

Variable V_6- Aquatic organism access. The Suitability Index graph for aquatic organism **access** in the saline marsh model is the same as that in the brackish marsh model.

4. Cypress-Tupelo Swamp Model

Variable V_1- Water regime. Four water regime categories are described for the cypress-tupelo swamp model. The optimum water regime for a cypress-tupelo swamp is **assumed to be** seasonal flooding (SI=l.0); seasonal flooding with periodic drying cycles is **assumed to** contribute to increased nutrient cycling (primarily through oxidation and decomposition of accumulated detritus), increased vertical structure complexity (due to growth of other plants on the swamp floor), and increased recruitment of dominant overstory trees. Semipermanent flooding is also assumed to be desirable, as reflected in the SI=0.8 for that water regime category. Permanent flooding is assumed to be the least desirable (SI=0.2).

Variable V_2- Water flow/exchange. This variable attempts to take into consideration the amounts and types of water inputs into a cypress-tupelo swamp. The Suitability Index graph is constructed under the assumption that abundant and consistent riverine input and water flow-through is optimum (SI=l.0), because under that regime the full functions and values of a cypress-tupelo swamp in providing fish and wildlife habitat are assumed to be maximized. Habitat suitability is **assumed to** decrease as water exchange between the swamp and adjacent systems is reduced. A swamp system with no water exchange (e.g., an impounded swamp where the only water input is through rainfall and the only water loss

is through evapotranspiration and ground seepage) is assumed to be least desirable, and is assigned an SI= 0.2.

Variable V_3- Average high salinity. Average high salinity is defined as the average of the upper 33 percent of salinity measurements taken during a specified period of record. Because baldcypress is salinity-sensitive, optimum conditions for baldcypress survival are assumed to occur at average' high salinities less than 1 ppt. Habitat suitability is assumed to decrease rapidly at average high salinities in excess of 1 ppt.

VI. HABITAT SUITABILITY INDEX FORMULA

The final step in WVA model development was to construct a mathematical formula that combines all Suitability Indices for each wetland type into a single Habitat Suitability Index (HSI) value. Because the Suitability Indices range in value from 0.0 to 1.0, the HSI also ranges in from 0.0 to 1.0, and is a numerical representation of the overall or "composite" habitat quality of the particular wetland study area being evaluated. The HSI formula defines the aggregation of Suitability Indices in a manner unique to each wetland type depending on how the formula is constructed.

Within an HSI formula, any Suitability Index can be weighted by various means to increase the power or "importance" of that variable relative to the other variables in determining the HSI. Additionally, two or more variables can be grouped together into subgroups to further isolate variables for weighting.

In constructing HSI formulas for the marsh models, the Group recognized that the primary focus of the CWPPRA is on vegetated wetlands, and that some marsh protection strategies could have adverse impacts to estuarine organism access. Therefore, the Group made an a *priori* decision to emphasize variables V_1, V_2, and V_6 by grouping and weighting them together. Weighting was facilitated by treating the grouped variables as a geometric mean. Variables V_3, V_4, and V_5 were grouped to isolate their influence relative to V_1, V_2, and V,.

For all marsh models, V_1 receives the strongest weighting. The relative weights of V_2 and V_6 differ by marsh model to reflect differing levels of importance for those variables between the marsh types. For example, the amount of aquatic vegetation was deemed more important in the context of a fresh/intermediate marsh than in a saline marsh, due to the relative contributions of aquatic vegetation between the two marsh types in terms of providing food and cover.. Therefore, V_2 receives more weight in the fresh/intermediate HSI formula than in the saline HSI formula. Similarly, the degree of estuarine organism access was considered more important in a saline marsh than a fresh/intermediate marsh, and V_6 receives more weight in the saline HSI formula than in the fresh/intermediate formula.

As with the Suitability Index graphs, the Habitat Suitability Index formulas were developed by consensus among the Group members.

VI. BENEFIT ASSESSMENT

The net benefits of a proposed project are estimated by predicting future habitat conditions under two scenarios: with the proposed project in place and without the proposed project. Specifically, predictions are made as to how the model variables will change through time under the two scenarios. Through that process, HSI's are established for baseline (pre-project) conditions and for future-with- and future-without-project scenarios for selected "target years" throughout the expected life of the project. Those HSI's are then multiplied by the acreage of wetland type known or expected to be present in the target years to arrive at Habitat Units.

Habitat Units (HU's) represent a numerical combination of quality (HSI) and quantity (acres) existing at any given point in time. The "benefit" of a project can be quantified by comparing HU's between the future-with and future-without-project scenarios. The difference in HU's between the two scenarios represents the net benefit attributable to the project in terms of habitat quantity and quality.

The HU's resulting from the future-with and future-without-project scenarios are annualized, averaged out over the project life, and compared to determine the net gain in average annual HU's (AAHU's) attributable to the project. Net gain in AAHU's is then combined with annualized cost data to arrive at a cost per AAHU for the evaluated project. That figure is compared to the same figure from other projects in order to rank all proposed projects in order of cost per AAHU.

LITERATURE CITED

U. S. Fish and Wildlife Service. 1980. Habitat evaluation procedures (HEP). Div. Ecol. Serv. ESM 102, U. S. Fish and Wildl. Serv., Washington, DC. 141pp.

Revised June 2, 1993

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Fresh/Intermediate Marsh

Vegetation:

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Interspersion:

Variable V_3 Marsh edge and interspersion.

Water Depth:

Variable V, Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.

Water Quality:

Variable V_5 Mean high salinity during the growing season (March through November).

Aquatic Organism Access:

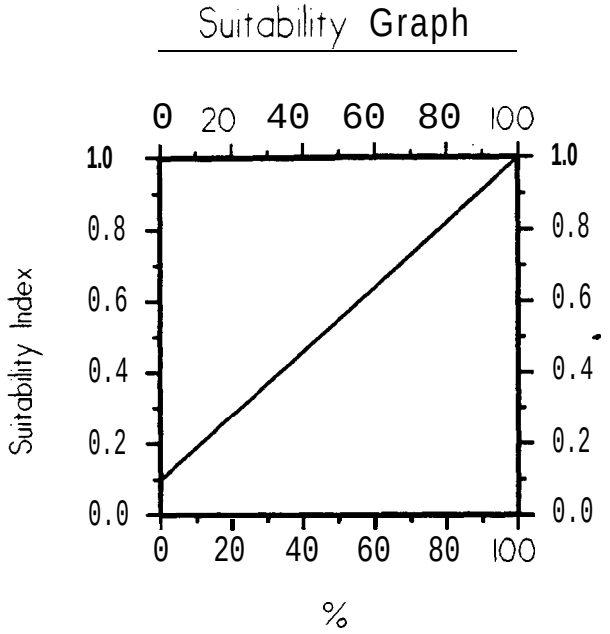
Variable V_6 Aquatic organism access.

HSI Calculation:

$$HSI = \frac{\left[3 \ .5x \ (SIV_1^{3} \times SIV_2^{1.2} \times SIV_6^{0.5})^{(1/4.7)}\right] + \left|\frac{(SIV_3 + SIV_4 + SIV_5)}{3}\right|}{4.5}$$

FRESH/INTERWEDIATE MARSH

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).



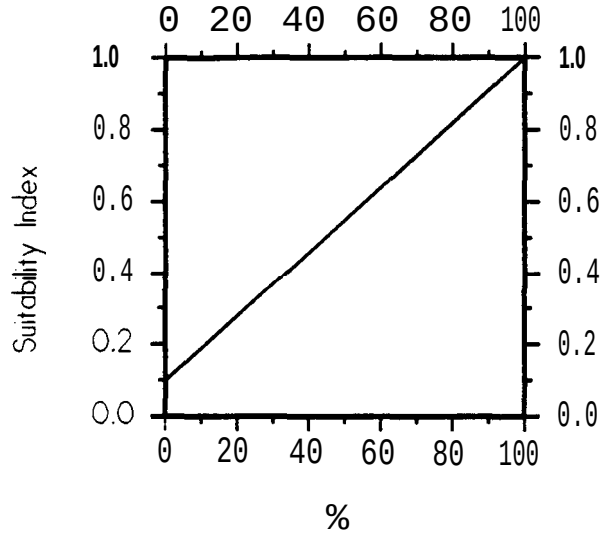
Line Formulas

SI = (0.009 * %) + 0.1

FRESH/INTERMEDIATE MARSH

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Suitability Graph



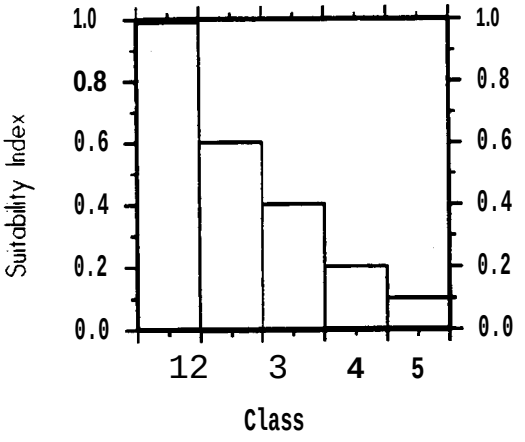
Line Formulas

SI = (0.009 * %) + 0.1

FRESH/INTERMEDIATE MARSH

Variable V_3 Marsh edge and interspersion.

Suitability Graph

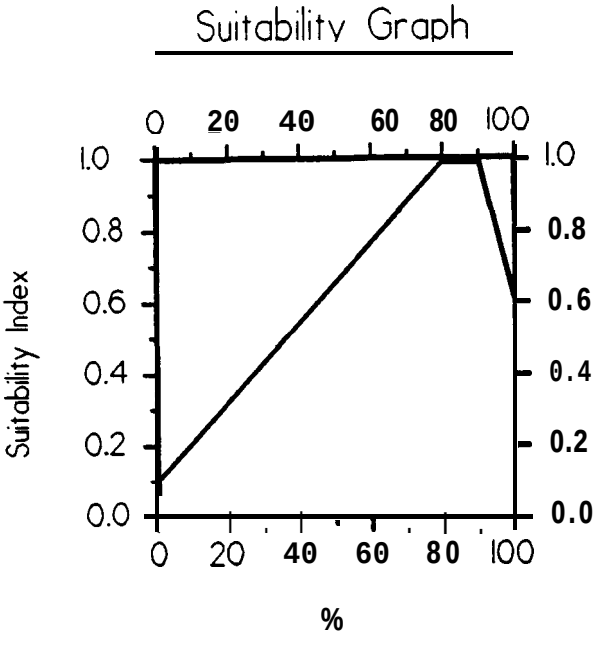


Instructions for Calculating SI for Variable.3:

1. Refer to Attachment 5 for examples of the different interspersion classes (=types).

2. Estimate percent of project area in each class and compute a weighted average to arrive at SIV,. If the entire project area is solid marsh, assign an interspersion class #l (SI=l.O). Conversely, if the entire project area is open water, assign an interspersion class #5 (SI=O.l).

Variable V_4 Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.



Line Formulas

If 0 ≤ % < 80, then SI = (0.01125 * %) + 0.1

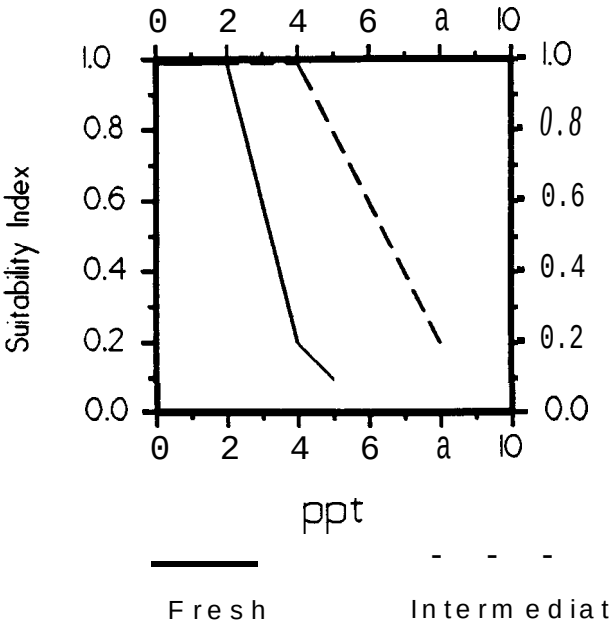
If 80 ≤ % < 90, then SI = 1.0

If % ≥ 90, then SI = (-0.04 * %) + 4.6

FRESH/INTERMEDIATE MARSH

Variable V_5 Mean high salinity during the growing season (March through November).

Suitability Graph



Line Formulas

Fresh Marsh:

If 0 ≤ ppt < 2, then SI = 1.0
If 2 ≤ ppt < 4, then SI = (-0.4 * ppt) + 1.8
If 4 ≤ ppt ≤ 5 then SI = (-0.1 * ppt) + 0.6

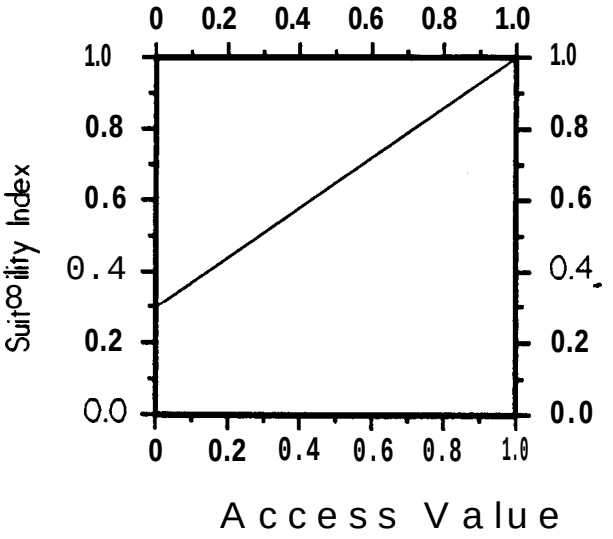
Intermediate Marsh:

If 0 ≤ ppt < 4, then SI = 1.0
If 4 ≤ ppt ≤ 8, then SI = (-0.2 * ppt) + 1.8

NOTE: Mean high salinity is defined as the average of the upper 33 percent of salinity readings taken during the period of record.

Variable V_6 Aquatic organism access.

Suitability Graph



Line **Formula**

SI = **(0.7 *** Access Value) + 0.3

NOTE: Access Value = P * R, where **"P"** = percentage of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and **"R" =** Structure Rating.

Refer to Attachment 6 ****Procedure For Calculating Access Value" for complete information on calculating "P" and "R" values.**

Revised June 2, 1993

WETLAND **VALUE ASSESSMENT COMMUNITY MODEL**

Brackish Marsh

Vegetation:

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Interspersion:

Variable V_3 Marsh edge and interspersion.

Water Depth:

Variable V, Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.

Water Quality:

Variable V_5 Average annual salinity.

Aquatic Organism Access:

Variable V_6 Aquatic organism access.

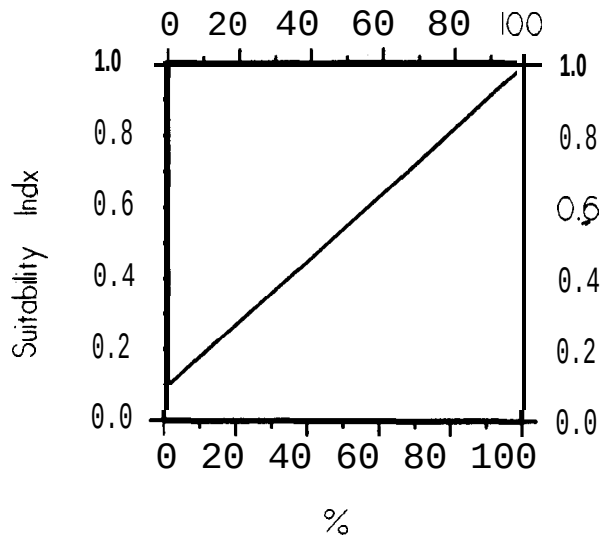
HSI Calculation:

$$HSI = \frac{\left[3.5 \times (SIV_1^3 \times SIV_2 \times SIV_6)^{(1/5)}\right] + \left|\frac{(SIV_3 + SIV_4 + SIV_5)}{3}\right|}{4.5}$$

BRACKISH MARSH

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).

Suitability **Graph**

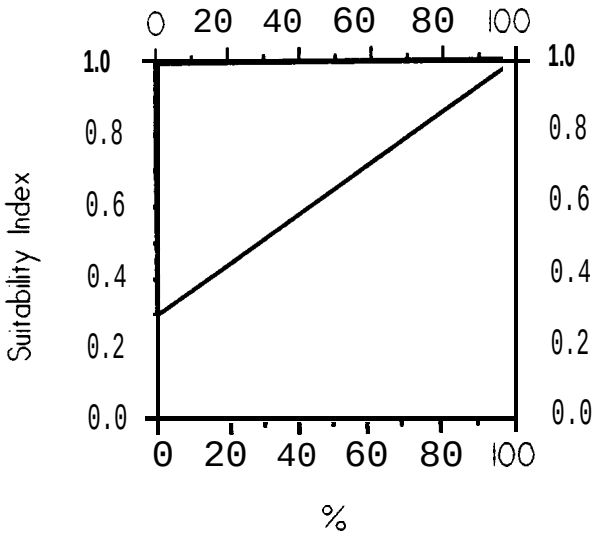


Line Formulas

SI = (0.009 * %) + 0.1

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Suitabality Graph



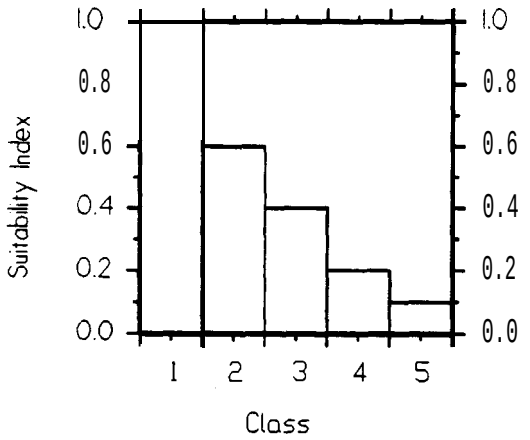
Line Formulas

SI = (0.007 * %) + 0.3

BRACKISH MARSH

Variable V_3 Marsh edge and interspersion.

Suitability Graph



Instructions for Calculating SI for Variable 3:

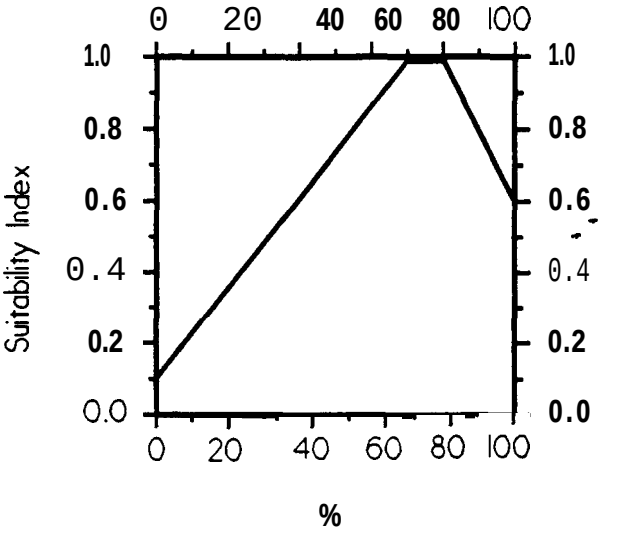
1. Refer to Attachment 5 for examples of the different interspersion classes ('types).

2. Estimate percent of project area in **each** class and compute a weighted average to arrive at **SIV_3.** If the entire project area is solid marsh, assign an interspersion class #l (SI=l.O). Conversely, if the entire project area is open water, assign an interspersion class #5 (SI=O.l).

BRACKISH MARSH

Variable V, Percent of open water area ≤ **1.5** feet deep, in relation to marsh surface.

Suitability Graph



Line Formulas

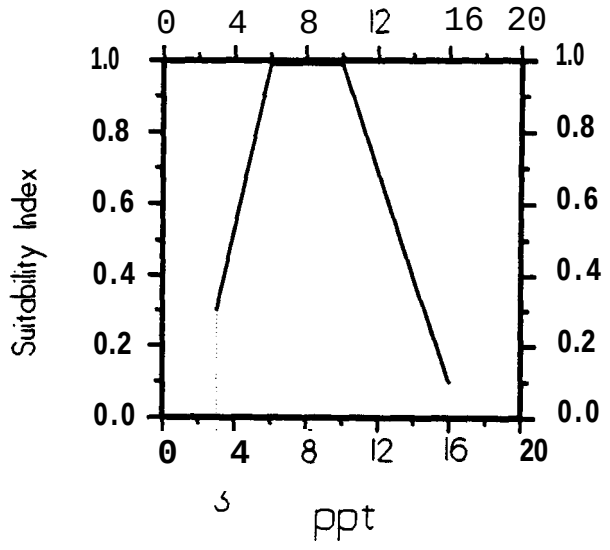
If 0 ≤ % < **70**, then SI = (0.01286 * %) + 0.1

If **70** ≤ % < **80**, then SI = 1.0

If % ≥ **80**, then SI = (-0.02 * %) + 2.6

Variable V_5 Average annual salinity.

Suitability Graph



Line Formulas

If **3 ≤ ppt< 6,** then **SI = (0.233** * ppt) **- 0.4**

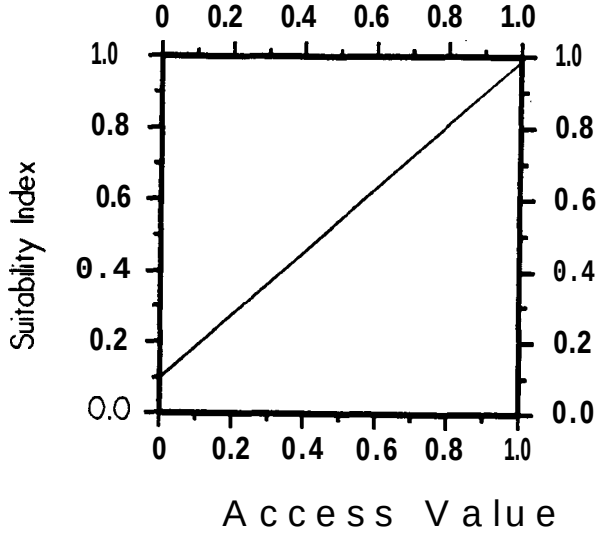
If 6 ≤ ppt< 10, then **SI = 1.0**

If ppt **≥** 10, then **SI = (-0.15** * ppt) + **2.5**

BRACKISH MARSH

Variable V_6 Aquatic organism access.

Suitability Graph



Line Formula

SI = (0.9 * Access Value) + 0.1

Note: Access Value = P * R, where "P" = percentage.of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and "R" = Structure Rating.

Refer to Attachment 6 "Procedure For Calculating Access Value" for complete information on calculating "P" and "R" values.

Revised June 2, 1993

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Saline Marsh

Vegetation:

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Interspersion:

Variable V_3 Marsh edge and interspersion.

Water Depth:

Variable V_4 Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.

Water Quality:

Variable V_5 Average annual salinity.

Aquatic Organism Access:

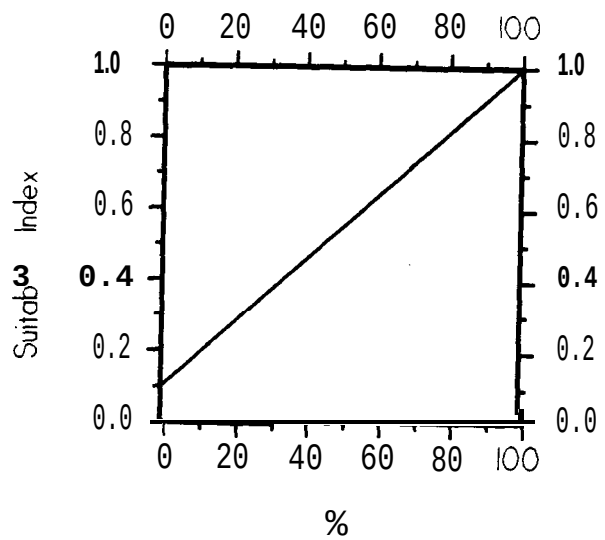
Variable V_6 Aquatic organism access.

HSI Calculation:

$$HSI = \frac{\left[3.5 \times \left(SIV_1^{3} \times SIV_2^{0.5} \times SIV_6^{1.2}\right)^{(1/4.7)}\right] + \left|\frac{(SIV_3 + SIV_4 + SIV_5)}{3}\right|}{4.5}$$

Variable V_1 Percent of wetland area covered by emergent vegetation (≥ 10% canopy cover).

Suitability Graph

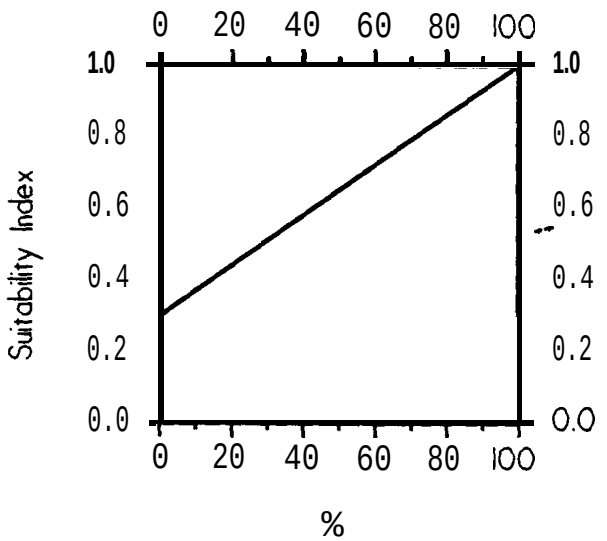


Line Formulas

SI = (0.009 * %) + 0.1

Variable V_2 Percent of open water area dominated (> 50% canopy cover) by aquatic vegetation.

Suitability Graph



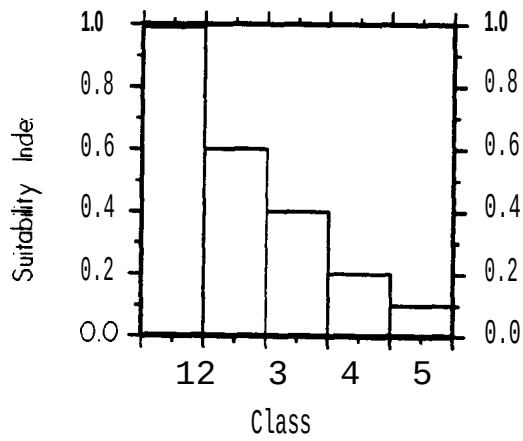
Line Formulas

SI = (0.007 * %) + 0.3

SALINE MARSH

Variable V_3 Marsh edge and interspersion.

Suitability Graph



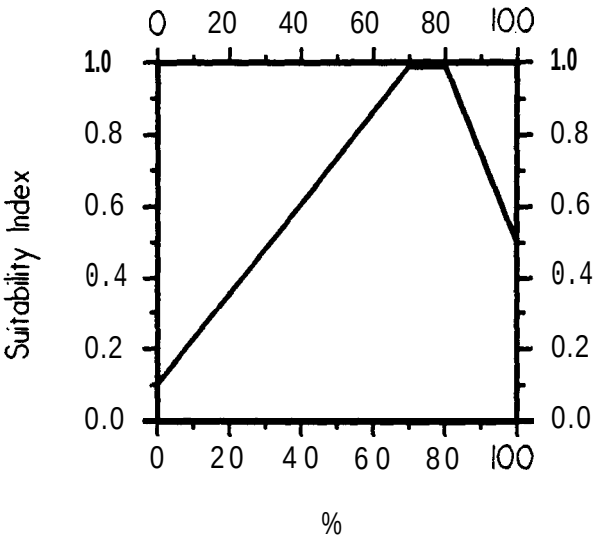
Instructions for Calculating SI for Variable 3:

1. Refer to Attachment 5 for examples of the different interspersion classes ('types).

2. Estimate percent of project area in each class and compute a weighted average to arrive at SIV,. If the entire project area is solid marsh, assign an interspersion class #l (SI=l.O). Conversely, if the entire project area is open water, assign an interspersion class #5 (SI=0.1).

Variable V, Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.

Suitability Graph



Line Formulas

If 0 ≤ % < 70, then SI = (0.01286 * %) + 0.1

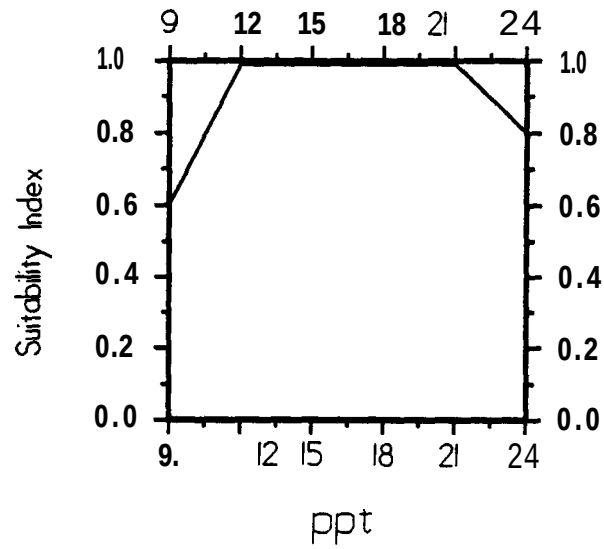
If 70 ≤ % < 80, then SI = 1.0

If % ≥ 80, then SI = (-0.025 * %) + 3.0

SALINE MARSH

Variable V_5 Average annual salinity.

Suitability Graph



Line Formulas

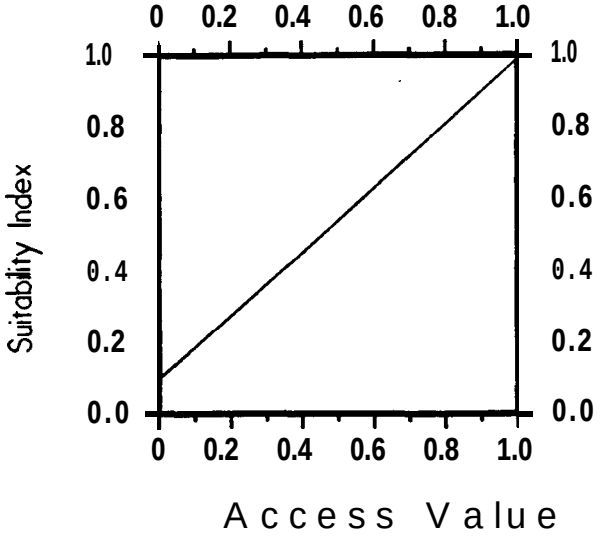
If $9 \leq ppt < 12$, then $SI = (0.133 * ppt) - 0.6$

If $12 \leq ppt < 21$, then $SI = 1.0$

If $ppt \geq 21$, then $SI = (-0.067 * ppt) + 2.4$

Variable V_6 Aquatic organism access.

Suitability Graph



Line Formula

SI = (0.9 * Access Value) + 0.1

Note: **Access Value = P * R, where "P" = percentage of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and "R" = Structure Rating.**

Refer **to Attachment 6 "Procedure For Calculating Access Value" for complete information on calculating "P" and **R" values.**

-Revised August 6, 1992

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Cypress-Tupelo Swamp

Water Depth and Duration:

Variable V_1 Water regime.

Water Quality:

Variable V_2 Water flow/exchange.

Variable V_3 Average high salinity.

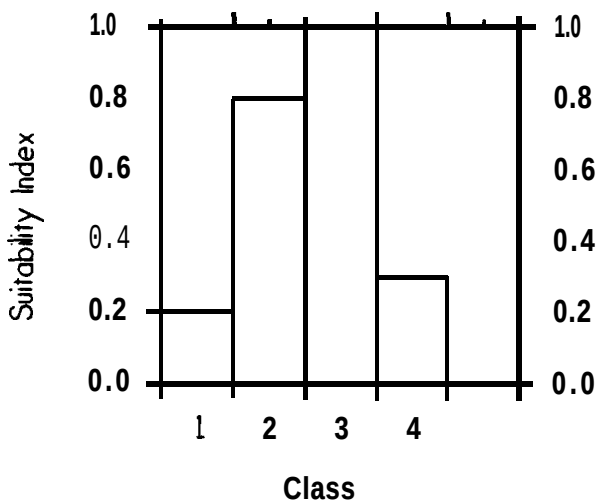
HSI Calculation:

$$HSI = (SI_{V_1} \times SI_{V_2} \times SI_{V_3})^{1/3}$$

CYPRESS-TUPELO SWAMP

Variable V_1 Water regime.

Suitability Graph



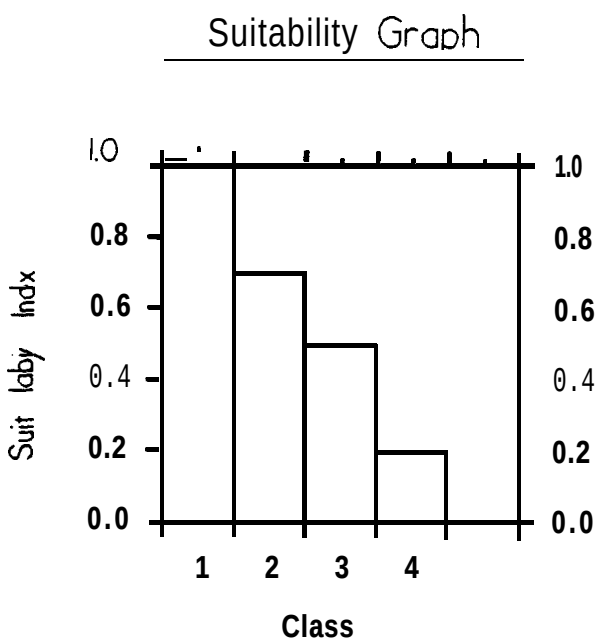
1 - Permanently Flooded: watercoversthe substratethroughoutthe year in all years.

2 - Seminermanentlv Flooded: surface water is present throughout the growing season in most years.

3 - Seasonally Flooded: surface water is present for extended periods, especially in the growing season, but is absent by the end of the growing season in most years.

4 - Temnorarilv Flooded: surface water is present for brief periods during the growing season, but the water table usually lies well below the surface for most of the season.

Variable V_2 Water flow/exchange.



1 - **Receives** abundant and consistent riverine input and through-flow.

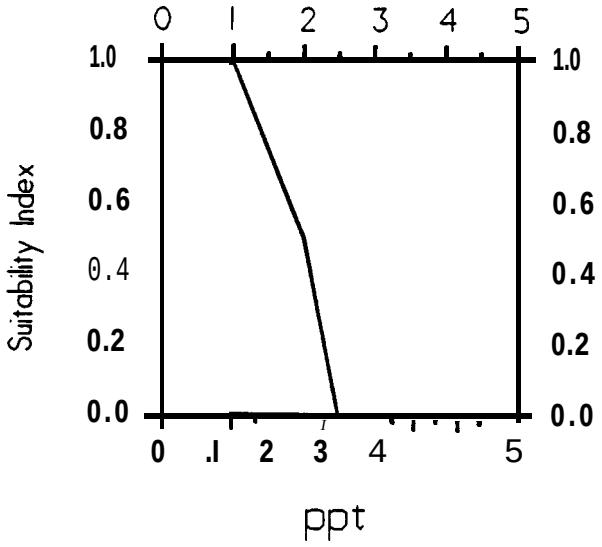
2 - Moderate water exchange, through riverine and/or tidal input.

3 - Limited water exchange, through riverine and/or tidal input.

4 - No water exchange (stagnant, impounded).

Variable V_3 Average high salinity.

Suitability Graph



Line Formulas

If $0 \leq ppt < 1$, then $SI = 1.0$

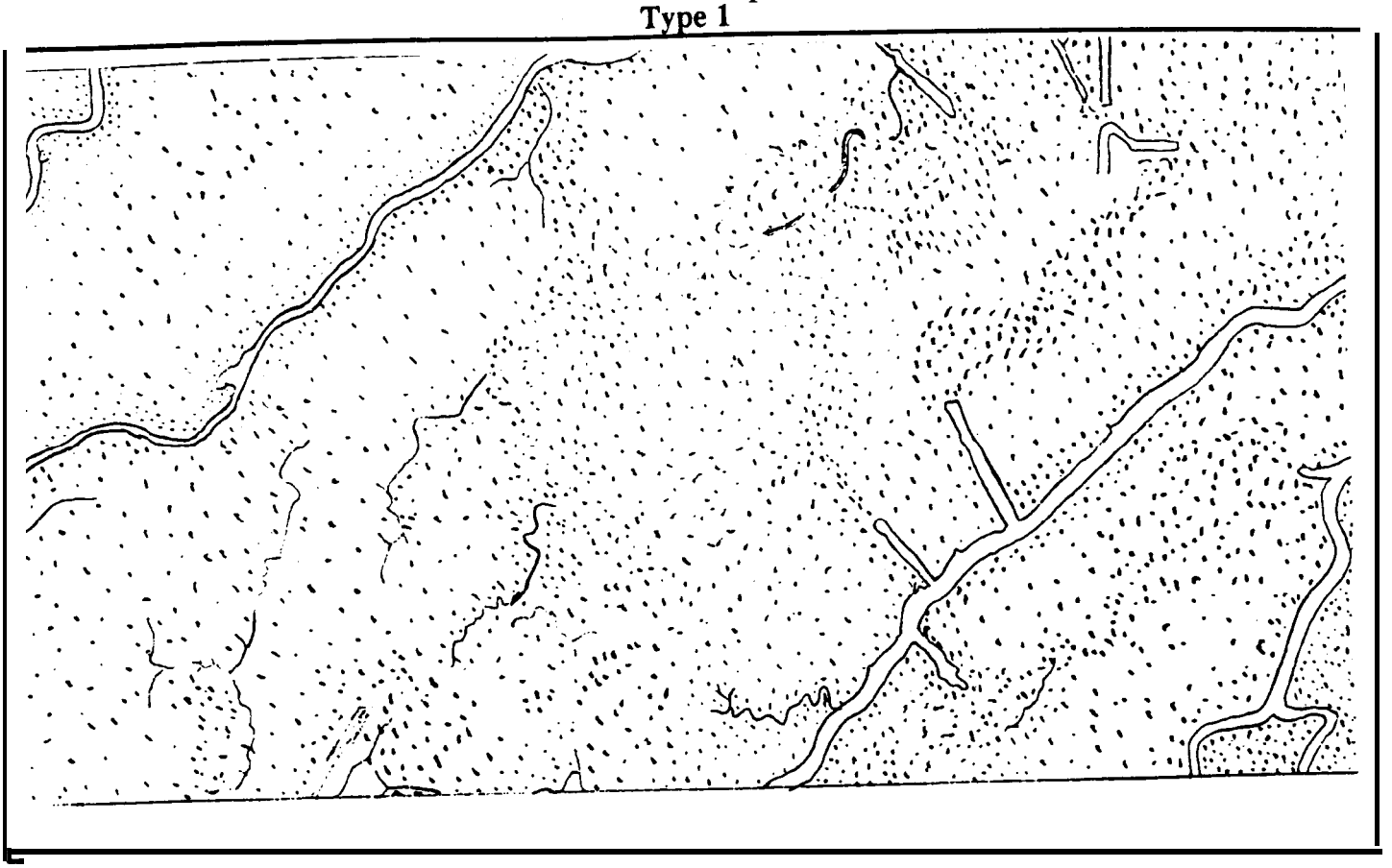
If $1 \leq ppt < 2$, then $SI = (-0.5 * ppt) + 1.5$

If $2 \leq ppt < 2.5$, then $SI = (-1.0 * ppt) + 2.5$

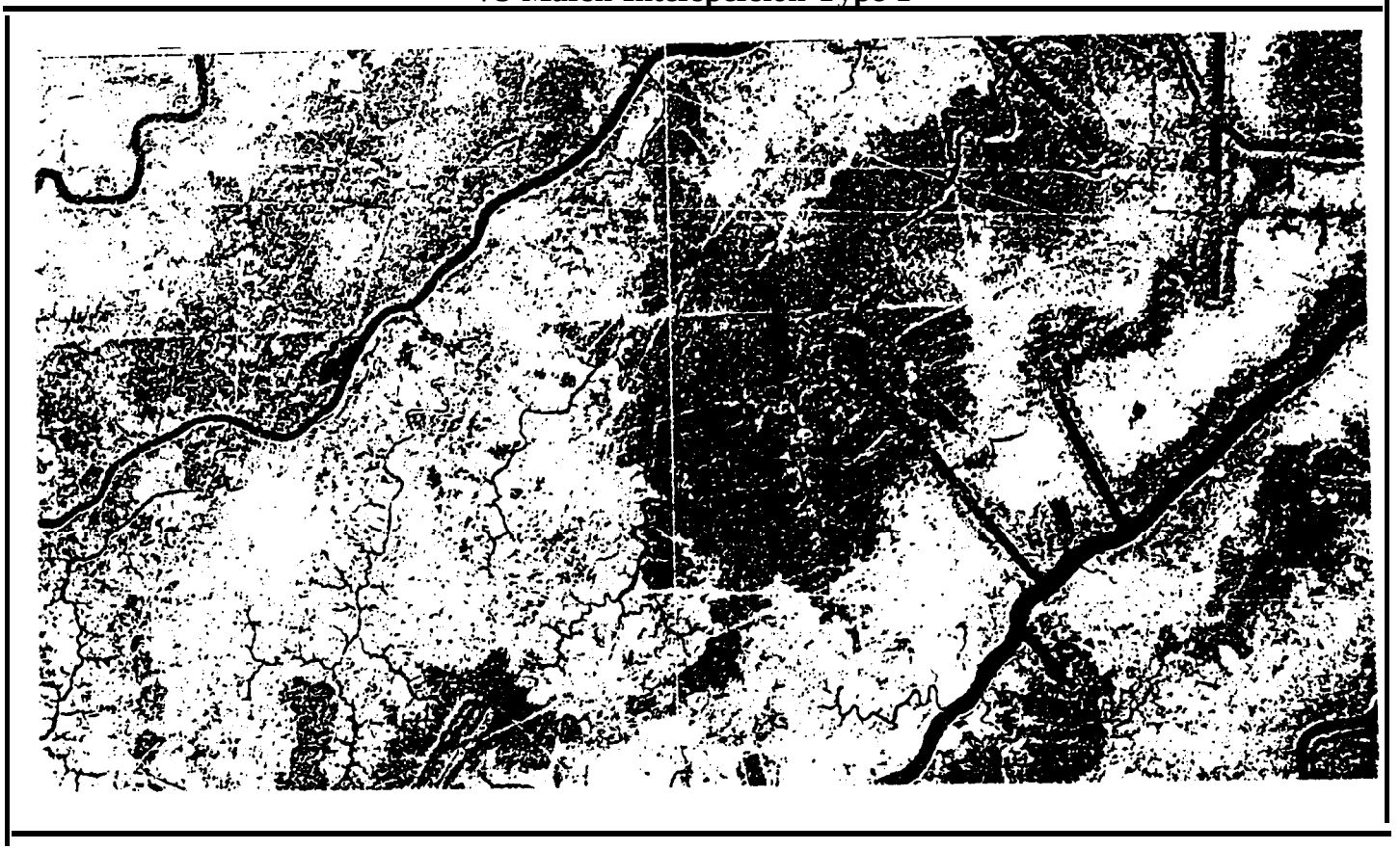
If $ppt \geq 2.5$, then $SI = 0$

Average high salinity is defined as the average of the **upper33** percent of salinity readings taken during the period of record.

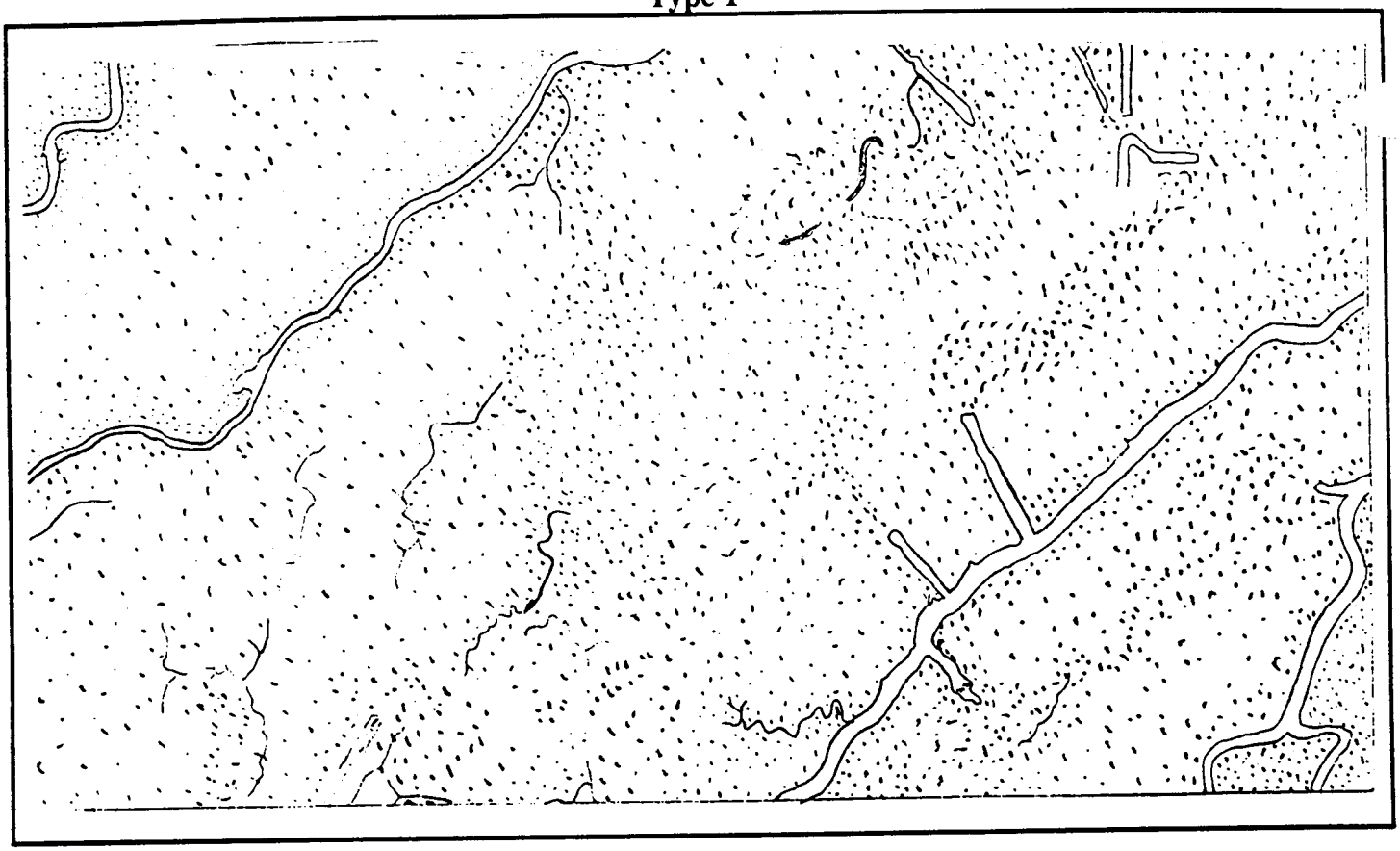
V3 Marsh Interspersion
Type 1



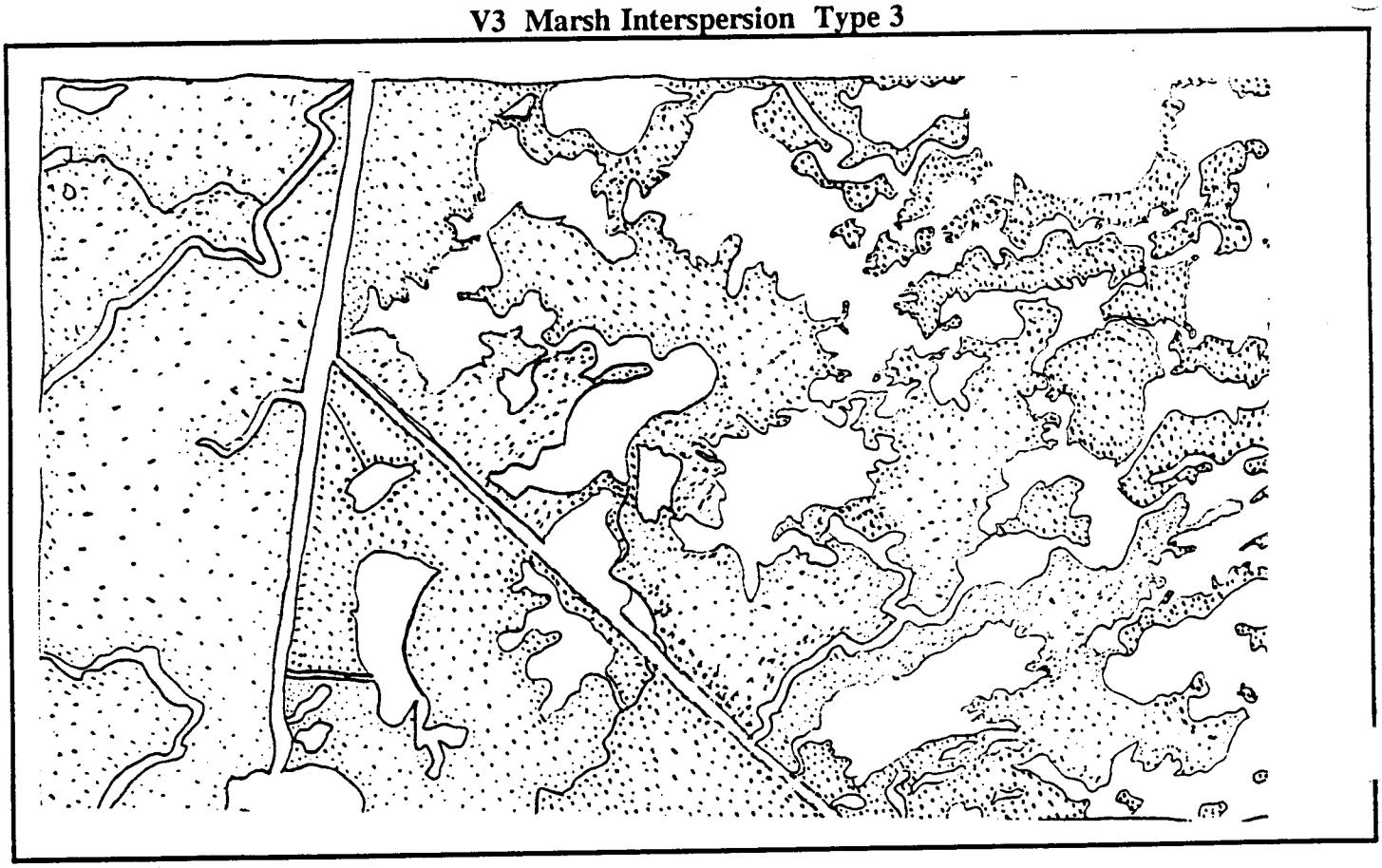
V3 Marsh Interspersion Type 1



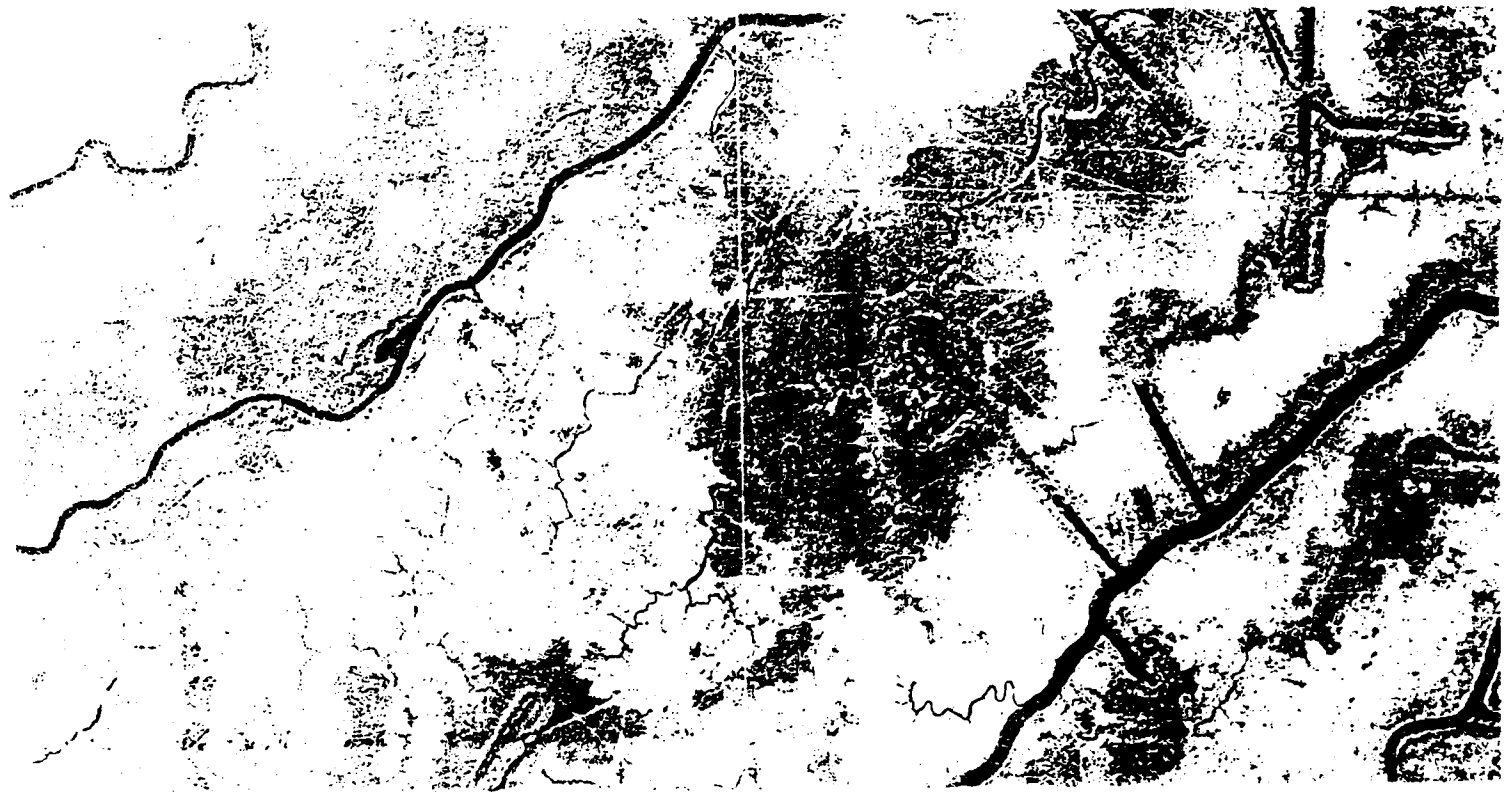
V3 Marsh Interspersion
Type 1



V3 Marsh Interspersion Type 3



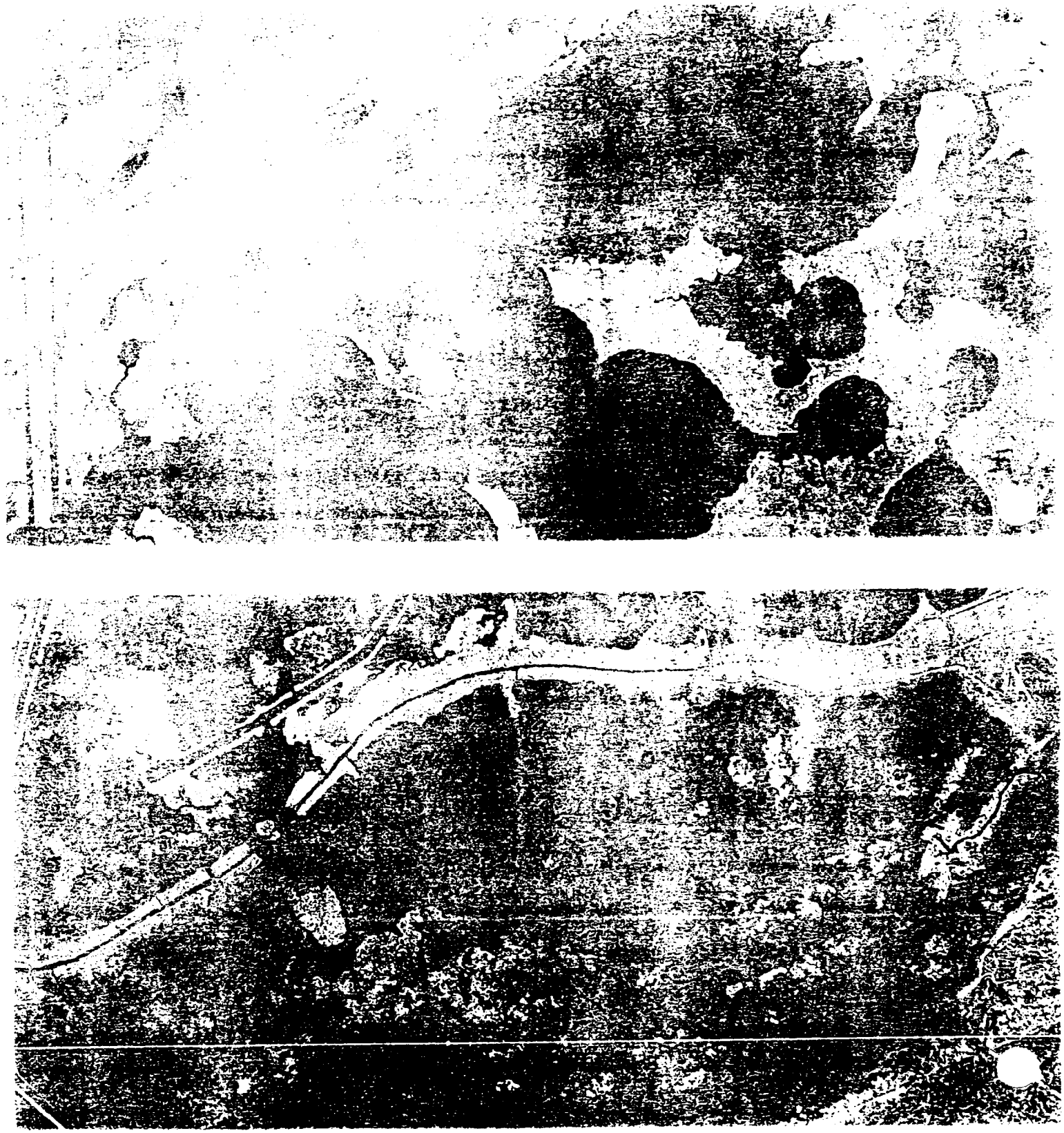
Variable 3-Marsh Interspersion Type 1
Scale 1" = 2000'



Variable 3 - Marsh Interspersion Type 2
Scale 1" = 2000'

Variable 3 - Marsh Interspersion Type 3
Scale 1" = 2000'

Variable 3 - Marsh Interspersion Type 4
Scale 1” = 2000’



Revised June 2, 1993

PROCEDURE FOR CALCULATING ACCESS VALUE

1. Determine the percent of wetland area accessible by estuarine organisms during normal tidal fluctuations (P) for baseline (TYO) conditions. P may be determined by examination of aerial photography, knowledge of field conditions, or other appropriate methods.

2. Determine the Structure Rating (R) for each project structure as follows:

Structure Type	Rating
open system	1.0
rock weir set at lft BML[1], w/ boat bay	0.8
rock weir with boat bay	0.6
rock weir set at ≥ lft BML	0.6
slotted weir with boat bay	0.6
open culverts	0.5
weir with boat bay	0.5
weir set at ≥1ft BML	0.5
slotted weir	0.4
flapgated culvert with slotted weir	0.35
variable crest weir	0.3
flapgated variable crest weir	0.25
flapgated culvert	0.2
rock weir	0.15
fixed crest weir	0.1
solid plug	0.0001

For each structure type, the rating listed above pertains only to the standard structure configuration and assumes that the structure is operated according to common operating schedules consistent with the purpose for which that structure is designed. In the case of a "hybrid" structure or a unique application of one of the above-listed types (including unique or "non-standard" operational schemes), the WVA analyst(s) may assign an appropriate Structure Rating between 0.0001 and 1.0 that most closely approximates the relative degree to which the structure in question would allow ingress/egress of estuarine organisms. In those cases, the rational used in developing the new Structure Rating shall be documented.

3. Determine the Access Value. Where multiple openings equally affect a common **accessible unit", the Structure Rating (R) of

[1] Below Marsh Level

the structure proposed for the "major" access point for the unit will be used to calculate Access Value. The designation of "major" will be made by the Environmental Work Group. An "accessible unit" is a defined as a portion of the total accessible area that is served by one or more access routes (canals, bayous, etc.), yet is isolated in terms of estuarine organism access to or from other units of the project area. Isolation factors include physical barriers that prohibit further movement of estuarine organisms, such as natural levee ridges, and spoil banks; and dense marsh that lacks channels, trenasses, and similar small connections that would, if present, provide access and intertidal refugia for estuarine organisms.

Access Value should be calculated according to the following examples (Note: for all examples, P for TYO = 90%. That designation is arbitrary and is used only for illustrative purposes; P could be any percentage from 0% to 100%):

a. One opening into area; no structure.

   Access Value = P
   = .90

b. One opening into area that provides access to the entire 90% of the project area deemed accessible. A flapgated culvert with slotted weir is placed across the opening.

   Access Value = P * R
   = .90 * .6
   = .54

c. Two openings into area, each capable by itself of providing full access to the 90% of the project area deemed accessible in TYO. Opening #2 is determined to be the major access route relative to opening #l. A flapgated culvert with slotted weir is placed across opening #l. Opening #2 is left unaltered.

   Access Value = P
   = .90

   Note: Structure #l had no bearing on the Access Value calculation because its presence did not reduce access (opening #2 was determined to be the major access route, and access through that route was not altered).

d. Two openings into area. Opening #l provides access to an

accessible unit comprising 30% of the area. Opening #2 provides access to an accessible unit comprising the remaining 60% of the project area. A flapgated culvert **with** slotted weir is placed across #l. Opening #2 is left open.

Access Value = weighted avg. of Access Values of the two accessible units

$$= ([P_1*R_1] + [P_2*R_2])/(P_1+P_2)$$
$$= ([.30*0.6] + [.60*1.0])/(.30+.60)$$
$$= (.18 + .60)/.90$$
$$= .78/.90$$
$$= .87$$

Note: $P_1 + P_2 = .90$, because only 90 percent of the study area was determined to be accessible at TYO.

8. Three openings into area, each capable of providing full access to the entire area independent of the others. Opening #3 is determined to be the major access route, relative to openings #l and #2. Opening #l is blocked with a solid plug. Opening #2 is fitted with a flapgated culvert with slotted weir, and opening #3 is left open.

Access Value = P
= .90

Note: Structures #l and #2 had no bearing on the Access Value calculation because their presence did not reduce access (opening #3 was determined to be the major access route, and access through that route was not altered).

f. Three openings into area, each capable of providing full access to the entire area independent of the others. Opening #2 is determined to be the major access route relative to openings #l and #3. Opening #l is blocked with a solid plug. Opening #2 is fitted with a flapgated culvert with slotted weir, and opening #3 is fitted with a fixed crest weir.

Access Value = $P * R_2$
= .90 * .6
= .54

Note: Structures #l and #3 had no bearing on the Access Value calculation because their presence did not reduce access. Opening #2 was determined beforehand to be the major access route; thus, it was the flapgated culvert with slotted weir across that opening that actually served to limit access.

g. Three openings into area. Opening #1 provides access to an accessible unit comprising 20% of the area. Openings #2 and #3 provide access to an accessible unit comprising the remaining 70% of the area, and within that area, each is capable by itself of providing full access. However, opening #3 is determined to be the major access route relative to opening #2. Opening #l is fitted with an open culvert, #2 with a flapgated culvert with slotted weir, and #3 with a fixed crest weir.

Access Value = $([P_1*R_1] + [P_2*R_3])/(P_1+P_2)$

= $([.20*.7]+[.70*.6])/(.20+.70)$
= $(.14 + .42)/.90$
= $.56/.90$
= $.62$

h. Three openings into area. Opening #l provides access to an accessible unit comprising 20% of the area. Opening #2 provides access to an accessible unit comprising 40% of the area, and opening #3 provides access to the remaining 30% of the area. Opening #l is fitted with an open culvert, #2 a flapgated culvert with slotted weir, and #3 a fixed crest weir.

Access Value = $([P_1*R_1]+[P_2*R_2]+[P_3*R_3])/(P_1+P_2+P_3)$

= $([.20*.7]+[.40*.6]+[.30*.1])/(.20+.40+.30)$
= $(.14+.24+.03)/.90$
= $.41/.90$
= $.46$

published Habitat Suitability Index (HSI) Models Consulted for Variables for Possible Use in the Wetland Value Assessment Models

Estuarine Fish and Shellfish

pink shrimp
white shrimp
brown shrimp
spotted seatrout
Gulf flounder
southern flounder
Gulf menhaden
juvenile spot
juvenile Atlantic croaker
red drum

Reptiles and Amphibians

American alligator
slider turtle
bullfrog

Mammals

mink
muskrat

Freshwater Fish

channel catfish
largemouth bass
red ear sunfish
bluegill

Birds

clapper rail
great egret
northern pintail
mottled duck
coot
marsh wren
great blue heron
laughing gull
snow goose
red-winged blackbird
roseate spoonbill
white-fronted goose

Designs and Cost Analysis.

During the plan formulation process, each of the Task Force agencies assumed responsibility for developing designs, and estimates of costs and benefits for a number of candidate projects. The cost estimates for the projects were to be itemized as follows:

1. Construction Cost
2. Contingencies
3. Engineering and Design
4. Supervision and Administration
5. Supervision and Inspection (Construction Contract)
6. Real Estate
7. Operation and Maintenance
8. Monitoring

In addition, each lead agency was to provide a detailed itemized construction cost estimate for each project. These estimates are shown in Appendix C.

An Engineering Work Group was established by the Planning and Evaluation Subcommittee with each Federal agency and the State of Louisiana represented. The work group reviewed each estimate for accuracy and consistency.

When reviewing the construction cost estimates, the work group verified that each project feature had an associated cost and that the quantity and unit price for those items were reasonable. In addition, the work group reviewed the design of the projects to determine if the method of construction was appropriate and the design feasible.

Contingencies for each project were determined according to the level of detailed information available for the project design. All the projects were assigned a contingency of 25 percent because detailed information such as soil borings, surveys, and to a major extent hydrologic data were not available, in addition to allowing for variations in unit prices.

Engineering and design, supervision and administration, and supervision and inspection costs were reviewed for consistency, but ordinarily were not changed from what was presented by the lead agency.

Most projects contained estimates of costs for real estate activities; however, many projects that are located in open water did not require a real estate cost estimate.

Monitoring costs for each project were estimated by the Monitoring Work Group. The monitoring program is included as Appendix F.

Economic Analysis.

The CWPPRA directed the Task Force to develop a prioritized list of wetland projects "based on the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands." The Task Force satisfied this requirement through the integration of a traditional time-value analysis of life-cycle project costs and other economic impacts and an evaluation of wetlands benefits using a community-based version of the U.S. Fish and Wildlife Service's Habitat Evaluation Procedures. The product of these two analyses was a Cost per Habitat Unit figure for each project, which was used as the primary ranking criterion. The method permits incremental analysis of varying scales of investment and also accommodates the varying salinity types and habitat quality characteristics of project wetland outputs.

The major inputs to the cost effectiveness analysis are the products of the lead Task force agencies and the Engineering and Environmental Work Groups. The various plans were refined into estimates of annual implementation costs and annual Habitat Units (HU).

Implementation costs were used to calculate the economic and financial costs of each wetland project. Financial costs chiefly consist of the resources needed to plan, design, construct, operate, and maintain the project. These-are the costs, when adjusted for inflation, that the Task Force uses in budgeting decisions. The economic costs include, in addition to the financial cost, monetary indirect impacts of the plans not accounted for in the implementation costs. Examples would include impacts on dredging in nearby commercial navigation channels, effects on water supplies, and effects on nearby facilities and structures not reflected in right of way and acquisition costs.

The stream of economic costs for each project was brought to present value and annualized at the current discount rate, based on a 20-year project life. Beneficial environmental outputs were annualized at a zero discount rate and expressed as average annual habitat units (AAHU). These data were then used to rank each plan based on cost per AAHU produced. Annual economic costs were also calculated on a per acre basis. Financial costs were adjusted to account for projected levels of inflation and used to monitor overall budgeting and any future cost escalations in accordance with rules established by the Task Force.

Following the review by the Engineering Work Group, costs were expressed as first costs, fully funded costs, present worth costs, and average annual costs. The Cost per Habitat Unit criterion was derived by dividing the average annual cost for each wetland project by the Average Annual Habitat Units (AAHU) for each wetland project. The average annual costs figures are based on 1993 price levels, a discount rate of 8¼ percent, and a project life of 20 years. The fully funded cost estimates developed for each project were used to determine how many projects could be supported by the funds expected to be available in fiscal year 1994. The fully funded cost estimates include operation and maintenance and other compensated financial costs.

The cost component of the cost-effectiveness criterion was based on the following procedures and assumptions:

a. Average annual costs represent the sum of direct and known indirect construction and operating costs, discounted over time.

b. Construction or first costs include many different cost elements besides actual construction of a project, such as engineering and design, inspection, contingencies, and real estate (land, easements, rights-of-way, and relocations) and administration.

c. Operating or ongoing costs for a project include many different cost elements besides direct operation and maintenance, including environmentally related costs. The cost elements include monitoring, replacement or closure, and induced dredging. Note that operating costs are not counted if they are part of an existing program which would not be expanded because of the project.

d. The discount rate used to account for the tune value of money was 8¼ percent. Operating costs extend through 20 years from the base, which is also the time when first costs are considered fully amortized. Costs (and benefits) beyond 20 years are not considered.

e. The funding requirements for each project were based on the current dollar value of the construction and operating costs, except that costs paid for by sources other than the CWPPRA were not included. Whereas average annual costs assume no inflation over time, the calculation of funding requirements does include an inflation adjustment. Project benefits are not adjusted over time, i.e., they are not considered to inflate nor are they discounted to give extra value to near-term habitat gains.

The results of the economic analysis are presented in Table 17.

Table 17
Candidate Projects for the 3rd Priority Project List

Project Number	Project Name	Basin	Parish	Lead Agency	AAHU's	A	M	Avg Annual Cost/AAHU ($/AAHU)	Fully Funded Cost ($)	Cumulative Cost ($)	Status
XPO-71	MRGO Back Dike Marsh Prot	Pont	St. Bernard	USACE	435	661		99	512,000	512,000	3rd PPL
BA-4c	West Pt.-a-la-Hache Outfall Mgmt	Bar	Plaquemines	X S	429	581		140	881,000	1,393,000	3rd PPL
XMR-10	Channel Armor Gap Crevasse	Miss R	Plaquemines	USACE	234	497		286	808,000	2,201,000	3rd PPL
BS-5	B. Lamoque Outfall Mgmt	Bret	Plaquemines	SCS	106	93		357	534,000	2,735,000	3rd PPL Deferred
TV-4	Cote Blanche Hydro Rest	T / V	St. Mary	X S	1,200	1,167		371	5,173,000	7,908,000	3rd PPL
CS-4a	Cameron-Creole Maintenance	c / s	Cameron	SCS	454	716		378	3,720,000	11,628,000	3rd PPL
XBA-65a	B. Perot/B. Rigolettes Marsh	Bar	Jefferson	NMFS	498	642		380	1,835,000	13,463,000	3rd PPL
TE-10/XTE-49	Grand Bayou/GIWW Diversion	Terr	Lafourche	SCS	689	782		406	3,899,000	17,362,000	3rd PPL
MR-8/9a	Pass-a-Loutre Crevasse	Miss R	Plaquemines	USACE	455	636		439	2,858,000	20,220,000	3rd PPL
CS-14	Tripod Bayou Control Struct	c / s	Calcasieu	SCS	70	76		614	762,000	20,982,000	
XTE-67	E. Timbalier Restoration	Terr	Lafourche	NMFS	319	664		686	2,047,000	23,029,000	3rd PPL
XCS-47,48i, etc.	Replace Hog Island etc. Cntrl Structs	c / s	Cameron	USFWS	491	495		753	4,582,000	27,611,000	3rd PPL
BS-4a	White's Ditch Outfall Mgmt	Bret	Plaquemines	SCS	68	20		781	756,000	28,367,000	3rd PPL
PTV-19	Little Vermilion Bay Sed Trap	T / V	Vermilion	NMFS	182	238		800	1,516,000	29,883,000	3rd PPL Deferred
PTE-23/26a/33	L. Chapeau Mrsh Crtn and HR	Terr	Terrebonne	NMFS	468	391		876	4,149,000	34,032,000	3rd PPL
CS-11b	Sweet/Willow Lakes SP/HR	C/S	Cameron	SCS	365	m		876	3,411,000	37,443,000	
PTE-15bi	Whiskey Island Restoration	T a r	Terrebonne	EPA	549	837		921	4,844,000	42,287,000	3rd PPL
PTE-26b	Brady Canal Hydro Rest	T a r	Terrebonne	SCS	337	156		1,017	4,718,000	47,005,000	3rd PPL
PBS-6	Grand Bay Crevasse	Bret	Plaquemines	USACE	155	191		1,133	1,777,000	48,782,000	
XAT-6	Booster Pumps Marsh Creation	Atch	St. Mary	USACE	86	120		1,294	1,091,000	49,873,000	
CS-16	Black Bayou Culverts	C/S	Calcasieu	USACE	650	394		1,363	9,639,000	59,512,000	
XME-22	Pecan Island Terracing	Merm	Vermilion	NMFS	89	23		1,370	1,231,000	60,743,000	
ME-7	Deep Lake Marsh Creation	Merm	Cameron/Verm	SCS	66	42		1,467	1,113,000	61,856,000	
ME-5/XME-38	White Lake Shoreline Protection	Merm	Vermilion	SCS	248	276		1,470	3,717,000	65,573,000	
XPO-69	B. Sauvage/B. Chevee Shore Prot	Pont	Orleans	USFWS	150	210		1,856	2,989,000	68,562,000	
XPO-83	L Athanasio Spit	Pont	St. Bernard	USACE	54	109		1,869	1,040,000	69,602,000	
PO-15	Alligator Point Marsh Rat	Pont	Orleans	x s	59	73		2,608	1,927,000	71,529,000	
XTV-26	Two Mouth Bayou Freshwater Div	T / V	Iberia/St. Mary	SCS	16	5		2,706	615,000	72,144,000	
PO-9a	Violet Freshwater Distribution	Pont	St. Bernard	SCS	38	130		3,305	1,821,000	73,965,000	3rd PPL
XTV-25	Oaks Canal/Tigre Lagoon SP	T / V	Vermilion/Iberia	SCS	53	124		4,798	2,710,000	76,675,000	
BS-3b/6a	Pump Outfall North of L. Lery	Bret	St. Bernard	SCS	50	129		5,070	3,039,000	79,714,000	
xI-E-65	Hydro Rest West of Locust Bayou	Terr	Terrebone	NMFS	28	63		5,450	1,477,000	81,191,000	
PTE-15bii	Raccoon Island Restoration	Terr	Terrebonne	E P A	53	68		6,492	3,325,000	84,516,000	
XBA-lc	Grand Pierre Island Restoration	Bar	Plaquemines	USACE	46	80		7,441	3,301,000	87,817,000	
XME-28	Freshwater Bayou Bank Stabilization	Merm	Vermilion	USACE	13	32		13,292	2,026,000	89,843,000	
XBA-70	Dupre Cut and B. Dupont Bank Prot	Bar	Jefferson	SCS	-25	171			4,255,000	94,098,000	
	Proposed Demonstration Projects										
BA-15	L. Salvador Shore Protection Demo	Bar	St. Charles	NMFS	219	88		586	1,445,000	1,445,000	3rd PPL
XTE-54b	Flotant Marsh Demo	Terr	Terrebonne	SCS	43	37		814	458,000	1,903,000	
PME-6	SW Shore White Lake Demo	Merm	Cameron/Verm	SCS	4	9		1,850	126,000	2,029,000	3rd PPL
XTE-66	Sediment Distribution System	Terr	Terrebonne	E P A	36	95		3,881	1,395,000	3,424,000	
XTE-43	Red Mud Demo *	Terr	St John Baptist	EPA					350,000	3,774,000	3rd PPL

*Excludes Kaiser Aluminum contibution of $183,000.

AAA	Average Annual Acres of Emergent Marsh	Pont	Ponchartrain Basin	Merm	Mermentau Basin
AAHU	Average Annual Habitat Units	Bret	Breton Sound Basin	C/S	Calcasieu/Sabine Basin
EPA	Environmental Protection Agency	Miss R	Mississippi River Delta Basin		
NMFS	National Marine Fisheries Service	Bar	Barataria Basin		
SCS	Soil Conservation Service	Terr	Terrebonne		
USACE	U.S. Army Corps of Engineers	Atch	Atchafalaya Basin		
USFWS	US. Fish and Wildlife Service	T/V	Teche/Vermilion Basin		

SELECTED PROJECTS

Proieck Ranked by Cost Effectiveness.

On October 1,1993, the Louisiana_ Coastal Wetlands Conservation and Restoration Task Force met to select the projects for the 3rd Project Priority List. The Task Force's selections are shown in Table 18, ranked in order of cost effectiveness. Plate 1 gives the locations of the projects.

Rationale for the Selection of Priority List Projects.

The list of projects selected by the Task Force is not a simple compendium of the most cost effective of the candidate projects (see Table 17). The **Wetland Value** Assessment, while it is the best tool presently available for evaluating wetland projects, is not perfect; like all models, it suffers from any number of weaknesses. In addition to the errors which are unavoidably inherent in the model (since our knowledge of wetlands is less than all-encompassing), there is the problem of the quality of the data available for input Every attempt was made to ensure **that data were as** accurate as possible, but the demands created by evaluating a large number of proposals in a short period of time did not permit adherence to the conventional feasibility study process. As a consequence, any number of factors other than cost effectiveness were taken into account by the Planning and Evaluation Subcommittee, the Technical Committee, the Citizen Participation Group, and the Task Force in arriving at the 3rd Priority Project List. Not all of these are rigorously quantifiable elements. Consideration was given to the overall fitness of coastal Louisiana.

This section contains a project-by-project discussion of the rationale for placing less cost effective projects on the list. The reasons for removing higher ranked projects are also discussed.

From the group of the most cost effective projects analyzed, two projects were deferred-Bayou Lamoque Outfall Management (BS-5) and Little Vermilion Sediment Trapping (PTV-19). The Bayou Lamoque project received little local support and although the area is experiencing loss, the project area is stable and opportunities exist for outfall management at other locations within the Breton Sound Basin (i. e., White's Ditch, BS-4a).

Land loss in the Teche/Vermilion Basin is not as great as in other basins **(i. e.,** Barataria and Terrebonne); as a consequence, immediate project priorities are higher in the basins experiencing higher loss rates, and the Task Force wished to limit the number of projects and spending recommended for this basin. The Little Vermilion Bay Sediment Trapping project was deferred because the Cote Blanche Hydrologic Restoration (TV-4) is more cost effective and addresses an extremely large project area-30,000 acres-expending almost 15 percent of the approximately $40,000,000 available.

The Tripod Bayou Control Structure (CS-14) affects a portion of the same project area as the Assumption of the Cameron-Creole Maintenance project (CS-4a); prudent allocation of funds dictated limiting approval to project **CS-4a.**

The Task Force decided against approving the Sweet Lake / Willow Lake Shoreline Protection and Hydrologic Restoration project (CS-11b) because of the large amount of funds already allocated to the Calcasieu / Sabine Basin.

The Task Force decided to elevate the Violet Freshwater Distribution project (PO-9a) past several more cost effective project because no project had been approved for funding under the CWPPRA in St. Bernard Parish, which experienced increased land loss due to the construction of the MRGO. The project passed over by the Task Force in St. Bernard Parish was the Lake Athanasio Spit Marsh Creation project (XPO-83) Because this project uses material dredged for maintenance of the MRGO, funding for this project is possible under existing USACE authorities (e. g. , existing operation and maintenance program, Section 1135, Section 204).

Table 18
3rd Priority Project List Projects

Project Number	Project Name	Basin	Parish	Lead Agency	AAHU's	AAA	Avg Annual Cost/AAHU ($/AAHU)	Project First Cost ($)	Fully Funded cost ($)	Cumulative cost ($)
HR XPO-71	MRGO Back Dike Marsh Prot	Pont	St. Bernard	USACE	435	661	99	324,000	512,000	512,000
OM BA-4c	West Pt.-a-la-Hache Outfall Mgmt	Bar	Plaquemines	SCS	429	581	140	405,000	881,000	1,393,000
SD XMR-10	Channel Armor Gap Crevasse	Miss	Plaquemines	USACE	234	497	286	498,000	808,000	2,201,000
SP/HR TV-4	Cote Blanche Hydro Rest	T/V	St. Mary	SCS	1,200	1,167	371	3,601,000	5,173,000	7374,000
MM CS-4a	Cameron-Creole Maintenance	C/S	Cameron	SCS	454	716	378	0	3,720,000	11,094,000
MC XBA-65a	B. Perot/B. Rigolettes Marsh	Bar	Jefferson	NMFS	498	642	380	1,571,000	1835,000	12,929,000
SD MR-8/9a	Pass-a-Loutre Crevasse	Miss	Plaquemines	USACE	455	636	439	1,355,000	2858,000	15,787,000
BI XTE-67	E. Timbalier Restoration	Terr	Lafourche	NMFS	319	664	686	1,783,000	2,047,000	17834,000
HR/MM XCS-47,48i, etc.	Replace Hog Island etc. Cntrl Structs	C/S	Cameron	USFWS	491	495	753	2823,000	4,582,000	22,416,000
OM BS-4a	White's Ditch Outfall Mgmt	Bret	Plaquemines	SCS	68	20	781	359,000	756,000	23,172,000
HR/MC PTE-23/26a/33	L. Chapeau Mrsh Crtn and HR	Terr	Terrebonne	NMFS	468	391	876	3,249,000	4,149,000	27,321,000
BI PTE-15bi	Whiskey Island Restoration	Terr	Terrebonne	EPA	549	837	921	4,437,000	4844,000	32,165,000
HR PTE-26b	Brady Canal Hydro Rest	Terr	Terrebonne	SCS	337	156	1,017	2,331,000	4,718,000	36883,000
HR PO-9a	Violet Freshwater Distribution	Pont	St. Bernard	SCS	38	130	3,305	800,000	1821,000	38,704,000
	Demonstration Projects									
SP BA-15	L. Salvador Shore Protection Demo	Bar	St. Charles	NMFS	219	88	586	1,035,000	1,445,000	40,149,000
SP PME-6	SW Shore White Lake Demo	Merm	Cameron/Verm	SCS	4	9	1,850	34,000	126,000	40,275,000
MC XTE-43	Red Mud Demo *	Terr	St. John Baptist	EPA	--	---	---	330,000	350,000	40,625,000
	Deferred Projects									
OM BS-5	Bayou Lamoque Outfall Management	Bret	Plaquemines	SCS	106	93	357	266,000	534,000	41,159,000
ST PTV-19	Little Vermilion Bay Sed Trap	T/V	Vermilion	NMFS	182	238	800	1,228,000	1516,000	42,675,000

* Excludes Kaiser Aluminum contibution of $183,000.

AAA	Average Annual Acres of Emergent Marsh	Pont	Ponchartrain Basin
AAHU	Average Annual Habitat Units	Bret	Breton Sound Basin
EPA	Environmental Protection Agency,	Miss	Mississippi River Delta Basin
NMFS	National Marine Fisheries Service	Bar	Barataria Basin
SCS	Soil Conservation Service	Terr	Terrebonne Basin
USACE	U.S. Army Corps of Engineers	T/V	Teche/Vermilion Basin
USFWS	U.S. Fish and Wildlife Service	Merm	Mermentau Basin
		c / s	Calcasieu/Sabine Basin

Project First Cost includes initial construction cost, engineering and design, supervision and administration, supervision and inspection, and real estate charges.

Fully Funded Cost is the anticipated direct outlays (expenditures) that will be required for project implementation. These are the expenditures after the application of inflation factors to reflect the growth in project implementation cost over time.

The 3rd PPL projects involve creation, protection, restoration, or enhancement of wetlands of varying types. The distribution of wetland types for each of the selected projects is given in Table 19. The acres shown are the net acres created, protected, or restored at the end of the 20 year project life.

Table 19
Distribution of Wetland Types
for Selected Projects

Project	Fresh/ Intermediate		Brackish		Saline	
(Ac)		r	e	er	As	ercent)
MRGO Bake Dike Marsh Protection	755	100				
West Pt-a-la-Hache Outfall Mgmt	652	60	435	40		
Channel Armor Gap Crevasse	936	100				
Cote Blanche Hydro Rest	2,223	100				
B. Perot/B. Rigolettes Marsh	1,065	100				
Cameron-Creole Maintenance	1,531	59	955	37	116	4
Pass-a-Loutre Crevasse	1,043	100				
E. Timbalier Restoration					1,013	100
Replace Hog Island etc. Structures	290	30	663	70		
White's Ditch Outfall Mgmt			37	loo		
L. Chapeau Mrsh Crtn and HR	346	68	163	32		
Whiskey Island Restoration					1239	100
Brady Canal Hydro Res	297	100				
Violet Freshwater Distribution	132	53	115	47		
Demonstration Projects						
L. Salvador Shore Protection	176	100				
SW Shore White Lake	16	100				
Red Mud	3	100				
Deferred Projects						
Bayou Lamoque Outfall Mgmt					176	100
Little Vermilion Bay Sed Trap	441	100				
Total 04,818 acres)	9,906	67	2,368	16	2,544	17

Mississippi River Gulf Outlet Disposal Area Marsh Protection

XPO-71

Proposed by: U.S. **Department** of the Army, U.S. Army Corps of Engineers

PROJECT DESCRIPTION

Location

The project is located in St. Bernard Parish on the existing south bank dredged material disposal area for the Mississippi River Gulf Outlet (MRGO), south of the Bayou La Loutre Ridge, from approximate Mile 36.0 to Mile 30.0 along the MRGO. The project area consist of an 855-acre fresh marsh perched one to four feet higher than the adjacent brackish marsh.

Justification

The project area is confined by a 4,000-foot-wide diked disposal area originally utilized for placement of dredged material during construction of the MRGO in the early 1960's. During maintenance dredging operations, only the 2,000 feet nearest the waterway has been used. The rear, or back 2,000 feet has reverted to a high fresh marsh, especially south of the Bayou La Loutre Ridge as a result of the disposal material settling and water ponding. These marshes are elevated one to four feet higher than the adjacent brackish marsh. This wetland area is extremely valuable for waterfowl. The project, repairing the original earthen dikes along the interior (lateral) and rear of the disposal areas south of the La Loutre Ridge, would prevent the perched marshes from draining, thus preserving over 855 acres of valuable wetland.

Objective

The objective of the project is to protect and preserve vegetated wetlands by repairing the lateral and rear dikes of the MRGO disposal areas. Dike repairs, in conjunction with the installation of metal box weirs to control and divert water flow, will prevent the perched marshes from draining and becoming vegetated with upland plants.

Project Features

The project area is segmented into three separate reaches with each reach representing a fresh water marsh area. Approximately 28,000 linear feet of dike will be repaired.

Metal box weirs with a single 40-inch pipe would be installed in the rear dikes at designated locations to control water levels within each area. Material for repairing the dikes will come from within the disposal area.

ANTICIPATED BENEFITS

Type(s) and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

None anticipated.

Type(s) and acres of coastal wetlands protected

Project implementation will preserve over 755 ac: of marsh that will be lost within 20 years if no action is taken and the disposal area drains and converts to an upland type habitat.

Type(s) and acres of coastal wetlands restored

None anticipated.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Because the project area is one to four feet higher than the adjacent brackish marshes, marine organisms have no access into the area; however, this fresh perched marsh is an excellent habitat for migratory waterfowl.

Other significant benefits

None anticipated.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

COSTS

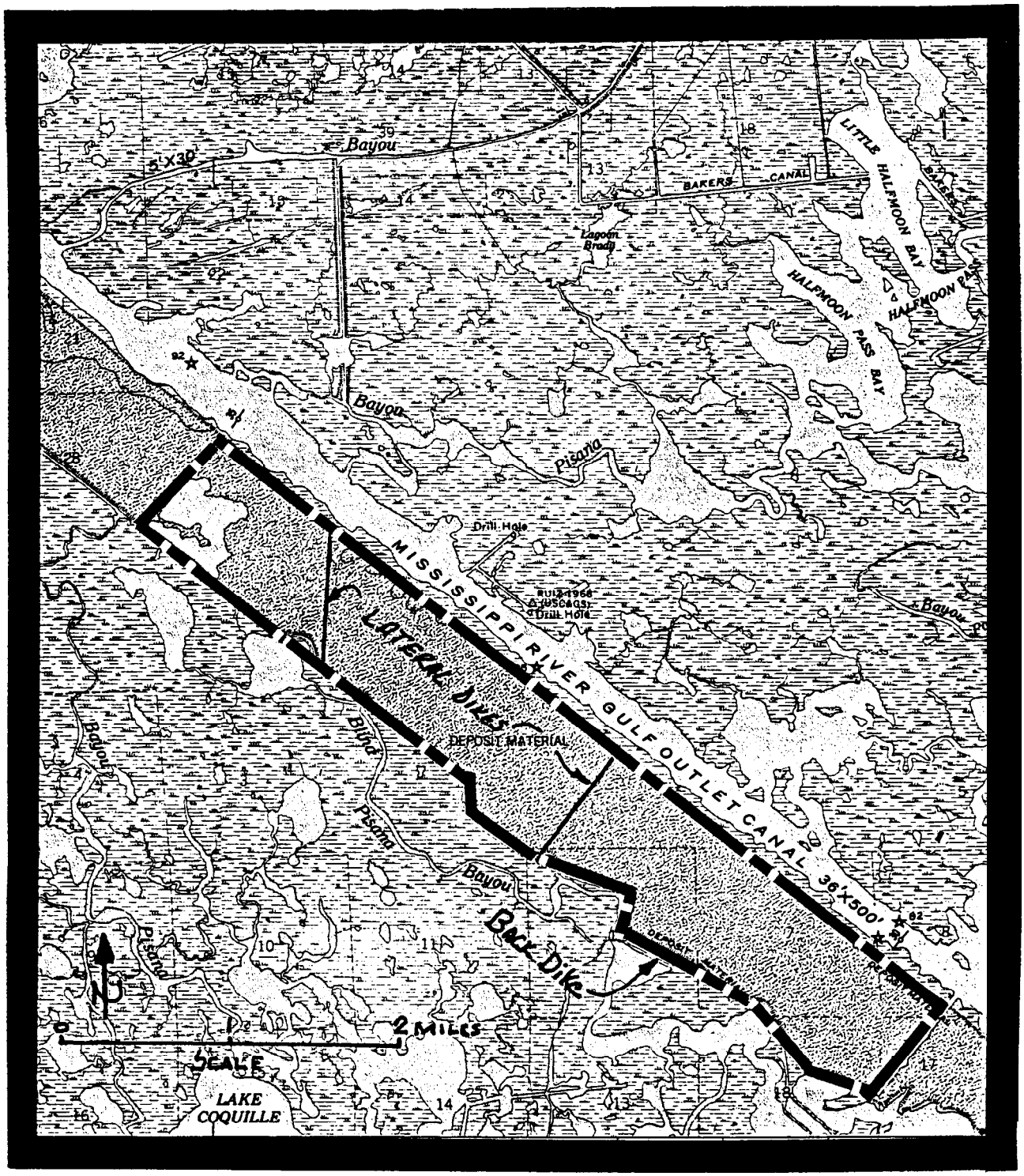
Item	Amount ($)
Construction Cost	153,000
Contingencies	38,000
Engineering and Design	45,000
Supervision and Administration	20,000
Supervision and Inspection	20,000
Real Estate	48,000
Total	324,000
Annual Charges	
Operation and Maintenance	*0*
Project Monitoring	5,483

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section l0/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Aug 94
Construction Start Date:	Oct94
Construction Finish Date:	Dec94



Mississippi River Gulf Outlet Disposal Area Marsh Protection (XPO-71)

West Pointe **a la Hache**

BA-4c

Proposed Bv: U.S. Department of Agriculture, Soil **Conservation** Service

PROJECT DESCRIPTION

Location

The existing siphons are located in Plaquemines Parish immediately upstream of the ferry landing at West Point a la Hache. The outfall management project encompasses a 16,912acre area bounded to the north by Lake Judge Perez (Lake Hermitage), to the west and southwest by Bayou Grande Cheniere, to the south and southeast by the Fosters Canal, Grande Bayou, and the hurricane protection levee.

Justification

Construction of the Mississippi River levees has resulted in a dramatic and detrimental ecosystem change to this area. The Mississippi River levees have effectively stopped annual flooding that served to nourish the surrounding marshes with sediments, nutrients, and fresh water. Dredging of oilfield and pipeline canals in conjunction with construction of major navigation channels such as the Freeport Sulphur Canal (immediately southeast of the project area not shown on the map) has provided avenues for salt water from the Gulf of Mexico to intrude into low salinity brackish and intermediate marshes in the project area. Increased channelization in this area has resulted in the export and overall loss of organic marsh soils from the project area. These man-induced causes of wetland loss are compounded by a relatively high rate of subsidence in the area.

The existing diversion system, which was opened on January 12,1993, consists of eight 72-inch-diameter siphon pipes, a vacuum pipe, a discharge pond lined with rip-rap, and four outfall channels. Designed to operate at a maximum discharge of 2,144 cfs, the objective of the siphons is to restore marshes to a fresher state by reintroducing fresh water, sediment, and nutrients into the area. This project will manage the outfall area to increase the siphons' ability to create marsh, reduce salinity, and enhance wetland habitat.

Objectives

The objective of the outfall management plan is to optimize the use of fresh water and sediment supplied by the existing siphons by managing water flow though the area. This will be accomplished by reducing channelized flow and routing the diverted flow across marshes or through shallow water areas instead of through larger channels so that suspended sediments are deposited and marshes are nourished and created.

Project Features

The outfall management plan consist of the following features:

1. One rock weir with a boat bay set one foot below marsh level (265 feet wide by 12 feet deep with a 20-foot-wide by 5-foot-deep boat bay) at Grand Bayou.

2. One rock weir with a boat bay set one foot below marsh level (150 feet wide by 12 feet deep with a lo-foot-wide by 4-foot-deep boat bay) at an unnamed pipeline canal and Grande Cheniere.

3. One earthen plug (120 feet wide by 10 feet deep) with shell or rock armor at an unnamed pipeline canal and Bayou Grande Cheniere.

4. Approximately 3.5 miles of vegetative plantings in shallow water (2 staggered rows of Scirpus californicus spaced 5 feet apart, approximately 7,400 plants).

5. Four 48-inch flapgated culverts on an unnamed bayou at the intersection with Bayou Grande Cheniere at the southern project area boundary.

ANTICIPATED BENEFITS

Twes and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Management of freshwater siphoned into the project area is expected to enhance approximately 17,000 acres of intermediate and brackish marsh by restoring the project area to a fresher water regime. Enhancement will be in the form of increased sediment and nutrient retention and overall fresher conditions that are expected to increase the productivity and species diversity of emergent marsh as well as submerged and floating aquatic vegetation. These changes will increase the project area's carrying capacity for wildlife and waterfowl.

Types and acres of coastal wetlands protected

By managing the outfall area, it is estimated that the current loss rate in the project area will be reduced by 70 percent, resulting in the protection of 652 acres of intermediate marsh and 435 acres of brackish marsh.

Types and acres of coastal wetlands restored

No gain is anticipated; however, by increasing sediment deposition, a near balance between background marsh loss and marsh gain is expected.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Fresher conditions in the project area are expected to directly benefit furbearer, reptile, and waterfowl populations by improving habitat suitability and fisheries by increasing marsh productivity.

Other significant benefits

The above mentioned benefits to reptiles, furbearers, waterfowl and fisheries will provide indirect benefits to recreational and commercial fishermen, trappers

and sportsmen. The local economy will benefit from moneys brought in from these activities.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

COSTS

Item	Amount ($)
Construction Cost	231,000
Contingencies	58,000
Engineering and Design	40,000
Supervision and Administration	16,000
Supervision and Inspection	20,000
Real Estate	40,000
Total	40,000

Annual Charges

Operation and Maintenance	4,500
Project Monitoring	9,112

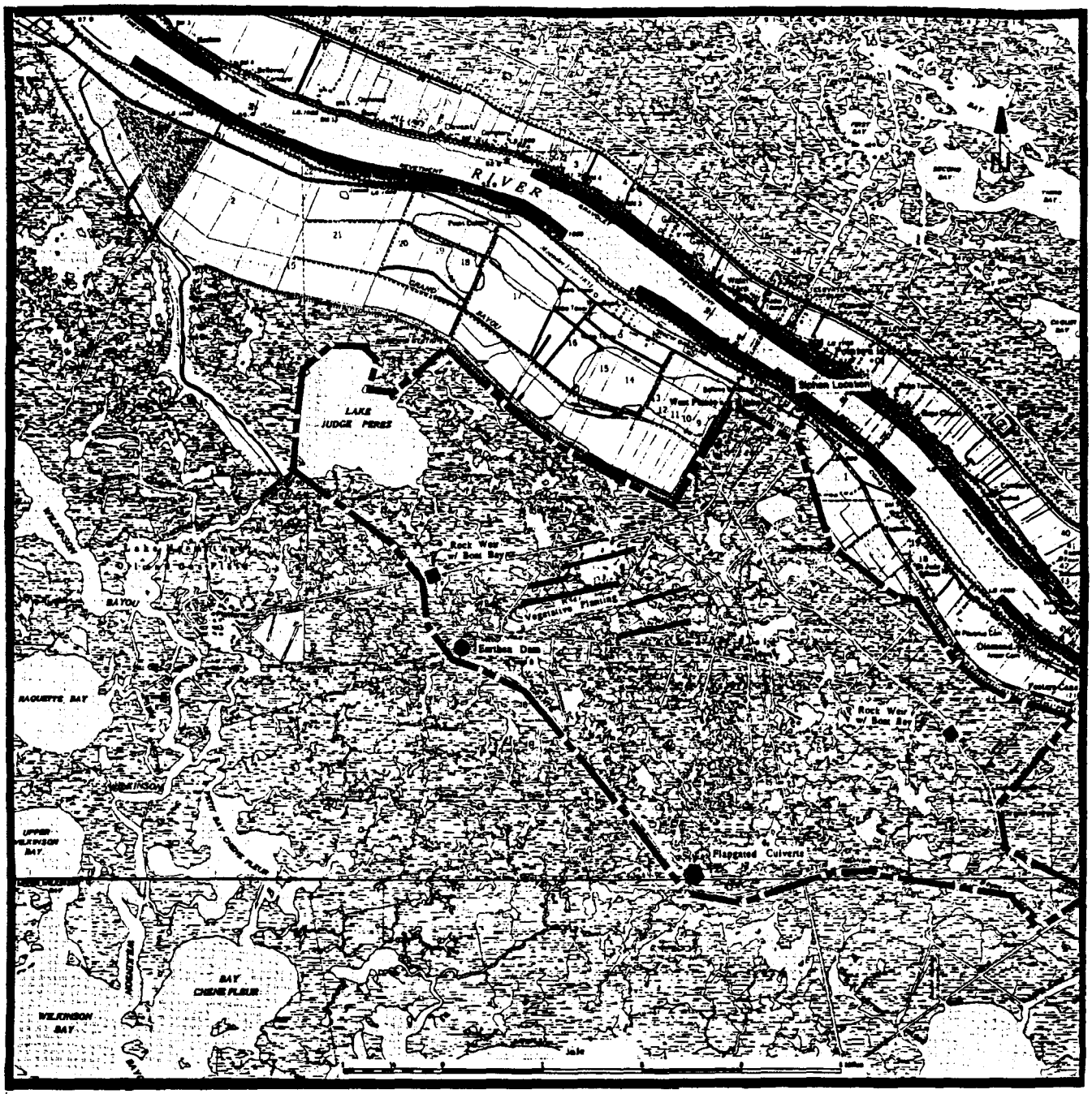
Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Nov 94
Engineering and Design Finish Date:	JLl195
Construction Start Date:	Oct95
Construction Finish Date:	Apr 96



West Point-a-la-Hache Outfall Management (BA-4c)

Channel **Armor Gap Crevasse**

XMR-10

Proposed bv: U.S. Department of the Army, U.S. Army Corns of Engineers

PROJECT DESCRIPTION

Location

The proposed project is located in the Mississippi River Bird's Foot Delta, in Plaquemines Parish Louisiana. The crevasse will be located on the left descending bank of the main river channel, at river mile 4.7 AHP. The project outfall area is located adjacent to the river channel and Main Pass, within the boundary of the Delta National Wildlife Refuge and consist of 2,097 acres of fresh/intermediate marsh.

Justification

The area adjacent to the Mississippi River no longer receives marsh-nourishing sediment from the the river due to the enhancement of the bank line. Shallow gaps have been built in the stone armor of the river bank to allow overflow during periods of high river flow. Due to infrequent and inadequate volume of flow, these gaps are not presently producing splays of emergent delta. The existing crevasse can be enlarged to allow additional flow and sediments to enter and deposit in shallow open water areas to create new emergent marsh.

Objectives

The objective of the project is to utilize available sediment in areas which are currently shallow open water bottoms to create emergent marsh. This can be accomplished by enhancing existing structures and channels. The result will be the conversion of an area of 60 percent open water to an area of approximately 90 percent emergent wetland.

Project Features

The project will consist of deepening the invert of the existing 150 foot wide gap in the Mississippi River channel bank armor. The existing invert will be lowered to -4.0 feet NGVD. In addition an existing earthen channel leading from the armored gap to the open water area beyond the bank will be enlarged. -This channel will have an invert depth of -3.5 feet NGVD and a bottom width of 150 feet allowing an average flow of 2,500 cfs to enter the outfall area. Approximately 125,000 cubic yards of material will be excavated from the outfall channel and cast adjacent to the channel in a manner conducive to marsh nourishment. The material will be placed to an elevation not to exceed +3.0 feet NGVD.

ANTICIPATED BENEFITS

Types and acres of coastal wetlands created

Over the 20-year life of the project the crevasse will create approximately 1,000 acres of emergent marsh. A net gain of 936 acres is expected (includes a combination of reduced loss of existing wetlands in the project area and losses of the wetlands created).

Types and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

The project will create 37 acres of shallow open water bottom suitable for the growth of aquatic vegetation (i.e. over 50 percent coverage of this acreage by submersed aquatic vegetation) as well as enhancing 51 acres of existing marsh. The project area is located in one of Louisiana's and the nation's prime waterfowl wintering areas.

Types and aaes of coastal wetlands protected

Project implementation will reduce the loss rate in the project area by approximately 50 percent, thus the project will prevent the loss of 163 aaes of fresh/intermediate marsh.

Twes and aaes of coastal wetlands restored

None anticipated.

Duration (life expectancy of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

The newly created wetlands will increase the acreage of habitat available to support migratory waterfowl. This area is also characterized by shallow open water areas and mudflats. These areas are productive habitat for numerous species of fish. The increased acreage and enhancement of existing areas of this type is expected to enhance fisheries productivity in this area.

Other significant benefits

The newly created wetlands are located within the Delta National Wildlife Refuge.

ANTICIPATED ADVERSE EFFECTS

Tvves and acres of coastal wetlands and other habitats adversely affected by the project

Approximately 1,000 aaes of open water habitat would be converted to emergent wetland. Another approximately 600 aaes of water bottom would experience some degree of deposition but would remain open water habitat. Additionally short term turbidity problems could occur during construction of the project.

Conflicts with other projects and programs

No conflicts with other programs are anticipated **at this time.**

COSTS

Item	Amount ($)
Construction Cost	244,000
Contingencies	61,000
Engineering and Design	90,000
Supervision and Administration	15,000
Supervision and Inspection	30,000
Real Estate	58,000
Total	498,000
Annual Charges	
Operation and Maintenance	0
Project Monitoring	8,360

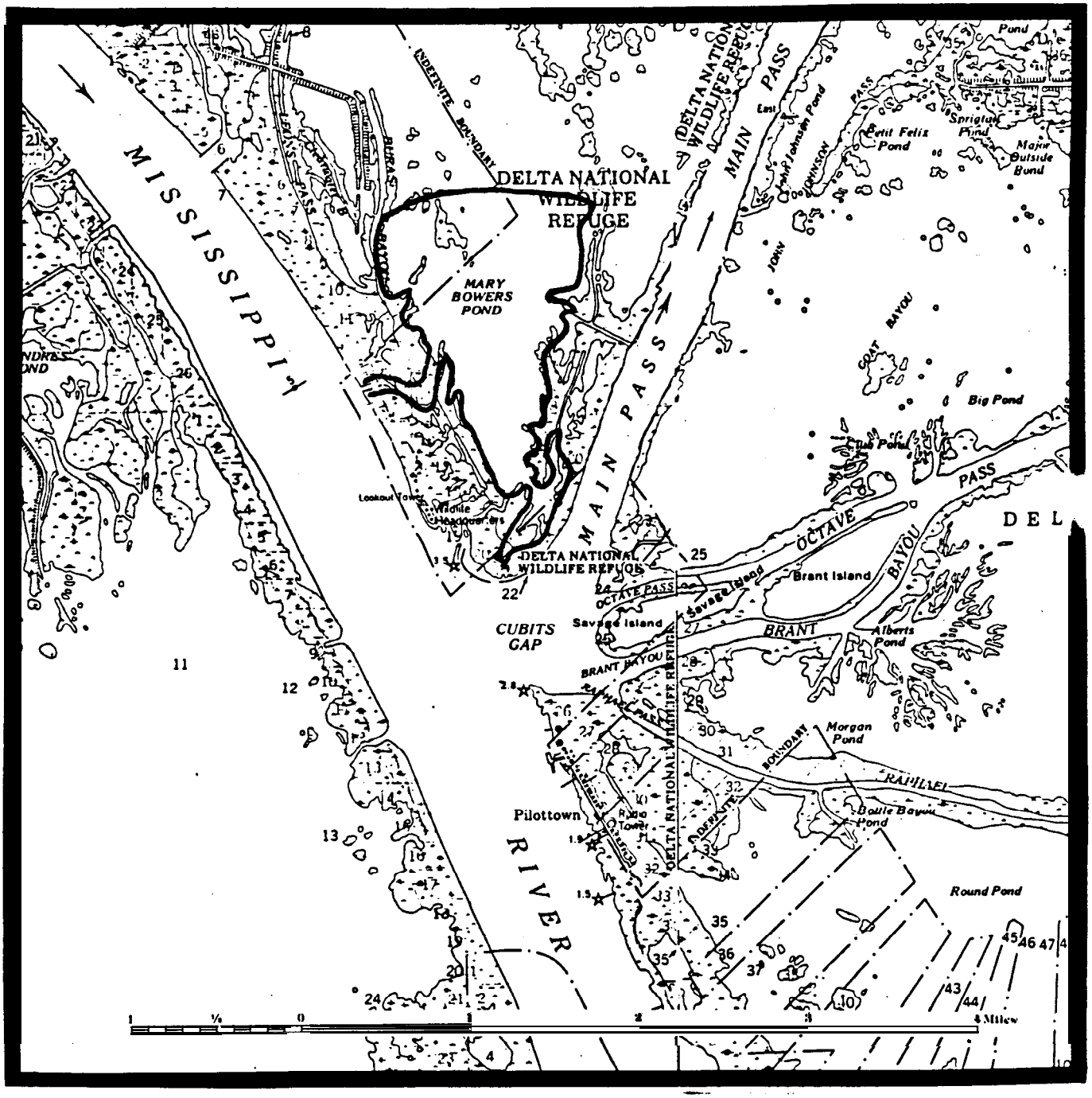
Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section l0/404	necessary, not **initiated**
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Jun 95
Construction Start Date:	oct95
Construction Finish Date:	Dec95



Channel Armor Gap Crevasse (XMR-10)

Cote Blanche Hydrologic Restoration

TV-4

Proposed bv: U.S. Department of Agriculture Soil Conservation Service

PROJECT DESCRIPTION

Location

The Cote Blanche Wetland is a 30,000-acre fresh marsh located in St. Mary Parish, and is bounded by the Gulf Intracostal Waterway (GIWW) to the north, Louisiana Highway 317 to the east, and East and West Cote Blanche Bays to the south and west, respectively.

Justification

Construction of the GIWW and numerous oilfield canals in the **area has greatly** increased the tidal exchange between the interior marshes of the Cote Blanche Wetlands and the East and West Cote Blanche Bays. This rapid tidal exchange is resulting in interior marsh loss and exacerbating erosion along the southern shoreline of the project area, currently eroding at a rate of 15 ft/yr. The area has also experienced increased freshwater introduction from the GlWW and through westward currents from the Atchafalaya Delta region. As a result, marshes in the project area converted from brackish and saline associations in 1949 to predominantly fresh associations by 1988.

Objectives

The primary objectives of the project are to reduce future shoreline loss from wave erosion, reduce excessive tidal fluctuations and rapid tidal exchange to prevent scouring of interior marsh, develop a hydrologic regime conducive to sediment and nutrient deposition, and to reestablish vegetation in eroded areas.

Project Features

The Cote Blanche Hydrologic Restoration project is expected to accomplish the project objectives through the use of both structural and non-structural features. To prevent further shoreline erosion, 10,000 feet of rock shoreline protection will be constructed along East Cote Blanche Bay. Major openings into East and West Cote Blanche Bays will be constricted using low-level rock weirs to moderate tidal exchange. Installation of one-way, flap-gated water control structures on two major openings (oilfield canals) to the GIWW will control sediment and nutrient introduction into the area.

ANTICIPATED BENEFITS

Types and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Over the 20-year project life, approximately 25,081 acres of the 26,300 acres of fresh/intermediate marsh currently in existence in the project area are expected to remain intact, and to be healthier and more productive, as a result of the proposed

hydrologic restoration. The acreage of open water in the project area that is suitable for the growth of submersed aquatic vegetation in dominant proportions (i.e., over 50 percent coverage of a given acreage by submersed aquatic vegetation) is expected to increase from 25 percent to 50 percent.

Types and acres of coastal wetlands created

None.

Types and acres of coastal wetlands protected

Over the 20 years project life, approximately 2,225 acres of fresh/intermediate marsh will be protected from being lost through control of shoreline erosion and tidal exchange between the surrounding bays and the interior marshes.

Types and acres of coastal wetlands restored

None.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of 20 years. The duration of benefits may continue beyond that length of time.

Benefits to coastal wetland dependent fish and wildlife populations

Hydrologic restoration of the Cote Blanche Wetlands will increase the habitat value of the fresh/intermediate marshes in the project area to migratory waterfowl and fur-bearers.

Other significant benefits

The project will promote the deposition of sediments and nutrients that would otherwise be lost to the surrounding open water bays. Projected benefits for wildlife will result in benefits for related commercial and recreational activities.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

None.

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

COSTS

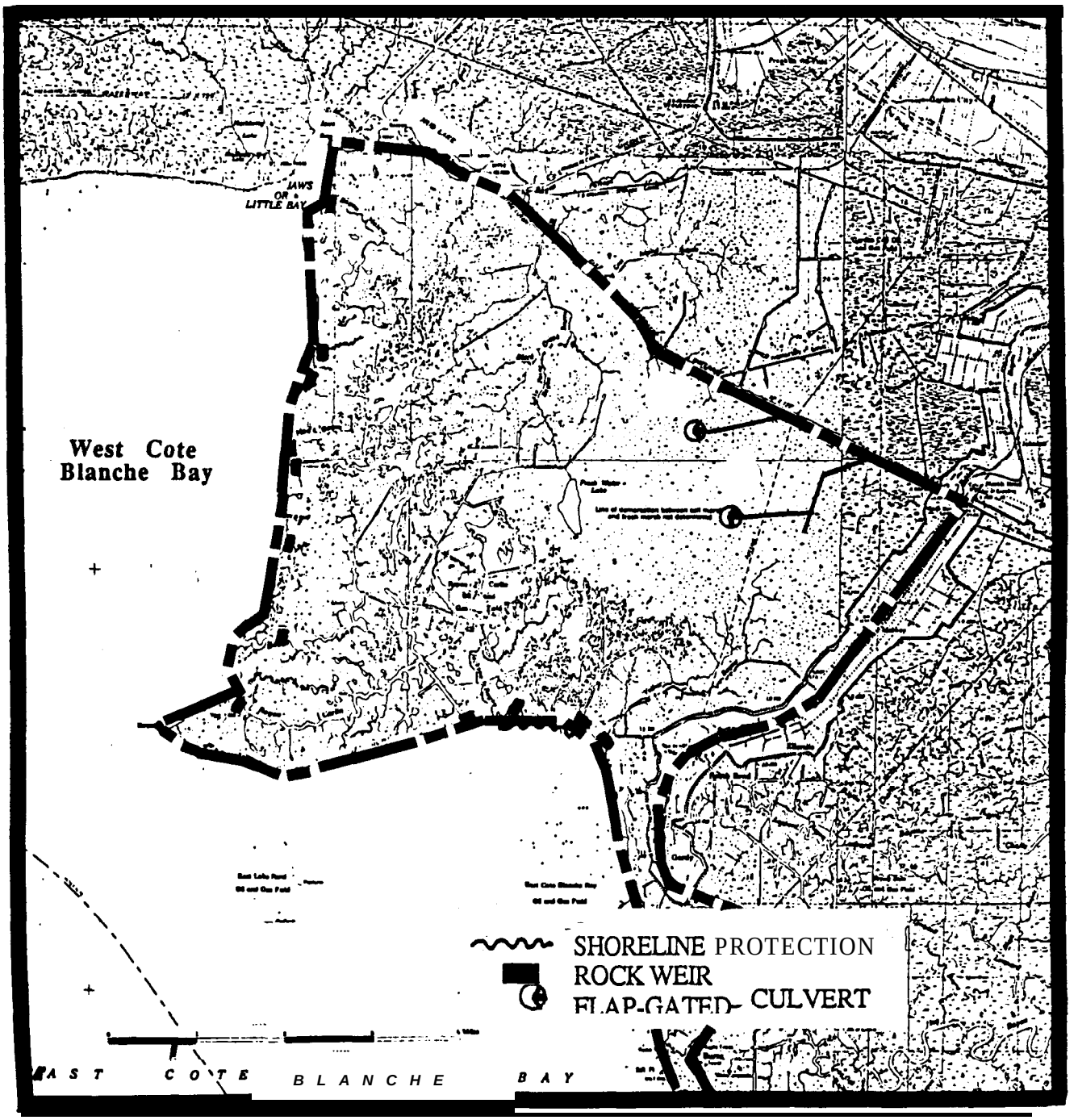
Item	Amount ($)
Construction Cost	2,317,000
Contingencies	579,000
Engineering and Design	225,000
Supervision and Administration	230,000
Supervision and Inspection	220,000
Real Estate	30,000
Total	3~01,000
Annual Charges	
Operation and Maintenance	12,000
Project Monitoring	25,875

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section l0/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Mar94
Engineering and Design Finish Date:	Dec94
Construction Start Date:	Apr 95
Construction Finish Date:	Dec 95



Cote Blanche Hydrologic Restoration (TV-4)

Cameron-Creole Maintenance

CS-4a

Proposed bv: Department of Agriculture, Soil Conservation Service

PROJECT DESCRIPTION

Location

The Cameron-Creole watershed is located in Cameron Parish. The area is bounded by the GIWW to the north, Louisiana Highway 27 and Little Cheniere Ridge to the east, Calcasieu Lake to the west, and Louisiana Highways 27 and 82 to the south. The project area comprises 54,076 acres of fresh/intermediate, brackish, and saline wetland.

Justification

The project area falls within the Cameron-Creole watershed management area, which has been adversely impacted by saltwater intrusion and loss of sediments due to channelization and water diversion of the Calcasieu River.

Major factors that have influenced the area's hydrology include: the removal of the Calcasieu Pass oyster reef (1876), the construction of the Calcasieu Ship Channel (1941), the construction of trenasses for trapping access (1940's), the construction of access canals, board roads, pipelines, and drill sites for oil and gas exploration and production (1940's to present).

These factors greatly increased saltwater intrusion from-the Gulf of Mexico into the interior marshes via Calcasieu Lake, and increased tidal scouring and wave erosion. As a result, approximately 63,000 acres (33%) of the brackish, intermediate, and fresh marsh on the east side of Calcasieu Lake were lost between 1950 and 1970, and replaced by deteriorating brackish to saline marsh.

Initiated in 1961 and completed in 1989, the Cameron-Creole Watershed Project has lead to decreased salinities, increased plant diversity and biomass, and increased wildlife and fisheries diversity in the watershed. However, shoreline erosion caused by increased boat traffic and winds across long fetches of open water in broken marsh and lake areas continue to be a major problem in the project area.

Currently, maintenance responsibility lies with the Cameron Parish Gravity Districts Nos. 3 and 4, which do not possess the financial ability to properly maintain the project. Without proper maintenance of the existing nineteen miles of levees and five water control structures, the existing protection will be lost and the resulting gains will quickly be destroyed. Salinity surges will kill the fresh submergents that have become established along with less tolerant emergents, and extreme tidal fluctuations will remove any organic material held by these species or accumulated as new soils.

Objective

The primary objective of this project is to provide maintenance for the existing nineteen miles of levee and five major structures which make up the Cameron-Creole Watershed Project.

Project Features

Recent examples of maintenance needs include the replacement of a gate and the rebuilding of a section of levee that has begun to wash out. Without maintenance these and similar problems will occur within 10 years. Examination of recent aerial photography shows areas where the protective berm has been eroded away to the base of the levee, establishing these areas as prime candidates for breaching if not repaired. Any breech will quickly expand and the integrity of the entire project will be jeopardized, reverting land loss rates to those occurring between 1974 and 1983.

The existing project consist of the following features:

1. Structure no. 1 at Grand Bayou-Flapgate and concrete box weir, 5 IO-foot-wide by 6-foot-tall gates with bottoms set at 4 feet below marsh elevation.

2. Structure no. 4 at Peconi Bayou and Structure no. 5 at Lambert Bayou-Slide gate concrete box weir, 4 &foot-wide by 6-foot-tall gates with bottoms set at 4 feet below marsh elevation, having 3 6-inch slots running from +5 feet to 4 feet below marsh elevation.

3. Structure no. 6 at No Name Bayou and Structure no. 8 at Mangrove Bayou-Guillotine gated concrete box weir, 4 B-foot-wide by 6-foot-tall gates with bottoms set at 4 feet below marsh elevation, having 3 6-inch slots in one bay from +0.7 feet to 4 feet

below marsh elevation.

4. Nineteen miles of levee, including shell core plugs at bayou closures.

ANTICIPATED BENEFITS

Types and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Maintaining the structural integrity of the Cameron-Creole Watershed is expected to enhance approximately 10,000 acres of wetland habitat.

Twes and acres of coastal wetlands protected

The project is expected to protect 1,531 acres of intermediate.marsh, 955 acres of brackish marsh, and 116 acres of saline marsh.

Twes and acres of coastal wetlands restored

Although some restoration is expected, current loss rates in the area are expected to continue.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Protecting these wetlands is expected to directly benefit furbearer, reptile and waterfowl populations by improving habitat suitability and fisheries by increasing marsh productivity.

Other significant benefits

The above mentioned benefits to reptile, furbearer, waterfowl and fisheries will provide indirect benefits to recreational and commercial fishermen, trappers and sportsmen. The local economy will benefit from moneys brought in from these activities.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

COSTS

Item	Amount ($)
Construction Cost	0
Contingencies	0
Engineering and Design	0
Supervision and Administration	0
Supervision and Inspection	0
Real Estate	0
Total	0

All costs associated with the Cameron-Creole Maintenance project are repair and rehabilitation costs.

Annual Charges

Operation and Maintenance	
year 2	30,000
year 5	1250,000
year 8	1,000,000
year 9	265,000
year 11	250,000
year 14	40,000
year 16	60,000
	2,895,000
Project Monitoring	0

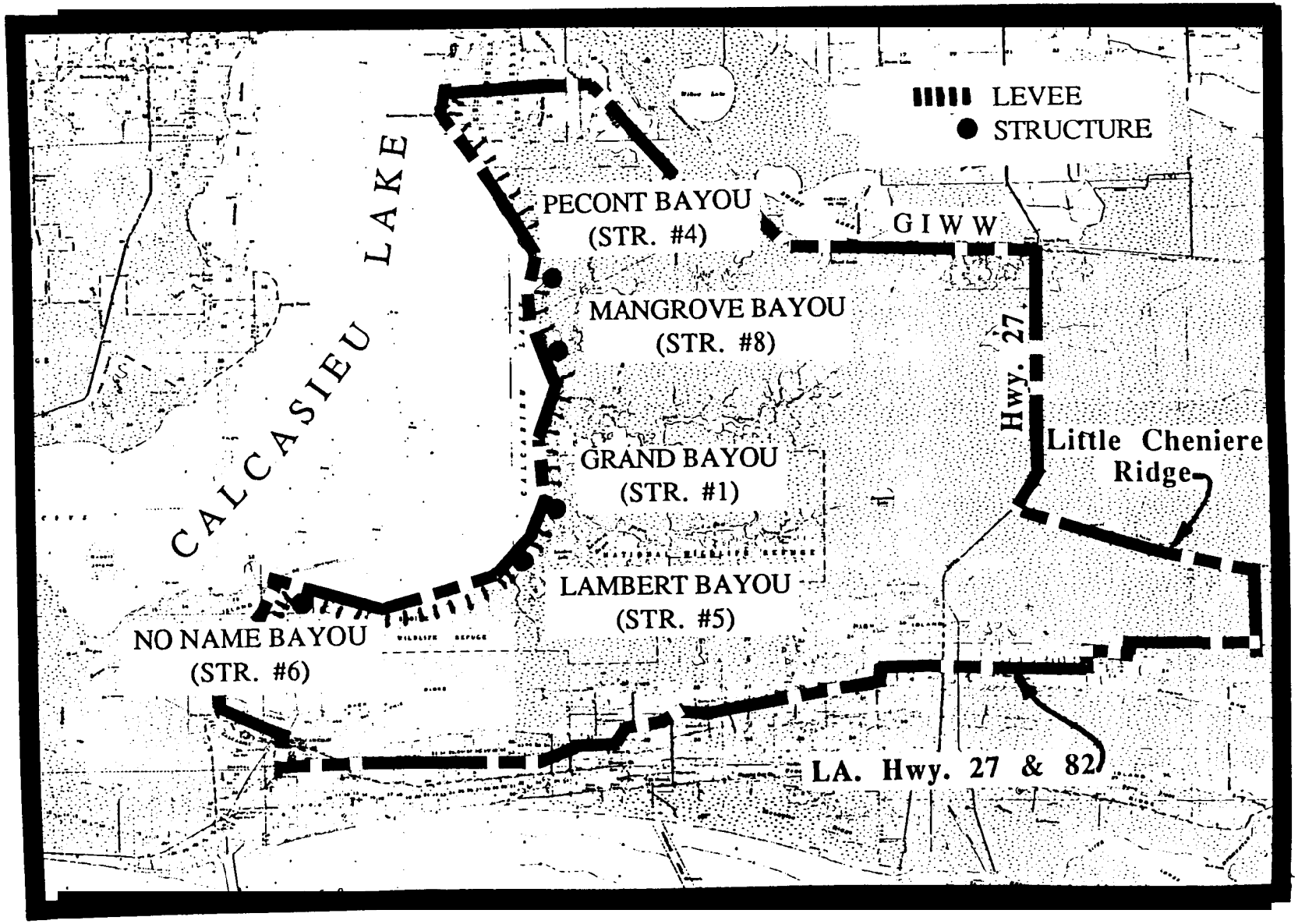
Note: The Cameron-Creole Watershed project is currently monitored by the USFWS and SCS; therefore, no additional monitoring will be required.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	undetermined
Section *10/404*	undetermined
Louisiana Coastal Management Program	undetermined
Louisiana Water Quality Certification	undetermined
Endangered Species Act	undetermined

PROJECT IMPLEMENTATION SCHEDULE

Scheduled repairs and rehabilitation are shown under “Annual Charges.”



Cameron-Creole Maintenance (CS-4a)

Restoration of Bayou Perot/Bayou Rigolettes

XBA-65a

Proposed bv: U.S. Department of Commerce, Natural Marine Fisheries Service

PROJECT DESCRIPTION

Location

The project area is the peninsula between Bayou Rigolettes in Jefferson Parish and Bayou Perot in Lafourche Parish (29° 38'00"N, 90" 09'00"W). The peninsula covers an area of approximately 4,255 acres and is 50 percent brackish marsh and **50 percent** shallow open water.

Justification

The peninsula lies in the area of maximum subsidence between the Mississippi River and Bayou Lafourche channel systems. The sediments that originally made up the peninsula were very fine grained and organic. Such sediments do not have much integral strength. Since the late 1920's, when the present artificial levees along the Mississippi River were constructed, inorganic (mineral) sediment input to this area has been substantially reduced. As a consequence, the bulk density of the marsh soils has fallen, causing increased marsh loss.

In addition to general marsh loss, shoreline erosion rates are very high, ranging from 20 to 30 feet per year. Unless this peninsula is given a substantial injection of sediments, it will soon be lost.

Objectives

The object is to mine sediments from Bayous Rigolettes and Perot and to place these sediments along the shoreline of the peninsula. This will elevate the shoreline and increase its stability. As the shoreline erodes over time, much of the dredged material would be moved inwards, significantly increasing the life of the peninsula. Building dams, walls, *or* levees along the shoreline would not have these positive consequences for marsh maintenance. Rather, due to wave reflectance and standing wave development, such structures are characterized by scour at their bases, and material eroded is usually lost to deeper water. In general the project will improve the inorganic/organic content of the marsh soils.

Project Features

The only feature of this project is to mine 600,000 cubic yards (cy) of material from Bayous Rigolettes and Perot and deposit this material on the peninsula. A shallow-draft barge fitted with a spray nozzle connected to the dredge by a flexible hose would be used to spread the sediments. A 250-foot-wide strip along the shoreline would be raised by about 1 foot.

ANTICIPATED BENEFITS

Types and Acres Enhanced

190 acres of wetlands will be enhanced by this project.

Types and Acres created

About 100 acres of wetlands will be created. As the shoreline erodes, most of the dredged material will be moved inland, thus extending the life of the peninsula significantly.

Twes and Acres Protected

Approximately 1,065 acres of wetlands will be protected due to reduction in shoreline erosion rates and improvement in the organic/inorganic ratio of marsh soils.

Duration of Coastal Benefit

The duration of the benefit will exceed 20 years.

Benefits to Coastal Wetland Dependent Fish and Wildlife Populations

Wildlife that utilize the marsh surface will directly benefit from the expansion in the surface area of the marsh and the improved productivity of the plants. Wetland and estuarine dependent fish should benefit from the increased organic matter productivity of this project.

Other Significant Benefits

Loss of this peninsula will greatly increase the fetch of wind-driven waves, which in turn will increase erosion rates along the west bank of Bayou Perot and east bank of Bayou Rigolettes.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

None expected

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

COSTS

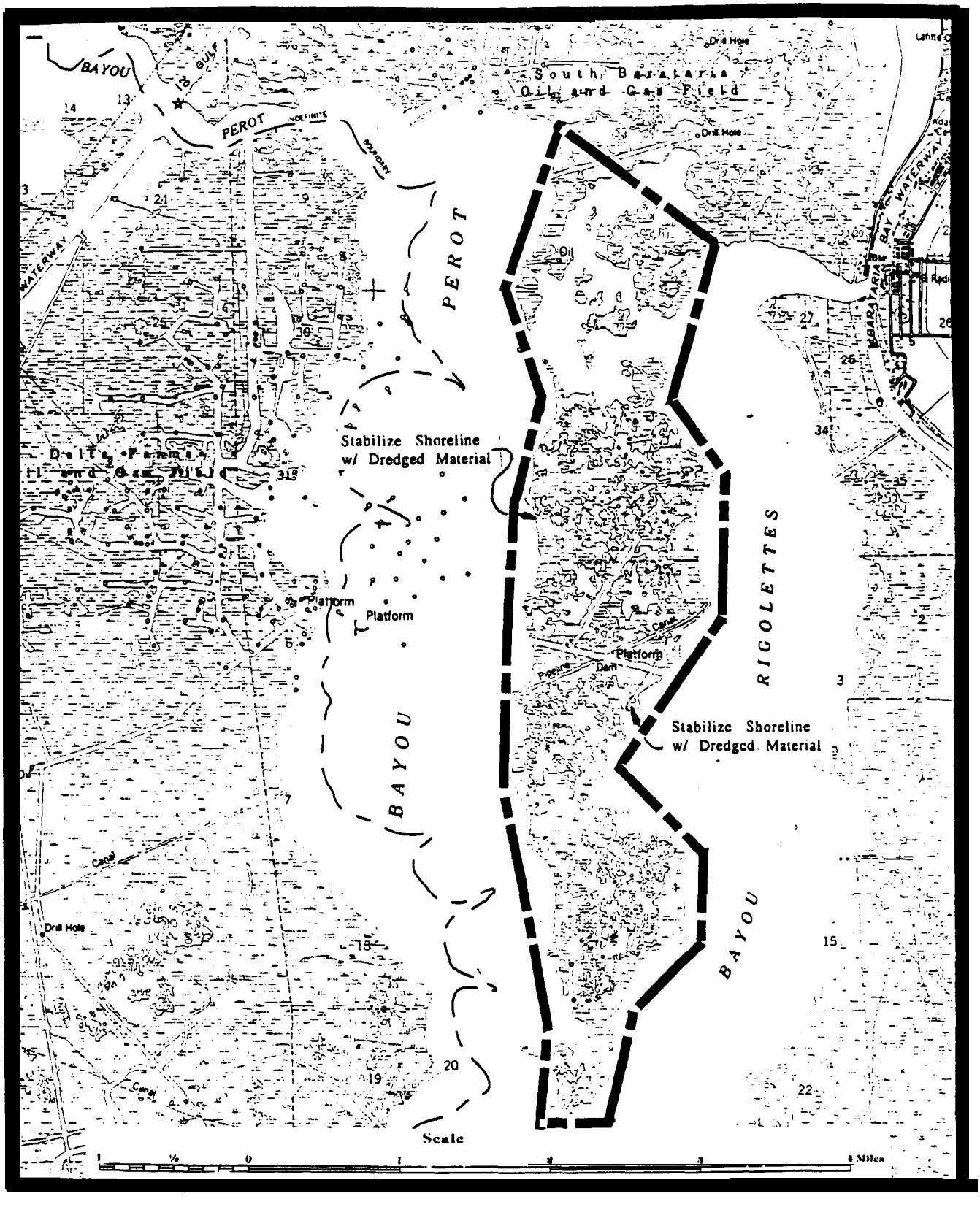
Item	Amount ($)
Construction Cost	1,080,000
Contingencies	270,000
Engineering and Design	135,000
Supervision and Administration	43,000
Supervision and Inspection	43,000
Real Estate	0
Total	1,571,000
Annual Charges	
Operation and Maintenance	0
Project Monitoring	4325

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Jun 94
Engineering and Design Finish Date:	Mar 95
Construction Start Date:	Jul 95
Construction Finish Date:	Dec 95



Bayou Perot/Bayou Rigolettes Marsh Restoration (XBA-65a)

Pass a Loutre Crevasse

XMR-8/9a

Proposed by: U.S. Department of the Army, U.S. Army Corps of Engineers

PROJECT DESCRIPTION

Location

The proposed project is located in the Mississippi River Birds Foot Delta, in Plaquemines Parish Louisiana. The proposed marsh development area is located at latitude 29° 9', longitude 89'14'. The project area is a 1,869-acre fresh/intermediate marsh.

Justification

The area north of Pass a Loutre and east of the Mississippi River no longer receives marsh nourishing sediment from the the river due to the enhancement of the bank line. The mouth of Pass a Loutre is routinely used as a hopper dredge disposal area. The additional material placed into this pass is retained in the channel bed usually until the low water season, at which time the material is scoured away and carried out to the mouth of the pass. Once the material is deposited near the mouth of Pass a Loutre, it is generally reworked by the high wave energy, and as a result fails to develop new sub-aerial delta. A crevasse will allow these sediments to enter and be deposited in the shallow open water area between Pass a Loutre and Raphael Pass to create new emergent marsh.

Objectives

The objective of the project is to utilize available sediment in areas which are currently shallow open water bottoms to create emergent marsh. In addition, the material excavated in constructing the crevasse channel will be placed to immediately create new wetlands.

Project Features

A crevasse channel with a 430-foot bottom width and an invert elevation of -6.0 feet NGVD will be dredged by a hydraulic cutter-head pipeline dredge. Approximately 380,000 cubic yards of material will be excavated from the northern bank of Pass a Loutre and placed in an unconfined, shallow-open-water disposal area located north of the channel cut. Dredged material would be placed at an elevation conducive to marsh development to reestablish wetlands lost to subsidence and erosion. The material will be placed to an elevation not to exceed +2.5 feet NGVD. The project is designed to create an estimated 63 acres of emergent marsh at elevation +2.5 NGVD with 15.2 additional acres between elevation 0.0 feet and 2.0 feet NGVD. After consolidation the dredged material will settle to a final maximum elevation between +1.5 and +2.0 feet NGW. This excavation would be repeated, most probably at the project mid-life, for channel maintenance.

ANTICIPATED BENEFITS

Types and acres of coastal wetlands created

Initially approximately 80 acres of shallow open water bottom will be converted to prime fresh marsh as a result of the project construction. This net gain of 80 acres would be repeated at year 10 as a result of channel maintenance. Over the 20 year life of the project the crevasse will create approximately 1,000 acres of emergent marsh. A net gain of of 1,043 acres is expected at the end of the project life (includes a combination of reduced loss of existing wetlands in the project area and some loss of the wetlands created).

Types(s) and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Shallow open water bottom suitable for the growth of submersed aquatic vegetation will be enhanced (i.e. over 50 percent coverage of this acreage by submersed aquatic vegetation).

Type(s) and aaes of coastal wetlands protected

Project implementation will reduce the loss rate in the project area by approximately 85 percent, thus the project will prevent the loss of 86 acres of fresh to intermediate marsh.

Types(s) and aaes of coastal wetlands restored

None anticipated.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

The project area is located in one of Louisiana's and the nations prime waterfowl wintering areas. The newly created wetlands will increase the acreage of habitat available to support migratory waterfowl. This area is also characterized by shallow open water areas and mudflats. These areas are productive habitat for numerous species of fish. The increased acreage and enhancement of existing areas of this type is expected to enhance fisheries productivity in this area.

Other significant benefits

This project will take advantage of riverine sediments that would normally be transported out to the mouth of Pass a Loutre.

ANTICIPATED ADVERSE EFFECTS

Types and aaes of coastal wetlands and other habitats adversely affected by the project

Approximately 1,000 aaes of open water habitat would be converted to emergent wetland. Another approximately 600 aaes of water bottom would experience some degree of deposition but would remain open water habitat.

Additionally short term turbidity problems could occur during construction of the project.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

COSTS

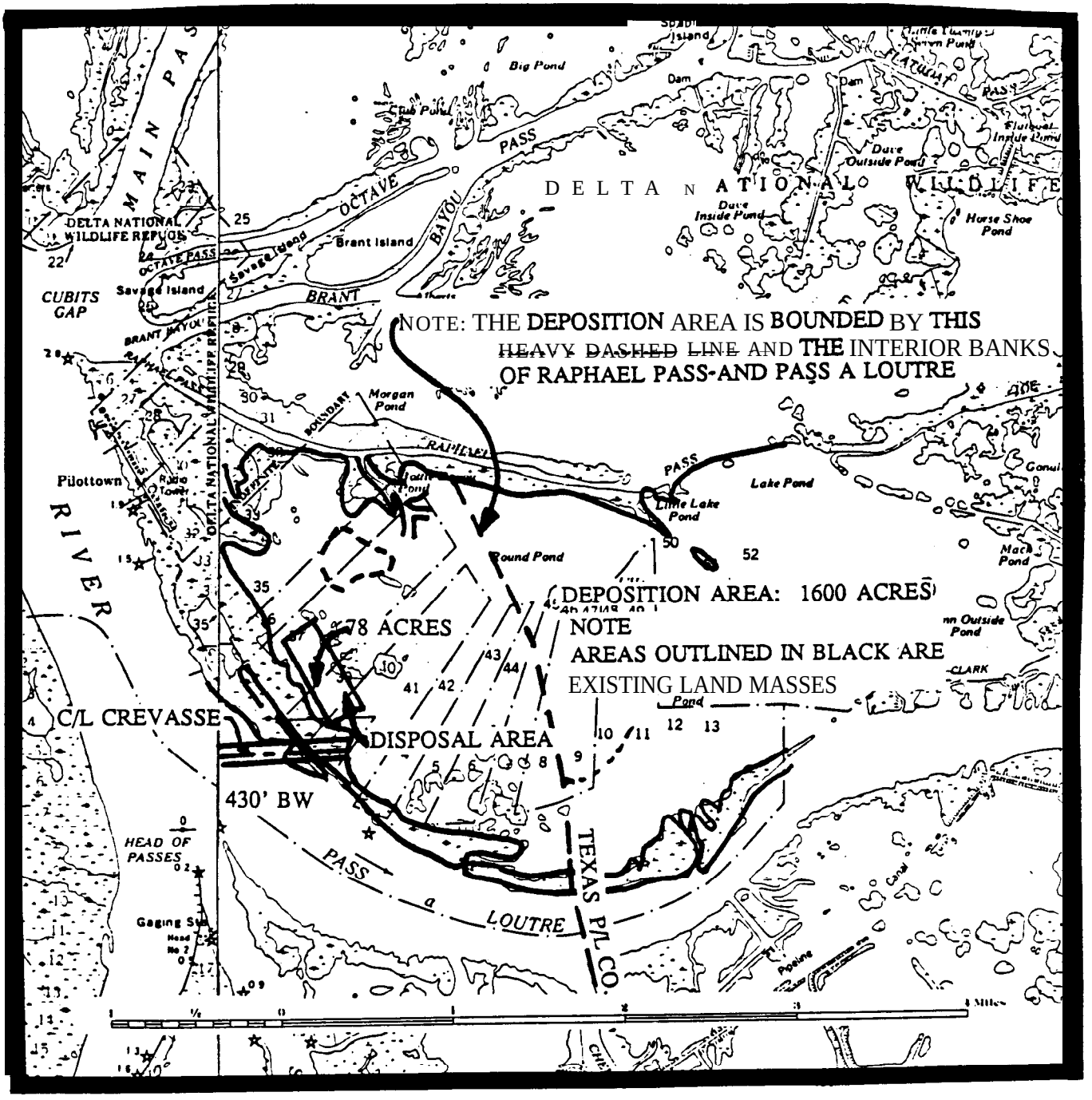
Item	Amount ($)
Construction Cost	754,000
Contingencies	189,000
Engineering and Design	147,000
Supervision and Administration	40,000
Supervision and Inspection	62,000
Real Estate	163,000
Total	1,355,000
Annual Charges	
Operation and Maintenance (at year 10)	714,000
Project Monitoring	8,625

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Jun 95
Construction Start Date:	Oct 95
Construction Finish Date:	Dec 95



Pass-a-Loutre Crevasse (PMR-8/9a)

East Timbalier Island Restoration

XTE -67

Proposed bv: U.S. Department of Commerce, Natural Marine Fisheries Service

PROJECT DESCRIPTION

Location

East Timbalier Island is in Lafourche Parish and is part of an island chain that fronts Terrebonne/Timbalier Bay. The island covers approximately 400 acres of which half is vegetated, and is centered at 29° 04'00" N, 90: 18'00" W.

Justification

Louisiana's barrier islands play an important role in protecting the Terrebonne, Barataria, and St. Bernard barrier-built estuaries and their surrounding wetlands from the destructive forces of high wave energy, storm surges and salt water intrusion. Additionally, a positive correlation exists between the total width of tidal inlets and bay tidal prisms. The habitats provided by barrier islands are extremely valuable as mammal and migratory song bird resting sites, waterfowl feeding and nesting areas, and protected aquatic nursery sites.

All of Louisiana's barrier islands are experiencing landward **migration, island** narrowing, and land loss as a consequence of a complex interaction **among global** sea level rise, subsidence, wave and storm processes, inadequate sediment supply, and intense human disturbance. The continued loss of these barrier islands will result in the collapse of the estuaries and wetlands they protect, thus severely disrupting coastal fisheries.

Objectives

The objective is to strengthen and thus increase the life expectancy of East Timbalier Island beyond its estimated 11 years by placing dredged material along the landward shoreline.

Project Features

The project calls for the mining of 890,000 cubic yards of sediment and placing it in three embayments along the landward shoreline of East Timbalier Island.

Site A is located approximately 1 mile west of the Greenhill Gil/Gas facility and would plug and fill a major overwash channel created during Hurricane Andrew. 250,000 cubic yards of material would be mined and, assuming a 3:2 cut-to-fill ratio, 20.66 acres of land at an elevation of +2 feet NGVD would be created.

Site B is seaward of the Greenhill facility. Two major overwash channels will be filled and 27.6 acres (270,000 cubic yards of material) of land created (elevation +2 feet NGVD).

Site C is approximately 1 mile east of the Greenhill facility. Here 370,000 cubic yards of material would be mined to create 38.5 acres at an elevation of +2 feet NGVD.

This project will in essence double the width of this island. One of the major lessons learned concerning barrier island responses to Hurricane Andrew was that the wider the barrier island, the less it was impacted by the storm. This project will thus ensure that the island will still be a geomorphic feature of Louisiana 20 years from now.

ANTICIPATED BENEFITS

Twes and Acres Created

At least 86 acres of vegetated land should result from this project.

Types and Acres Protected

Restoration of East Timbalier Island will give additional protection to approximately 1,900 acres of mainland marshes as it will reduce the present trend of increasing tidal prisms.

Duration of Coastal Benefits

The duration of the benefit will last 20 years.

Benefits to Coastal Wetland Dependent Fish and Wildlife Populations

Wildlife that utilize the marsh surface will benefit greatly from the increase in surface area. Louisiana's coastal fishery is based upon harvest of estuarine dependent species. Terrebonne/Timbalier Bay is a large, productive bar-built estuary. If the barrier islands disappear, this estuarine fishery will collapse with severe socio-economic consequences.

Other Significant Benefits

A large percentage of oil and gas facilities in the bays are old and were not constructed to endure open ocean wave conditions. Loss of the barrier islands would mean ocean swells will penetrate right up to the present marsh shoreline. Exposure of these old structures to high wave-energy will possibly result in a number of oil spills, some of which may be extremely damaging to the wetland environment.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

Dredging has adverse impacts on bottom habitat; previous studies indicate effects in the project area should be minimal. The filling of wetlands and the retention dikes may encroach upon and damage some existing saltwater marsh. The total acreage impacted should be much smaller than the acreage constructed, indicating no net loss of wetlands. Closing of island breaches may reduce migration corridors for Gulf species which utilize estuarine waters for a part of their life cycle.

Conflicts with other **projects** and programs

No conflicts with other **programs are apparent at this time.**

COSTS

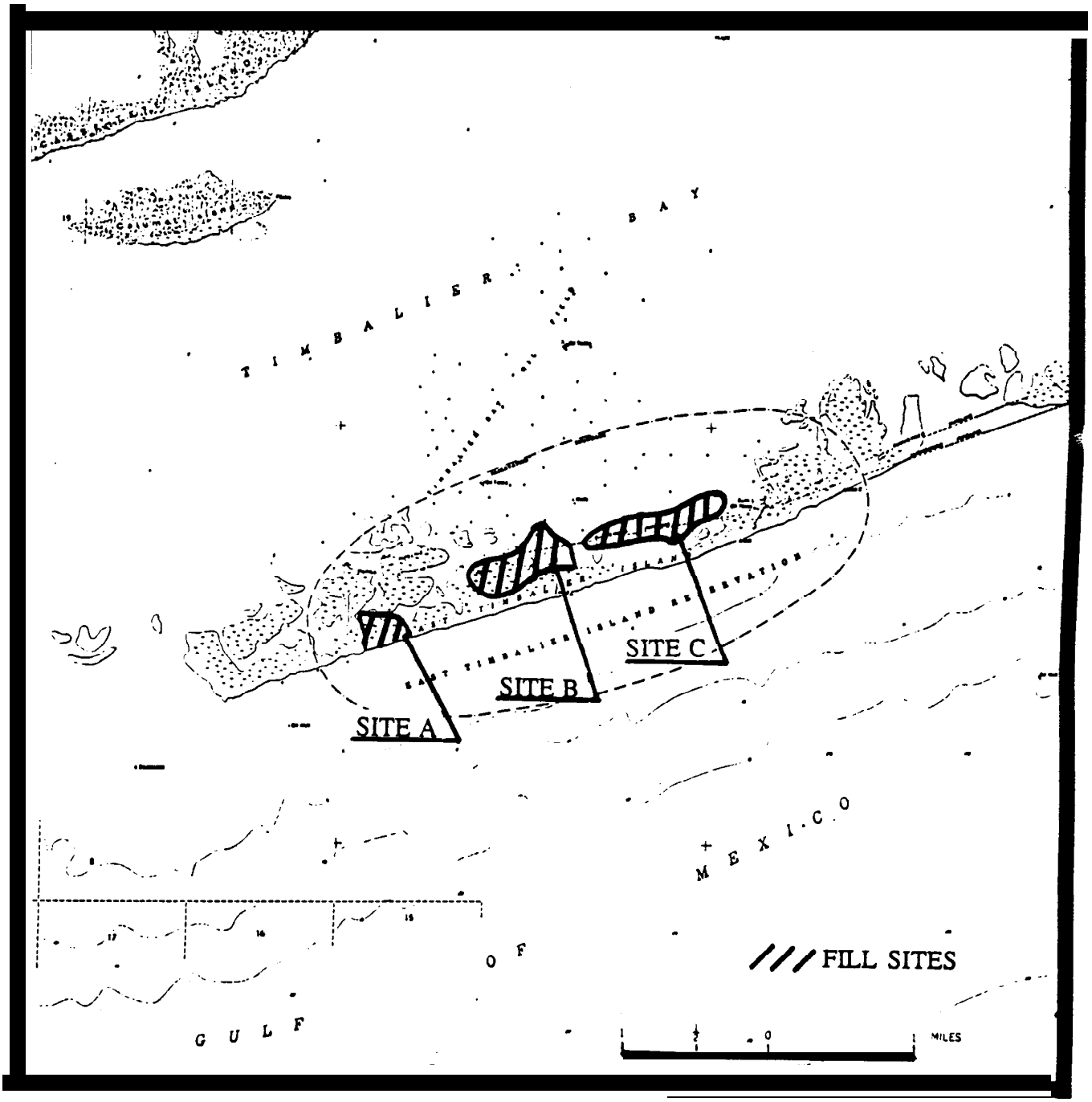
Item	Amount ($)
Construction cost	1,177,000
Contingencies	294,000
Engineering and Design	147,000
Supervision and Administration	47,000
Supervision and Inspection	118,000
Real Estate	0
Total	1,783,000
Annual Charges	
Operation and Maintenance	0
Project Monitoring	4,325

STATUS OF ENVIRONMENTAL COMPLIANCE

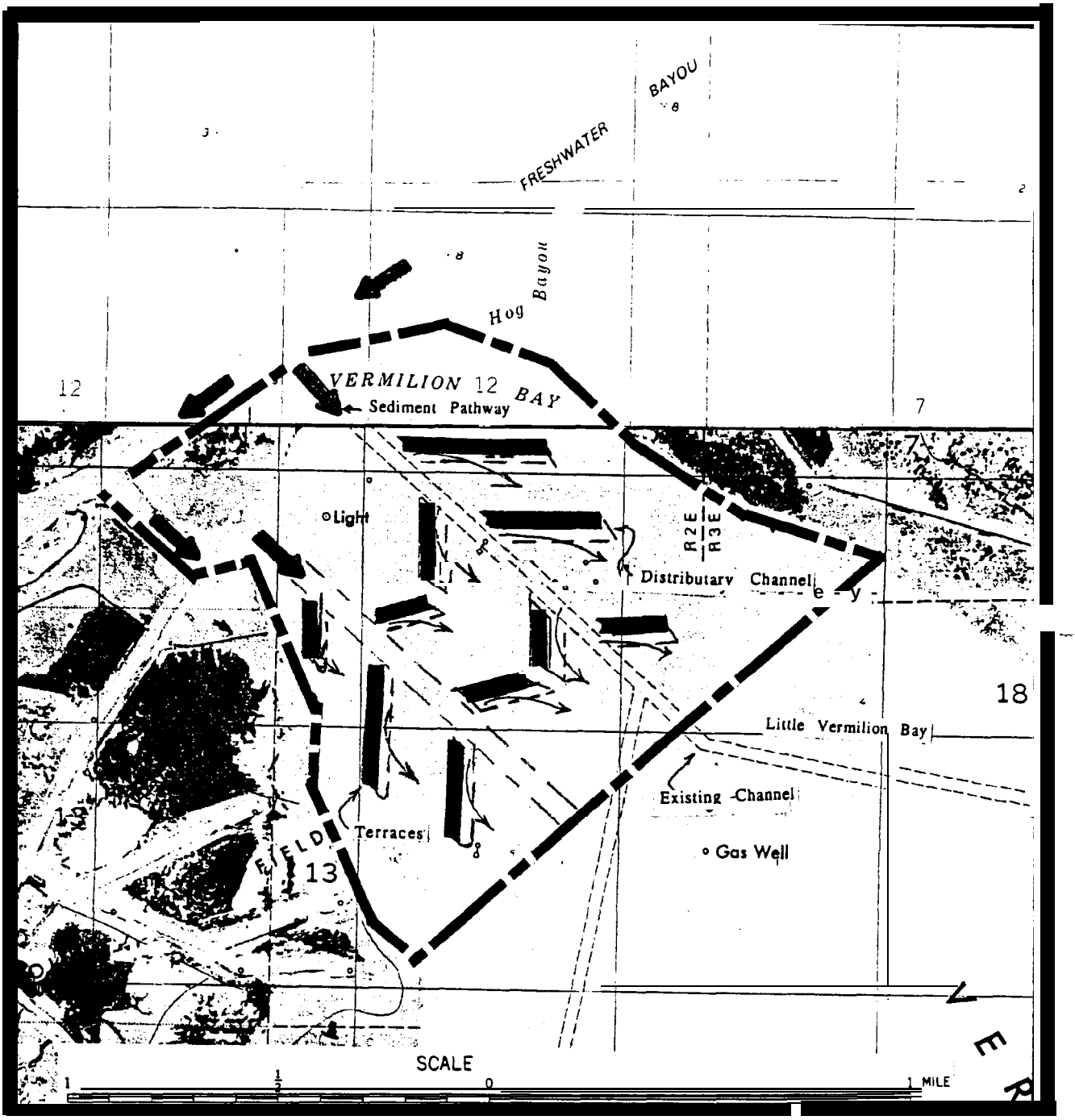
NEPA	necessary, not initiated
Section l0/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	oct94
Construction Start Date:	Apr 95
Construction Finish Date:	Nov 95



East Timbalier Island Restoration (XTE-67)



Little Vermilion Bay Sediment Trapping (PTV-19)

COSTS

Item	Amount ($)
Construction Cost	779,000
Contingencies	195,000
Engineering and Design	121,000
Supervision and Administration	31,000
Supervision and Inspection	97,000
Real Estate	5,000
Total	1,228,000
Annual Charges	
Operation and Maintenance	2,500
Project Monitoring	4,325

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Mar 94
Engineering and Design Finish Date:	Dec 94
Construction Start Date:	Apr 95
Construction Finish Date:	Aug 95

The wind-wave energy level in the bay may be preventing some of the existing subaqueous levees from becoming subaerial features, and is also responsible for shoreline erosion. For this reason, dredged material will be placed as a low elevation levee or terrace along the landward flank of each dredged distributary to protect the depositional area associated with the channel landward of the terrace. Additionally, terraces will contribute to shoreline protection.

Dredged distributaries will be 100 feet wide and 6 feet deep. A total of 15,000 linear feet of distributary channel will produce 340,000 cy of material. Assuming a 3:2 cut-to-fill ratio, 44 acres of terrace, 100 feet wide with an elevation of + 2 ft above the local mean sea level, will be created (after some compaction).

Gallon containers of smooth cordgrass will be planted at the base of those terraces facing the greatest fetch. Sprigs of smooth cordgrass, as well as bullwhip, will be planted along the shoreline and at the base of the remaining terraces,

ANTICIPATED BENEFITS

Types and Acres Created

Forty-four acres of emergent wetlands will be directly created by this project. Over a period of 20 years approximately 360 acres of emergent wetlands should be created as the bay floor aggrades.

Type and Acres Protected

Fifty-one acres of wetlands will be protected due to a reduction in shoreline erosion.

Duration of the Coastal Wetland Benefit

The project would persist in excess of 20 years.

Benefits to Coastal Wetland Dependent Fish and Wildlife Populations

Creation of marshes will improve the habitat for local furbearer and alligator populations. Additionally the project area and surrounding marshes would be excellent habitat for migratory waterfowl. This project will enhance productivity. The increase in shoreline length will provide greater habitat for fish and shellfish populations.

ANTICIPATED ADVERSE EFFECTS

Types and Acres Affected

No adverse effects.

Conflicts with other Programs

None.

Little Vermilion Bay Sediment Trapping

PTV-19

Proposed bv: U.S. Depertment of Commerce, National Marie Fisheries Service

PROJECT DESCRIPTION

Location

The project is located in Little Vermilion Bay, a shallow western arm of Vermilion Bay. At two locations, Little Vermilion Bay is connected to the Gulf Intracoastal Waterway (GIWW). The project is centered at approximately 29°43'00"N, 92°11'OO"W.

Justification

Prior to 1839, marshes fringing Little Vermilion Bay were brackish to saline. After this date fresh water from the Atchafalaya River started to reach Atchafalaya Bay and consequently reduced salinities. After the infilling of the Atchafalaya Basin, sediments started to be transported down the Atchafalaya to the bay. Under strong southeasterly winds, sediment-rich waters from Atchafalaya Bay reach Little Vermilion Bay and thus sediments from bay waters are deposited in the project area. However, the most important hydrologic change for this area was the dredging of the GIWW. This channel is a conduit for sediment-rich waters from Wax Lake Outlet to Little Vermilion Bay. Since the early 1970's about 3 feet of sedimentation has occurred in the study site. Sediment availability is of fundamental importance to the project.

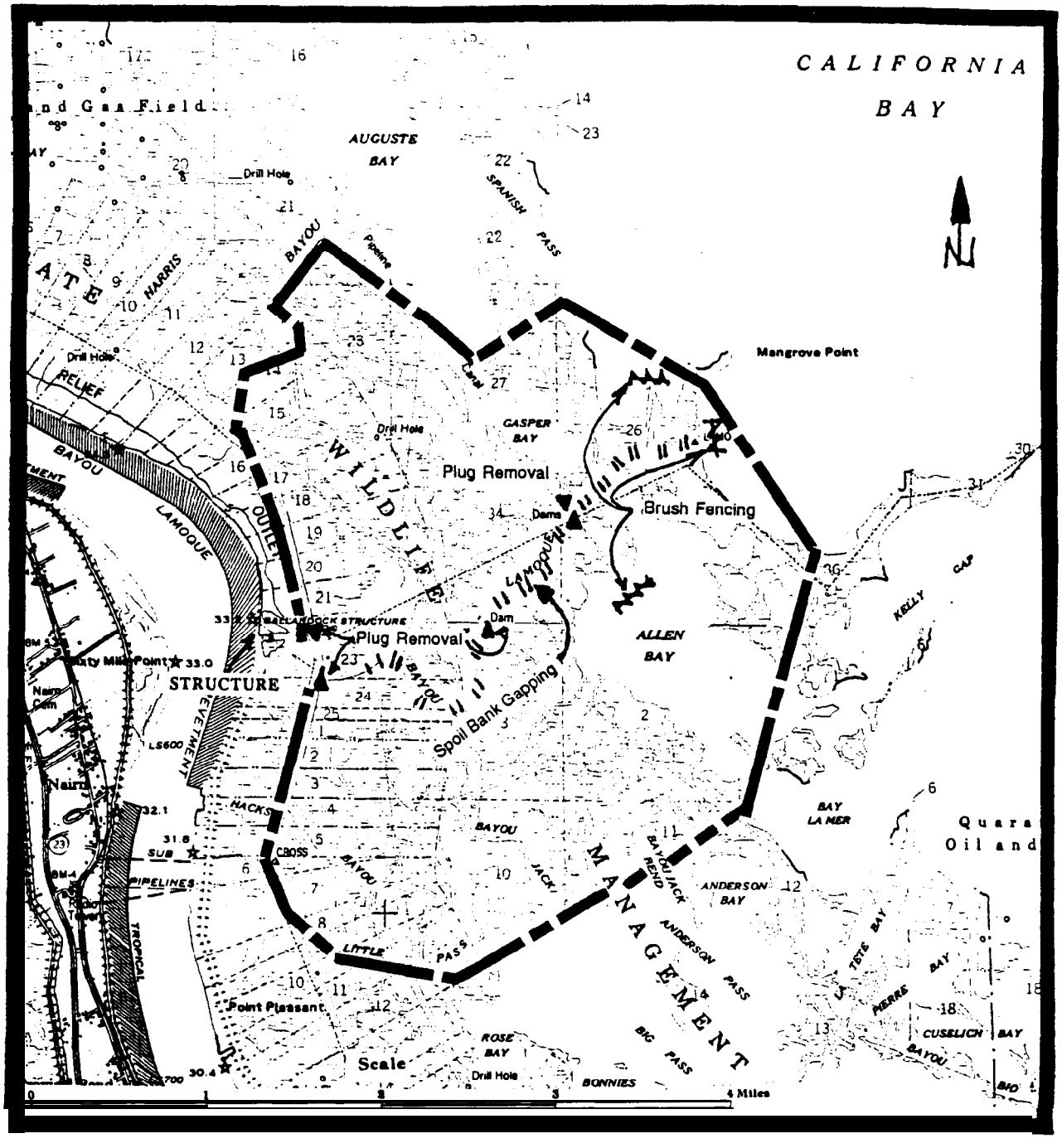
Obiectives

Through the dredging of a system of distributary channels off two man-made channels that cross the bay from the GIWW, it is expected that sedimentation will be induced in shallow areas away from the main channels to eventually create emergent marsh, and the existing shoreline and deposition will be enhanced and will be protected from wind-wave erosion.

Project Features

The project consists of 897 acres of shallow bay bottom and 3 acres of vegetated spoil mounds. A 200-foot strip of shoreline is included which comprises 67 acres of emergent marsh.

Presently, two man-made channels, 6 to 8 feet deep and 100 to 200 feet wide, cross the project site from the GIWW to the deeper outer bay. Associated with each channel are subaqueous levees representing both redistributed spoil material and natural sedimentation. Thus, the two channels are very efficient conduits of sediment from the ` to the open bay. The project calls for the dredging of a distributary channel system that will facilitate spreading of the sediment load over a wide area. Given that the sedimentation rate presently exceeds subsidence, the spreading of sediments could cause large parts of the bay to become subaerial within a few years.



Bayou Lamoque Outfall Management (BS-5)

COSTS

Item	Amount ($)
Construction Cost	156,000
Contingencies	39,000
Engineering and Design	16,000
Supervision and Administration	11,000
Supervision and Inspection	14,000
Real Estate	30,000
Total	266,000
Annual Charges	
Operation and Maintenance	2,000
Project Monitoring	5519

Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10.404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Jun 94
Engineering and Design Finish Date:	Dec 95
Construction Start Date:	Apr 96
Construction Finish Date:	Jul 96

ANTICIPATED BENEFITS

Types and acres of coastal wetlands enhanced, and the design and nature of the enhancement

Management of freshwater outfall in the project area is expected to enhance 205 acres of saline marsh by increasing sediment deposition on the marsh surface. This is expected to offset land loss to a large extent. These changes will result in increasing the project area's carrying capacity for wildlife and waterfowl as well as increasing species diversity of vegetation.

Tvves and aaes of coastal wetlands protected

The project is expected to protect approximately 176 aaes of saline marsh habitat.

Types and aaes of coastal wetlands restored

Brush fences are expected to trap sediment and create 30 aaes of new marsh.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Fresher conditions in the project area are expected to directly benefit furbearer and waterfowl populations by improving habitat suitability.

Other significant benefits

Outfall management may reduce the amount of sediment being deposited on oyster producing areas by filtering more of the diversion outfall through the marsh and brush fencing.

ANTICIPATED ADVERSE EFFECTS

Types and aaes of coastal wetlands and other habitats adversely affected by the project

None expected.

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

Bayou Lamoque Diversion Outfall Management

BS-5

Proposed by: U.S. Department of Agriculture, Soil Conservation Service

PROJECT DESCRIPTION

Location

The Bayou Lamoque diversion outfall management area is located on the east bank of the Mississippi River east of Naim, Louisiana, in Plaquemines Parish. The project area is bounded by the Mississippi River to the west, California Bay to the east, and Auguste Bayou and Anderson Bay to the north and south, respectively. The project area comprises 6,267 acres of saline marsh and open water habitat.

Justification

Construction of the Mississippi River levees has effectively stopped annual flooding that served to nourish the surrounding marshes with sediments, nutrients, and freshwater. As a result, this area is currently losing marsh at a rate of approximately 12 acres per year.

Two gated box culvert diversion structures were installed to facilitate oyster production in California Bay. The first structure was constructed in 1956 and consists of four 10- by 10-foot box culverts with screw gates. The second structure, built in 1974, consists of four 12- by 12-foot box culverts with screw gates. The structures are currently operated by the Louisiana Department of Wildlife and Fisheries and are open between January and August of each year. Currently no management of structure outfall is taking place. This project will manage the outfall area to increase the diversion structures' ability to create marsh, reduce salinity, and enhance wetland habitat. This plan proposes to utilize the structures' outfall for wetland creation and enhancement by gapping spoil banks and removing plugs from pipeline canals along Bayou Lamoque while maintaining conditions favorable to oyster production.

Objectives

The objective of the outfall management plan is to optimize the use of fresh water and sediment supplied by the existing structures.

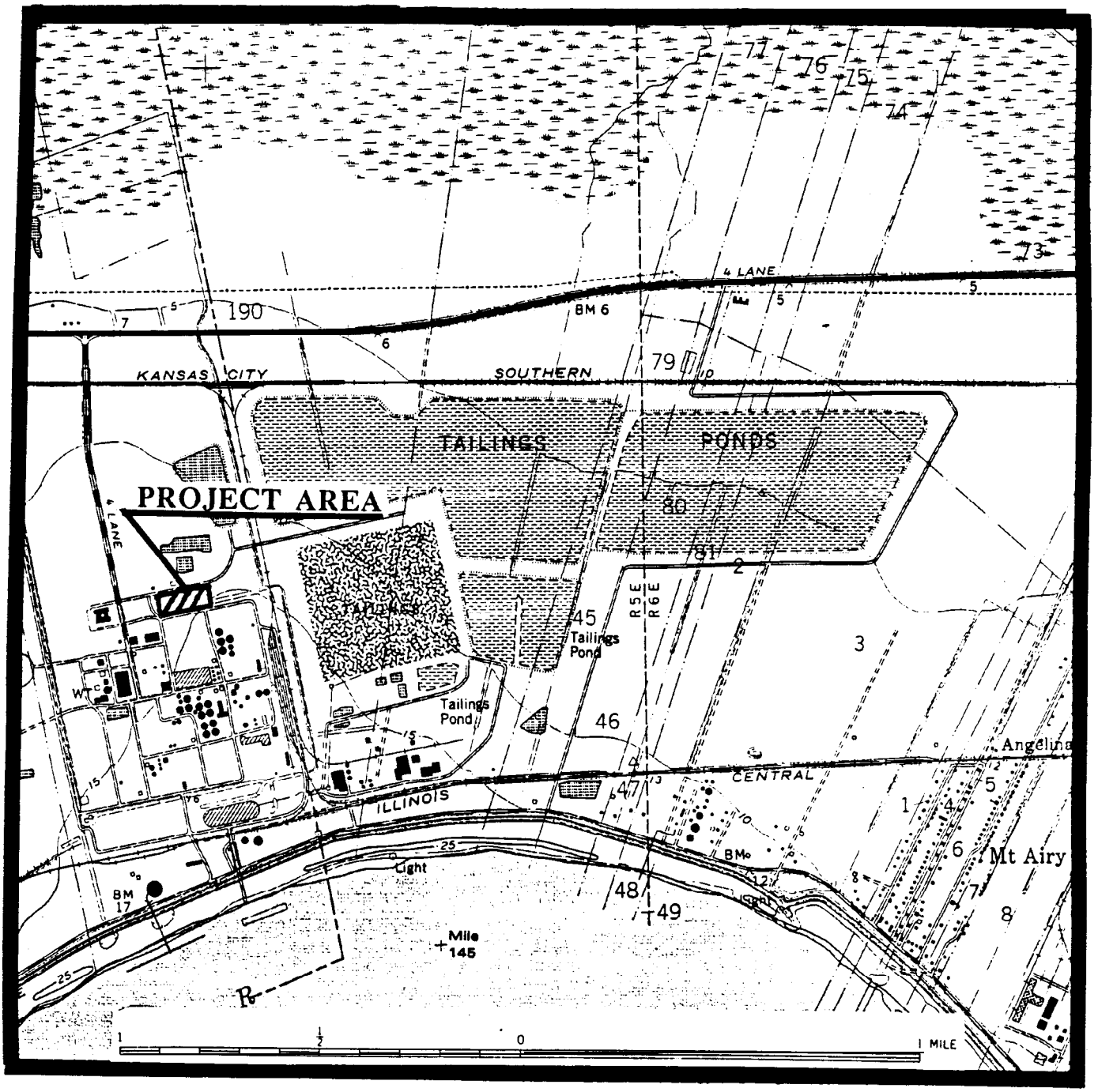
Project Features

Structural components of the plan area as follows:

1. 3.1 miles of spoil bank gapping (50 feet every 500 feet) along Bayou Lamoque.

2. Removal of five pipeline canal plugs.

3. Construction of 6,000 feet of brush fencing at three locations as illustrated on the attached project area map.



Modified Red Mud Demonstration (XTE-43)

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Mar 94
Construction Start Date:	Ju194
Construction Finish Date:	Aug 94

POTENTIAL FUNDING SOURCES

Federal funding: source(s)

Coastal Wetlands Planning, Protection and Restoration **Act**

Non-federal funding source(s)

State of Louisiana-Wetland Conservation and Restoration Fund

Kaiser Aluminum & Chemical Corporation

be pumped from the plant, using existing pipes, to the test area. The application **areas** will be separated by low levee or sill type structures or silt curtains.

ANTICIPATED BENEFITS

Anticipated benefits include establishment of fresh water marsh directly as a result of the project at the designated test site and generation of usable data for future offsite applications. Red mud as a sediment source for the marsh restoration is plentiful and available locally, thus ensuring that supply is high and transport costs are reasonable. The benefit of cost-effective sediment source and application is paramount to the demonstration project's success. The duration of this project is 20 years, although most of the benefits and results (i.e. application in wetland environments) should be realized in 2 to 3 years.

ANTICIPATED ADVERSE EFFECTS

To eliminate off-site concerns, this project will be performed in a confined, permitted solid waste disposal area. No adverse effects are anticipated within the site or in neighboring areas, because the red mud is inert toxicologically and will be contained at the test site by the levee system. The guidelines set by the environmental compliance permits acquired for this project will be strictly adhered to.

COSTS

Item	Amount ($)
Construction Cost	192,000
Contingencies	48,000
Engineering and Design	51,000
Supervision and Administration	15,000
Supervision and Inspection	24,000
Real Estate	0
Total	330,000
Monitoring	139,000
Annual Charges	
Operation and Maintenance	3,000

Kaiser Aluminum and Chemical Corporation will contribute $183,000 to the project cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	complete
Section 10/404	not required
Louisiana Coastal Management Program	not required
Louisiana Water Quality Certification	complete
Endangered Species Act	not required

PROJECT IMPLEMENTATION SCHEDULE

Red Mud Demonstration Project (Modified)

XTE-43

Proposed bv: U.S. Environmental Protection Anencv

PROJECT DESCRIPTION

Location

The project site is in St. James Parish, Louisiana about 14 miles east of the Sorrento at 30° 03'50" north latitude and 90° 40'35" west longitude. The site is roughly rectangular in shape and measures approximately 3 acres.

Justification

Louisiana has the highest rate of wetland loss in the United States, at an average of 30 square miles per year. The absence of suitable sediment to replenish vital wetlands is a major problem in Louisiana. In recent history this has been greatly exacerbated by the construction of Mississisppi River levees and the closure or control of natural river distributaries. Under this hydrologic regime the river is restricted from distributing its marsh nourishing sediments throughout the coastal plan. This sediment deficit problem is exacerbating the transformation of valuable wetlands habitat to open water habitat.

One alternative, as outlined in this fact sheet, is the placement of processed Bauxite soil (commonly described as red mud) in wetlands for coastal restoration purposes. The red mud is in abundant supply near the coast of Louisiana. Its use presents a potentially viable solution for curtailing coastal land loss in the state by targeting marsh sites presently undergoing erosion.

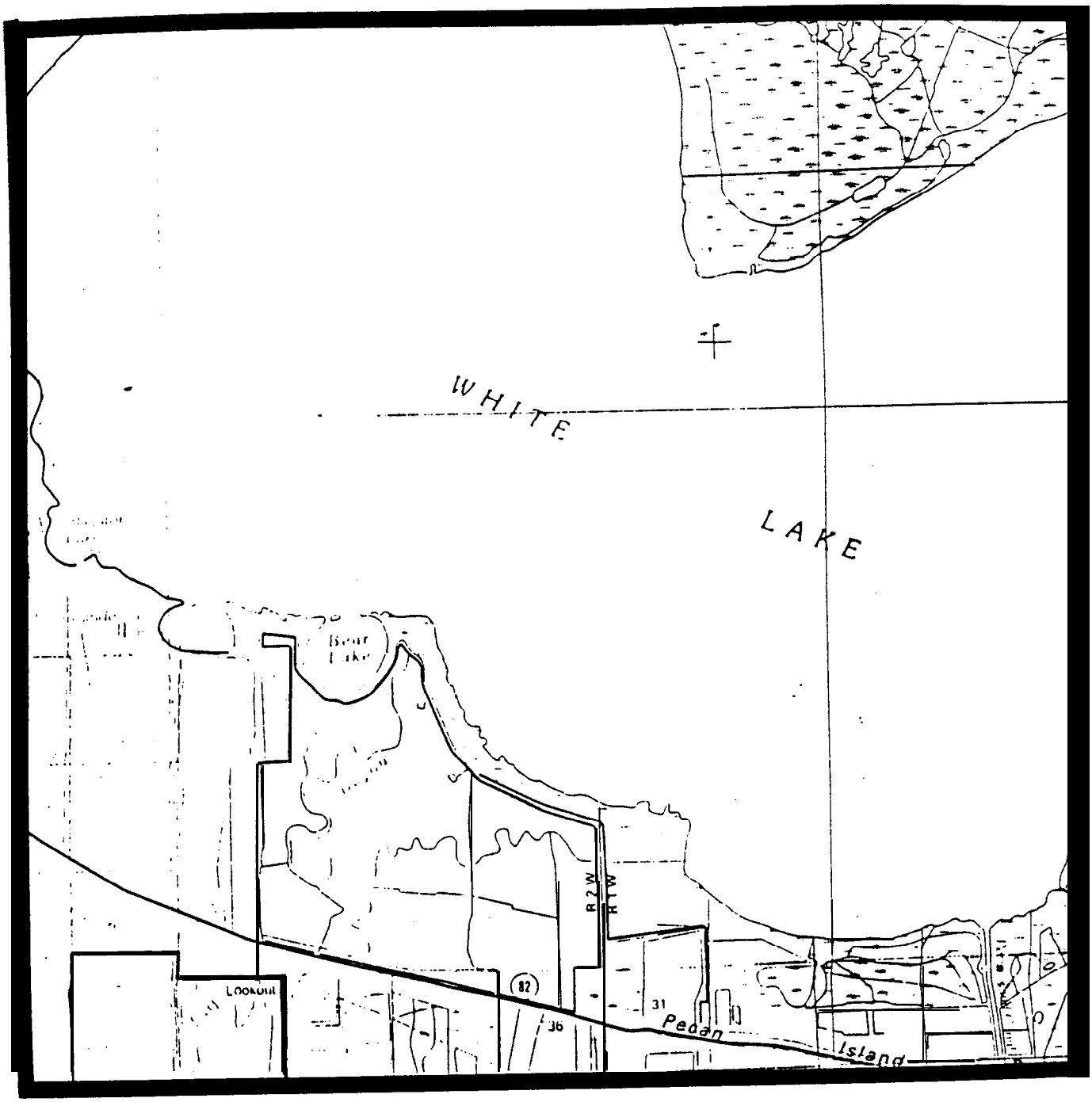
A field demonstration is proposed to determine the usefulness of red mud as a sediment source to reduce coastal land loss. Other factors that will be examined during the demonstration project include cost-effectiveness, ability of red mud substrate to sustain marsh plants and other biota, red mud stability, and potential for ecological impacts to the local environment.

Objective

The objective of this project is to demonstrate in the field that red mud can provide a substrate suitable for creation of emergent marsh in a cost-effective and environmentally unobtrusive manner. This field-based project is a complement to the controlled laboratory experiments currently funded by Raiser Aluminum & Chemical Corporation at Louisiana State University. Placement of red mud to create a fresh water marsh environment as designed in this demonstration project will provide a qualitative comparison of plant growth on various red mud applications, an indication of potential ecological effects, and rates of sediment transport.

Project Features

Approximately 3 acres of fresh water wetlands will be created with red mud at a test site in Gramercy, Louisiana. The site is roughly rectangular. The red mud will



SW Shoreline White Lake Demonstration (PME-6)

Benefits to coastal wetland dependent fish and wildlife populations

Fresher conditions in the project area are expected to directly benefit furbearer, reptile and waterfowl populations by improving habitat suitability and fisheries by increasing marsh productivity.

Other significant benefits

If effective, this cost effective solution to coastal erosion can be used in many parts of coastal Louisiana.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

COSTS

Item	Amount ($)
Construction Cost	20,000
Contingencies	5,000
Engineering and Design	2,500
Supervision and Administration	2,500
Supervision and Inspection	2,500
Real Estate	1,000
Total	34,000
Annual Charges	
Operation and Maintenance (4 years)	5,000
Project Monitoring	1,889

Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	not necessary
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Mar 94
Engineering and Design Finish Date:	Apr 94
Construction Start Date:	Jul 94
Construction Finish Date:	Aug 94

SW Shore White Lake Demonstration

PME-6

Proposed by: U.S. Department of Agriculture, Soil Conservation Service

PROJECT DESCRIPTION

Location

The project is located two miles north of Louisiana Highway 82 at the Vermilion/Cameron Parish line. The project area encompasses 25 acres of fresh/intermediate marsh. The project center is located at approximate latitude 29° 44'39" N and longitude 92° 36'18" W.

Justification

Erosion along the southwestern shoreline of White Lake is **threatening** to breach into Deep Lake. If shoreline erosion continues, emergent wetlands will convert into shallow open water areas and eventually become part of the lake.

Objectives

The objective of the project is to stabilize one mile of the White Lake shoreline and prevent breaching into Deep Lake. The project will determine if **California** Bulrush (*Scirpus californicus*) is effective at damping high energy wave. If successful, this cost effective solution to erosion problems can be used throughout coastal Louisiana.

Project Features

California bulrush will be planted along the southwest shoreline of White Lake form the northern end of Alligator Lake continuing one mile northward. Three rows will be planted along the shoreline in 0 to 1.5 feet of water. Approximately 3,200 plants will be required.

ANTICIPATED BENEFITS

Twes and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

None

Types and acres of coastal wetlands protected

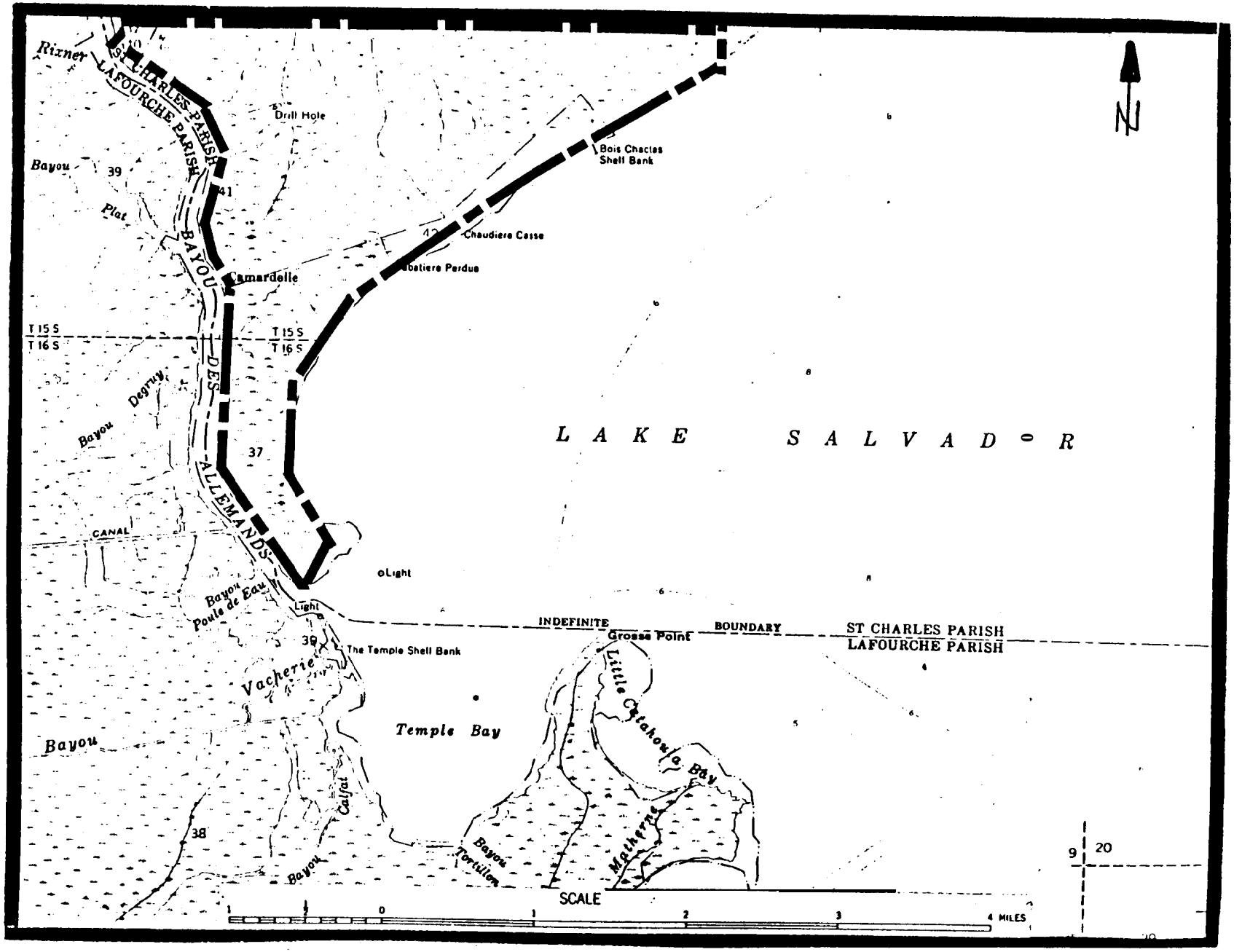
Over the 20 year project life, the project will prevent the loss of 16 acres of fresh marsh.

Types and aaes of coastal wetlands restored

None

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.



Lake Salvador Shoreline Protection Demonstration (BA-15)

COSTS

Item	Amount ($)
Construction Cost	670,000
Contingencies	167,000
Engineering and Design	87,000
Supervision and Administration	40,000
Supervision and Inspection	70,000
Real Estate	0
Total	1,035,000

Annual Charges
Operation and Maintenance
Project Monitoring

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Jul 94
Engineering and Design Finish Date:	Sep 94
Construction Start Date:	Jan 95
Construction Finish Date:	Mar 95

ANTICIPATED BENEFITS

Types and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Closure of shoreline breaches and shoreline protection is expected to enhance approximately 1,003 acres of marsh and shallow water habitat. Enhancement will be in the form of reduced wave activity that will provide an environment conducive to expansion of emergent and submergent vegetation. These changes will increase the project area's carrying capacity for wildlife and waterfowl.

Types and acres of coastal wetlands protected

Assuming that the current rate of marsh loss in the area will be reversed, this project is expected to protect approximately 166 acres of brackish marsh habitat.

Twes and acres of coastal wetlands restored

This project is expected to restore approximately 10 acres of marsh along the Lake Salvador shoreline.

Duration (life expectancy of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Protection, enhancement and limited restoration of the project area is expected to directly benefit furbearer, reptile, and waterfowl populations by improving habitat suitability and fisheries by increasing marsh productivity.

Other significant benefits

The above mentioned benefits to reptiles, furbearers, waterfowl and fisheries will provide indirect benefits to recreational and commercial fishermen, trappers, and sportsmen. The local economy will benefit from moneys brought in from these activities.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

Lake Salvador Shoreline Protection Demonstration Project

BA-15

Proposed bv: U.S. Department of Commerce, National Marine Fisheries Service

PROJECT DESCRIPTION

Location

The project is located along **4.2** miles of the north Lake Salvador shoreline bounded to the east by Baie du Chactas and to the west by Bayou des Allemandes on the St. Charles-Lafourche Parish lines. The project area extends inland for a distance of approximately one mile into the Lake Salvador Wildlife **Management Area. The area comprises 4,070** acres of fresh marsh and shallow open water habitat.

Justification

This area has suffered from high rates of land loss caused by shoreline erosion along Lake Salvador. Erosion rates in this area are on the order of 13 ft/yr. Erosion has breached the lake rim at several locations, allowing tidal and wave energy to erode the highly organic marsh surface, resulting in large shallow pond formations in the interior marsh. Since 1956, the project area has lost more than 1,000 acres of marsh, equating to a loss of approximately 25 percent of the land in the project area.

Objectives

This project is designed to demonstrate the effectiveness of two separate types of segmented timber breakwaters in highly organic, unconsolidated soil with poor load bearing capacities. Unconsolidated mucky soils such as those found in this area make traditional hard shoreline stabilization techniques ineffective. The project will maintain or recreate (with sediment input from the Federally authorized Davis Pond Freshwater Diversion project) the historical shoreline along this section of the lake and re-establish the historical hydrology of the interior marsh to reduce tidal scour and associated land loss.

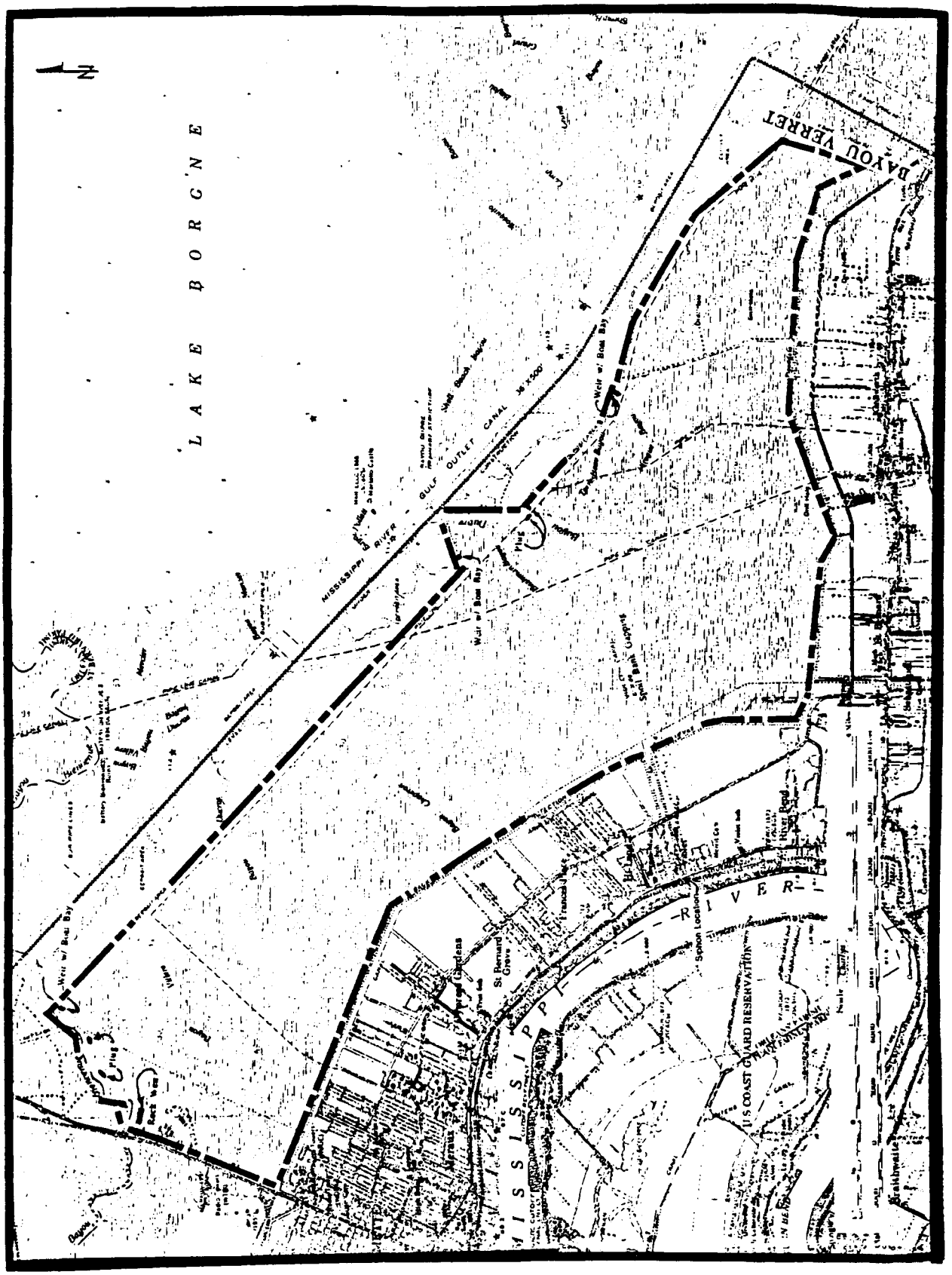
Project Features

Structural components of the plan include:

1. 5280 feet of low shell armored berm to be placed in areas where blowouts have occurred.

2. 11,088 feet of timber pylon segmented breakwater. Breakwaters are V-shaped and 16 feet long, spaced 10 feet apart on 21-foot 4-inch centers. Five hundred eighteen pylon structures will be required. The breakwaters will be placed in four feet of water approximately 300 to 400 feet from the shoreline.

3. 11,088 ft. of timber pylon segmented breakwater. Breakwaters are straight and 20 feet long spaced 10 feet apart on 30-foot centers. Three hundred seventy pylon structures will be required. The breakwaters will be placed in four feet of water approximately 300 to 400 feet from the shoreline.



Violet Freshwater Distribution (PO-9a)

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

COSTS

Item	Amount ($)
Construction Cost	500,000
Contingencies	125,000
Engineering and Design	70,000
Supervision and Administration	35,000
Supervision and Inspection	30,000
Real Estate	40,000
Total	800,000
Annual Charges	
Operation and Maintenance	10,000
Project Monitoring	18,199

Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10.404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Mar 95
Engineering and Design Finish Date:	Nov 95
Construction Start Date:	Apr 96
Construction Finish Date:	Oct 96

Project Features

Structural components of the plan are as follow:

I. Three slotted weirs with boat bays having channel widths and depths as follows: back levee canal south of Bayou Dupre 120 feet wide by 6 feet deep (depth **estimated),** back levee canal north of Bayou Dupre 70 feet wide by 12 feet deep, back **levee** canal south of Bayou Bienvenue 175 feet wide by 6 feet deep (depth estimated).

2. Rock weir at Bayou Bienvenu (175 feet wide by an estimated 5 feet deep).

3. Two earthen plugs at the pipeline canal paralleling the back levee canal at Bayou Dupre (20 feet wide by 2 feet deep, depth estimated).

4. Two plugs on Bayou Bienvenue (250 feet wide by 3 feet deep and 150 feet wide by 3 feet deep, depths estimated).

5. Spoil bank gaping along 5,500 feet of the Violet Canal (50 feet every 500 feet).

ANTICIPATED BENEFITS

Types and aaes of coastal wetlands enhanced, and the desivn and nature of the enhancement

The introduction and management of fresh water into the project area is expected to enhance 17,980 aaes of brackish and saline marsh by restoring the project area to a fresher water regime. These changes will increase the project area's carrying capacity for wildlife and waterfowl as well as increasing species diversity of vegetation.

Types and aaes of coastal wetlands protected

The project will protect 155 aaes of marsh from being lost over the 20-year project life.

tTypes and aaes of coastal wetlands restored

Increased retention of freshwater, sediments, and nutrients will provide a gain of 92 aaes of marsh over the 20-year project life.

Duration (life expectancy of coastal wetland benefits

The project has an expected life of twenty years.

Benefits to coastal wetland dewndent fish and wildlife populations

Fresher conditions in the project area are expected to directly benefit furbearers, reptiles, and waterfowl by improving habitat suitability.

Other significant benefits

None

ANTICIPATED ADVERSE EFFECTS

Types and aaes of coastal wetlands and other habitats adversely affected by the project

None expected

Violet Freshwater Distribution

PO-9

Proposed by: U.S. Department of Agriculture, Soil Conservation Service

PROJECT DESCRIPTION

Location

The Violet Freshwater Distribution Project (OI-9) complements the existing siphons diverting Mississippi River water into 17,980 acres of brackish and saline marsh in St. Bernard Parish known as the Central Wetlands Management Unit. This wetland is located between the Mississippi River Gulf Outlet (MRGO) and the back protection levee and extends from Bayou Bienvenue to Bayou Verret.

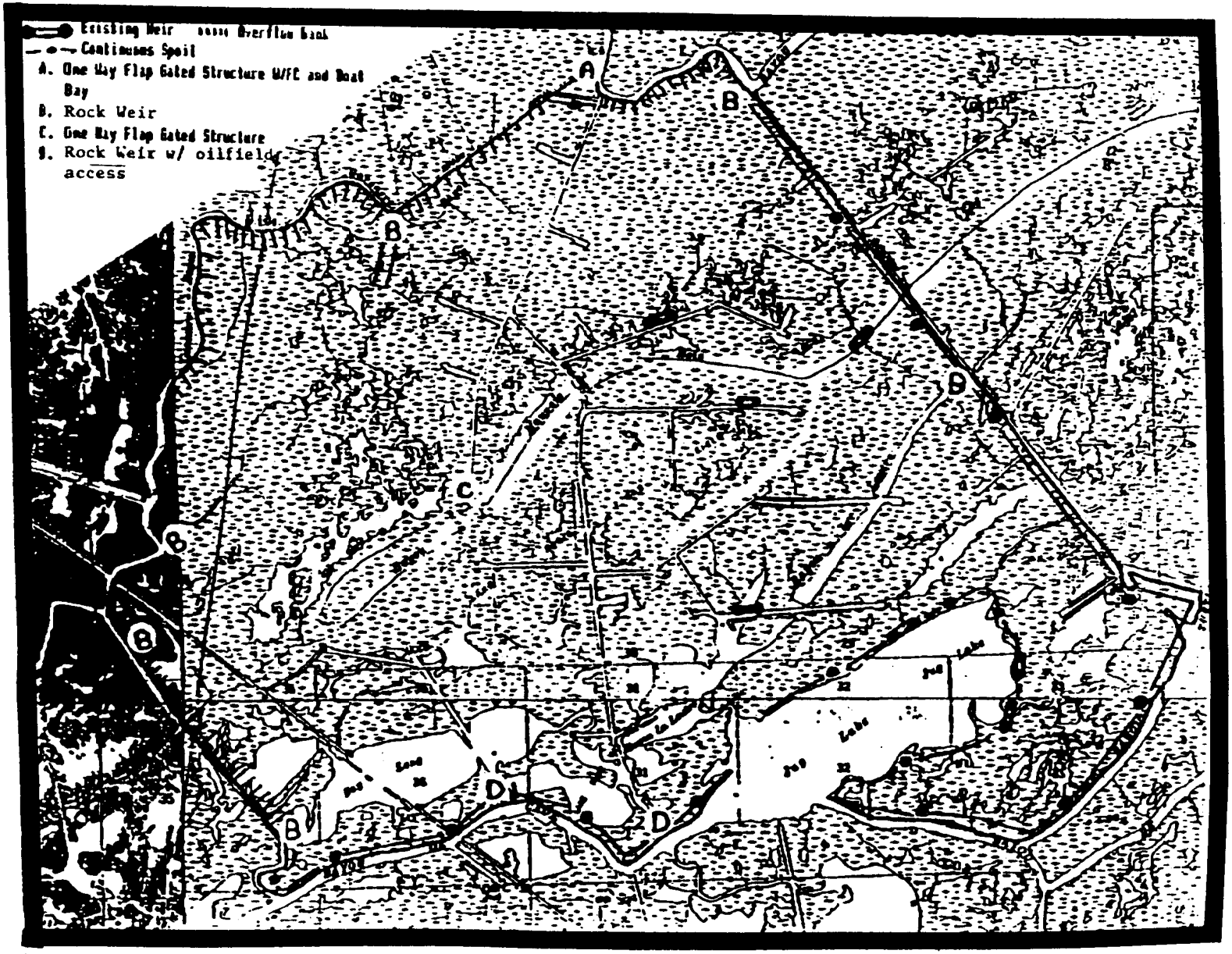
Justification

Construction of the Mississippi River levee and the Mississippi River Gulf Outlet has resulted in dramatic and detrimental ecosystem change to the project area. The Mississippi River levees have effectively stopped annual flooding that served to nourish the surrounding marshes with sediments, nutrients, and fresh water. Construction of the MRGO in 1963 allowed saline waters from the Gulf of Mexico to regularly inundate this area, resulting in a habitat change from a healthy bald cypress-tupelo swamp with fresh to intermediate marshes to a deteriorating brackish marsh dominated by Spurfina putens and S. alterniflora.

The Violet Siphons were constructed in 1979 with the objective of restoring the project area to a fresher state through mimicking the former behavior of the Mississippi River by siphoning fresh water into the marsh. The siphons were operational for only four years due primarily to public opposition to large amounts of sediment that were deposited in Violet Canal, interfering with navigation. This was caused mainly by failure to properly maintain and monitor the system. The siphons were rehabilitated in 1992 and are currently operational. Due to the lack of water control, the project area is subject to rapid and extreme fluctuations in salinity and water levels that result in reduced marsh productivity. By reintroducing fresh water into the system and installing structures to effectively manage the siphons' outfall, area vegetation as well as fish and wildlife productivity is expected to increase significantly.

Objectives

The objective of the outfall management plan is to optimize the use of fresh water and sediment supplied by the existing siphons by managing water flow through the area. This will be accomplished by reducing channelized flow and routing the diverted flow across marshes or through shallow water areas instead of through larger channels so that suspended sediments are deposited and marshes are nourished and created.



Brady Canal Hydrologic Restoration (PTE-26b)

COSTS

Item	Amount ($)
Construction Cost	1,601,000
Contingencies	400,000
Engineering and Design	110,000
Supervision and Administration	90,000
Supervision and Inspection	100,000
Real Estate	30,000
Total	2331,000
Annual Charges	
Operation and Maintenance	38,000
Project Monitoring	25,875

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section 10/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Jun 95
Engineering and Design Finish Date:	Feb %
Construction Start Date:	May 96
Construction Finish Date:	Nov 96

DeCade, and Turtle Bayou will be maintained and three existing outlets will be armored with rock to accommodate oil field navigation and tidal exchange.

ANTICIPATED BENEFITS

Typs and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Approximately 188 acres of fresh/intermediate marsh will be enhanced through improved hydrologic conditions and increased retention of freshwater and sediments. The project will allow for the expansion of emergent marsh into shallow, open water areas and increased plant diversity.

Twes and acres of coastal wetlands protected

Over the 20 year project life, the project will prevent the loss of 297 acres of fresh/intermediate marsh.

Twes and acres of coastal wetlands restored

None

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dewndent fish and wildlife populations

Increases in emergent wetlands, submerged aquatics, and plant diversity will provide obvious benefits for furbearers, waterfowl, alligators, and many other wetlands-dependent birds, mammals, reptiles, and amphibians. Protecting remaining vegetated wetlands will also provide long term benefits to fisheries and other marine organisms.

Other significant benefits

The above mentioned benefits to reptiles, furbearer, waterfowl and fisheries will provide indirect benefits to recreational and commercial fishermen, trappers and sportsmen. The local economy will benefit from moneys brought in from these activities.

ANTICIPATED ADVERSE EFFECTS

Types and acres of coastal wetlands and other habitats adversely affected by the project

No adverse impacts are anticipated.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

Brady Canal Hydrologic Restoration

PTE-26b

Proposed bv: U.S. Department of Agricultures, Soil Conservation Service

PROJECT DESCRIPTION

Location

The project is located in Terrebonne Parish and consists of 7,653 acres of fresh/intermediate and brackish marsh. It is bounded on the north by Bayou Penchant, Brady Canal, and Bayou Little Carencro, on the south by Bayou DeCade and Turtle Bayou, on the east by Superior canal, and on the west by Bayou Little Carencro and Voss Canal. The location of the center of the project is approximately latitude 29° 52'30" N and longitude 91° 29'30" W.

Justification

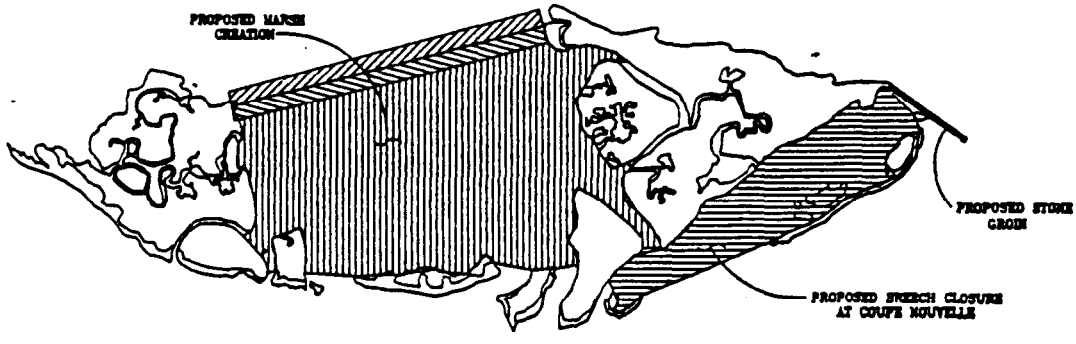
Deterioration of the Bayou DeCade natural levee ridge has opened this fresh/intermediate area to increased salinities and tidal exchange of the more brackish marshes to the south. The project area consists primarily of flotant marsh and acts as a buffer zone between the brackish marshes to the south and fresh marshes to the north. Because of their high organic content, marshes in the project area and those to the north are not able to withstand the tidal energies and rapid water exchange rates which are encroaching from the south. Exposing these areas to unnatural hydrologic events will result in the rapid conversion of emergent marsh to open water.

Objective

The objective of the project is to maintain the fragile, highly-fragmented transitional marshes between the fresh and estuarine zones by enhancing freshwater, sediment, and nutrient delivery into the area. The project wilI promote freshwater flow from Bayou Penchant into a fresh/intermediate marsh that encompasses the western-most segment of the Mauvais Bois ridge. Tidal scouring and rapid water exchange rates will be reduced by decreasing the cross-sectional areas of natural and man-made outlets and by maintaining the banks along Bayou DeCade, Turtle Bayou, and Superior Canal. These measures will also promote greater freshwater and sediment retention for increased marsh productivity.

Project Features

Three additional 60-inch-diameter one-way flapgated structures will be installed at the existing Brady Canal structure at the confluence with Bayou Penchant. Banks along Brady Canal, Bayou Little Carencro, and Voss Canal will be modified for a distance of 9,650 feet to allow overbank flow into the outfall management area. Rock weirs will be installed at four locations along the banks of the above-noted watercourses to increase freshwater introduction into the project area. A one-way flapgated structure will be installed at the end of an oil field access canal originating from Bayou Penchant and terminating in the center of the area. Along the downstream boundary of the area 21,513 feet of banks along Superior Canal, Bayou



CREATE 657 ACRES *OF* **BACK ISLAND MARSH**
AND CONSTRUCT 2,400 FEET *OF STONE GROIN*

WHISKEY ISLAND

Whiskey Island Restoration (PTE-15bi))

ANTICIPATED ADVERSE EFFECTS

Types and aaes of coastal wetlands and other habitats adversely affected bv **the** project

Dredging has adverse impacts on bottom habitat; previous studies indicate effects in the project area should be minimal. The filling of wetlands and the retention dikes may encroach upon and damage some existing saltwater marsh. The total acreage impacted should be much smaller than the acreage constructed, indicating no net loss of wetlands. Closing of island breaches may reduce migration corridors for Gulf species which utilize estuarine waters for a part of their life cycle.

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

COSTS

Item	Amount ($)
Construction Cost	3,100,000
Contingencies	775,000
Engineering and Design	271,000
Supervision and Administration	97,000
Supervision and Inspection	194,ooo
Real Estate	0
Total	4437,000
Annual Char ges	
Operation and Maintenance	0
Project Monitoring	4,325

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, initiated
Section l0/404	necessary, initiated
Louisiana Coastal Management Program	necessary, initiated
Louisiana Water Quality Certification	necessary, initiated
Endangered Species Act	necessary, initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Ju194
Construction Start Date:	Oct94
Construction Finish Date:	Mar94

dissipation of storm surges; fewer tidal inlets and less saline intrusion and less tidal prism erosion of mainland marshes.

The mainland losses will occur very shortly after the islands disappear and quit serving as hydrological barriers to gulf tide.

Type(s) and acres of coastal wetlands created

The project will directly create 523 acres of saline marsh on the back side to the island and 134 acres by closing the breach at Coupe Nouvelle.

Type and acres of coastal wetlands protected

Restoration of Whiskey Island will prevent the loss of 437 acres of saline marsh protected by the island. In addition, the 802 acres of marsh will remain on the island at the end of the project life.

Duration (life expectancy) of coastal wetland benefits

Increasing island height and width will extend the lifetime of the islands by approximately 23 years beyond their current lifespan, i.e. to at least 35 years in the future. Besides providing a barrier island system for a lot longer than is currently being predicted the benefit of mainland marsh protection largely occurs during the last 9 years of projected project life.

Benefits to coastal wetland deuendent fish and wildlife populations

Creation of marsh on the islands will provide direct habitat for fish and wildlife, including nesting area for shore birds such as brown pelicans. These wetlands will enhance the retention of precipitation and water supplies for species needing fresh or brackish water. The entire estuarine/wetland system which is to be protected by the project is part of the coastal ecosystem of Louisiana which provides vital support for fish and wildlife populations.

Other significant benefits

This project builds upon the previous success of the Terrebonne Parish demonstration project and is supportive of local initiatives for coastal zone protection and restoration. This project, by reducing storm surge impacts, will enhance local flood protection programs. Loss of the islands will eliminate small craft commercial and recreational bay fishing, shrimping, and crabbing activities. This would severely limit access to these activities for many people and would probably eliminate bay crabbing activities. Loss of this barrier island chain would have a severe adverse impact on bay type oil and gas production activities.

Whiskey Island Restoration

PTE-15bi

Proposed by: U.S. Environmental Protection Agency

PROJECT DESCRIPTION

Location

The project is located on Whiskey Island, which is part of the Isles Demieres chain of barrier islands in Terrebonne Parish.

Justification

If the rate of coastal erosion between 1978 and 1988 continues, East Island will disappear by 1998, Trinity Island by 2007, Whiskey Island by 2007, and Raccoon Island by 2000. Using more conservative breached island erosion rates developed for the Isle Dernieres island chain, the island chain will disappear by the year 2010. These islands provide the primary line of defense **against wave *energy* for the Gulf of Mexico for an** extensive estuarine system and a vast expanse of wetlands in Terrebonne Parish.

The rapid erosion, breaching and disappearance of the Isle Dernieres reduces their effectiveness in preventing storm surges from reaching lands adjoining the estuary, opens up bay area marshes to direct wave attack from the Gulf of Mexico, and increases the frequency and residence time of saline water incursions and the impact of tidal cycles. The result is accelerated conversion of estuarine areas to a less productive open gulf habitat.

Without the protection of barrier islands, the estuaries and wetlands in the lower deltaic plain are susceptible to a dramatic increase in erosion rates and, consequently land loss.

Objectives

The project objectives are to create and restore beaches and back island marshes, and close breaches on Whiskey Island.

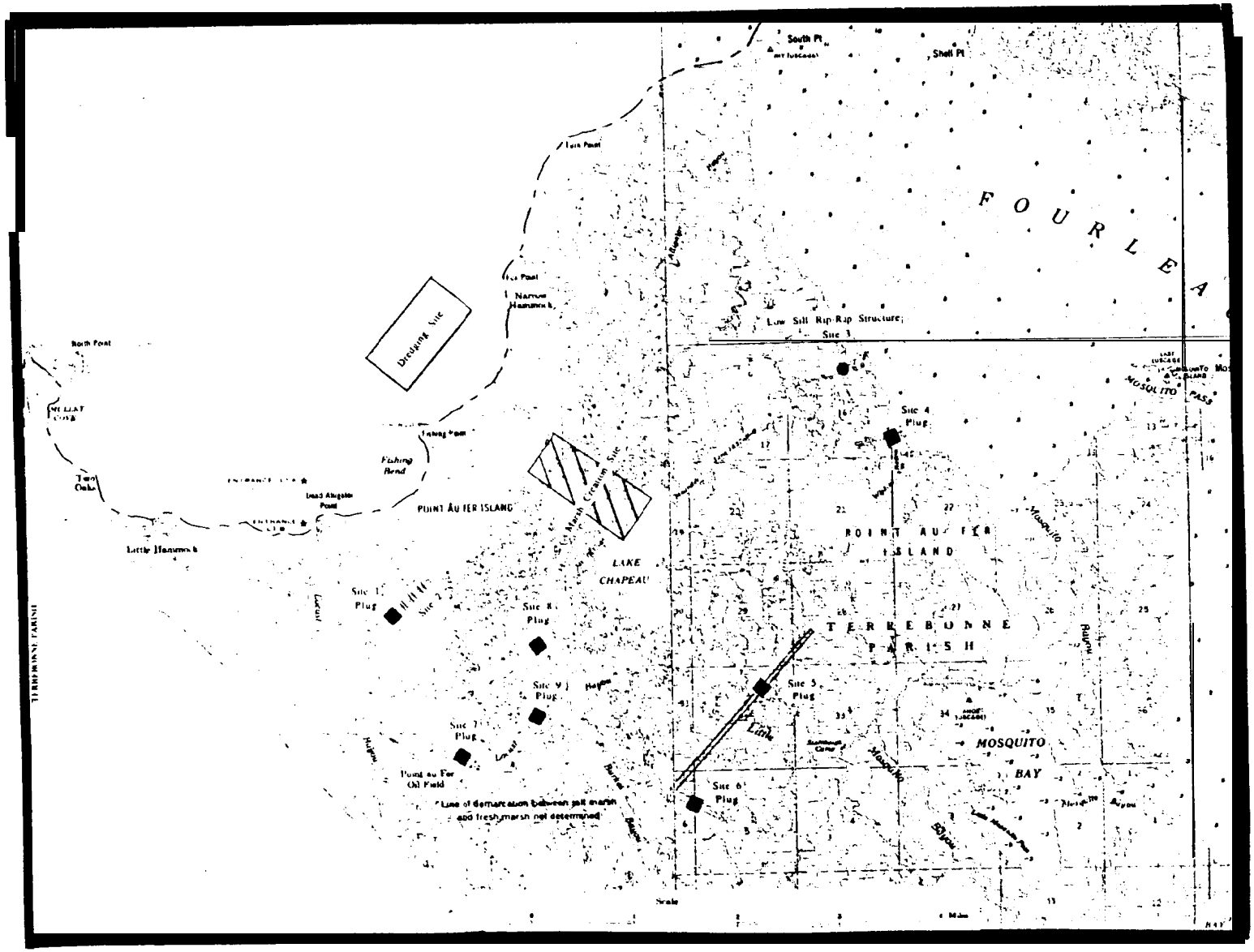
Project Features

The project consist of creating 523 acres of back island marsh, filling in the breach at Coupe Nouvelle (134 acres) and constructing a 2,400 foot stone groin on the east end of the island for retention and protection. Dredged material will be taken from the Lake Pelto area.

ANTICIPATED BENEFITS

Type and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Construction of a barrier island system which is continuous, high and wide will provide greater protection to back-barrier bays, estuaries and marshes, compared **to** the existing island system. The protection comes from a combination of island features, including: reduction of fetch for local wind-induced waves; greater energy



Lake Chapeau Marsh Creation and Hydrologic Restoration (PTE-23/26a/33)

COSTS

Item	Amount ($)
Construction Cost	2,236,000
Contingencies	559,000
Engineering and Design	220,000
Supervision and Administration	43,000
Supervision and Inspection	141,000
Real Estate	50,000
Total	3,249,000
Annual Charees	
Operation and Maintenance	0
Project Monitoring	20,700

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section l0/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Nov 94
Construction Start Date:	Mar 95
Construction Finish Date:	Dee 95

Site 8 is located where a southeast trending, long oil access canal (same canal as Site 6) crosses Locust Bayou. The canal will be plugged along the west bank of the Bayou. Size of the canal and plug type will be similar to Site 7.

Site 9 is located in a northwest trending canal southwest of Lake Chapeau. The existing bulkhead and shell plug will be restored to marsh height. The plug is 200 ft wide with the top of shell plug 4 ft below water surface.

ANTICIPATED BENEFITS

Tvnes and Acres Created

With the dredged material from the Atchafalaya bay, 260 acres of open water will be converted to marsh.

Tvnes and Acres Protected

Reducing open water areas and filling shallow breaks in the marsh will protect 2,500 acres from wind-wave induced erosion. About 1,000 acres of wetlands will be protected from tidal scour.

Types and Acres Enhanced

Plugging man-made canals and gapping spoil banks will restore natural sediment pathways enhancing 12,000 acres of wetlands.

Duration of the Coastal Wetland Benefit

The project life is 20 years.

Benefits to Coastal Wetland Dependent Fish and Wildlife Populations

Creation, restoration and protection of Point au Fer's marshes will ensure the continued provision of habitat for the local waterfowl and furbearing populations. Additionally the project area and surrounding marshes is excellent habitat for migratory waterfowl.

The Point au Fer marshes provide fish forage and nursery habitats and are a good source of plant detritus. Since this restoration project will enhance marsh productivity both the inshore and nearshore fishery productivity should increase.

Other Significant Benefits.

Under the direct influence of sediments and fresh water from the Atchafalaya River, the vegetation on the island will continue to move towards fresher species. Continued sediment deposition will greatly aid in reducing and eventually reversing the islands' wetland loss.

ANTICIPATED ADVERSE EFFECTS

Tvnes and acres of coastal wetlands and other habitats adversely affected by the project

None expected

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

Proiect Objectives

The objectives of the project are to restore the marshes west of Lake Chapeau, reestablishing the hydrologic separation of the Locust Bayou and Alligator Bayou watersheds, and to reestablish the natural drainage patterns within the Lake Chapeau area.

Proiect Features

A 20-inch hydraulic dredge will be utilized to mine 500,000 cubic yards of material from the Atchafalaya Bay bottom, 300 yards off the west central shoreline of Point au Fer. The material will be pumped a maximum of 6,000 feet and jetted out over an 1,800-acre area. Combining a flexible hose with conventional pipe, plus having the end pipe attached to a marsh buggy, will ensure an even spread of the material to a thickness of approximately 1 foot. Marsh buggy tracks will be filled at the end of the project.

In order to reestablish the natural drainage patterns in the Lake Chapeau area, plugs will be installed as follows:

Site 1 is located in the dogleg of the oil access canal that heads northeast from Locust Bayou into the marshes west of Lake Chapeau. A plug (timber bulkhead, limestone chips, and armour-flex) with an elevation of local marsh height will be constructed. The site is 166 feet wide and 7 feet deep.

Site 2 is along the canal north of Site 1 and consists of 6 separate spoil gapping locations.

Site 3 is in Pellegrin Cut and consists of a low sill rip-rap structure or a sunken concrete barge placed across the cut to reduce tidal exchange. The site is 160 feet wide and 22 feet deep. The sill elevation will be -4.0 feet NGVD to allow recreational boat traffic.

Site 4 is in the abandoned mineral access canal near the mouth of Wildcat Bayou, where a rock plug will be constructed, similar to that at Site 1. The canal is 150 feet wide and 17 feet deep.

Site 5 is located at the junction of a small distributary of Little Mosquito Bayou and the long northeast trending mineral access canal. A plug will be built across the canal immediately south of the canal/distributary crossing. The canal is 150 ft wide and approximately 15 ft deep. The plug will be set at local marsh elevation.

Site 6 is in a southeasterly trending oil access canal approximately 1.5 miles east of Locust Bayou. An existing shell plug will be repaired. The canal is 100 ft wide and the shell is 4 ft below the water surface. This plug will aid in the separation of the Locust Bayou and Little Mosquito Bayou watersheds.

Site 7 is located where a southeast oriented, relatively short, oil access canal crosses Locust Bayou. The canal, 150 ft wide and 15 ft deep, will be plugged to marsh height along the west bank of the bayou. The plug will be similar to the plug at site 1.

Lake **Chapeau Sediment Input and** Hydrologic Restoration, Point **au** Fer Island

PTE -23/26A/33

Proposed **Bv: U.S. Department** of Commerce, National Marine Fisheries Service

PROJECT DESCRIPTION

Location

The project area incorporates the western central portion of Point au Fer Island, located in the extreme southwestern comer of Terrebonne Parish, and a portion of southeastern Atchafalaya Bay. The project consists of 6,156 acres of brackish marsh, 3,481 acres of intermediate marsh, and 3387 acres of open water. Point au Fer Island is bounded by the Gulf of Mexico, Oyster Bayou, Four League Bay and Atchafalaya Bay. The project center is approximately 29°26'00"N, 91°15'00"W.

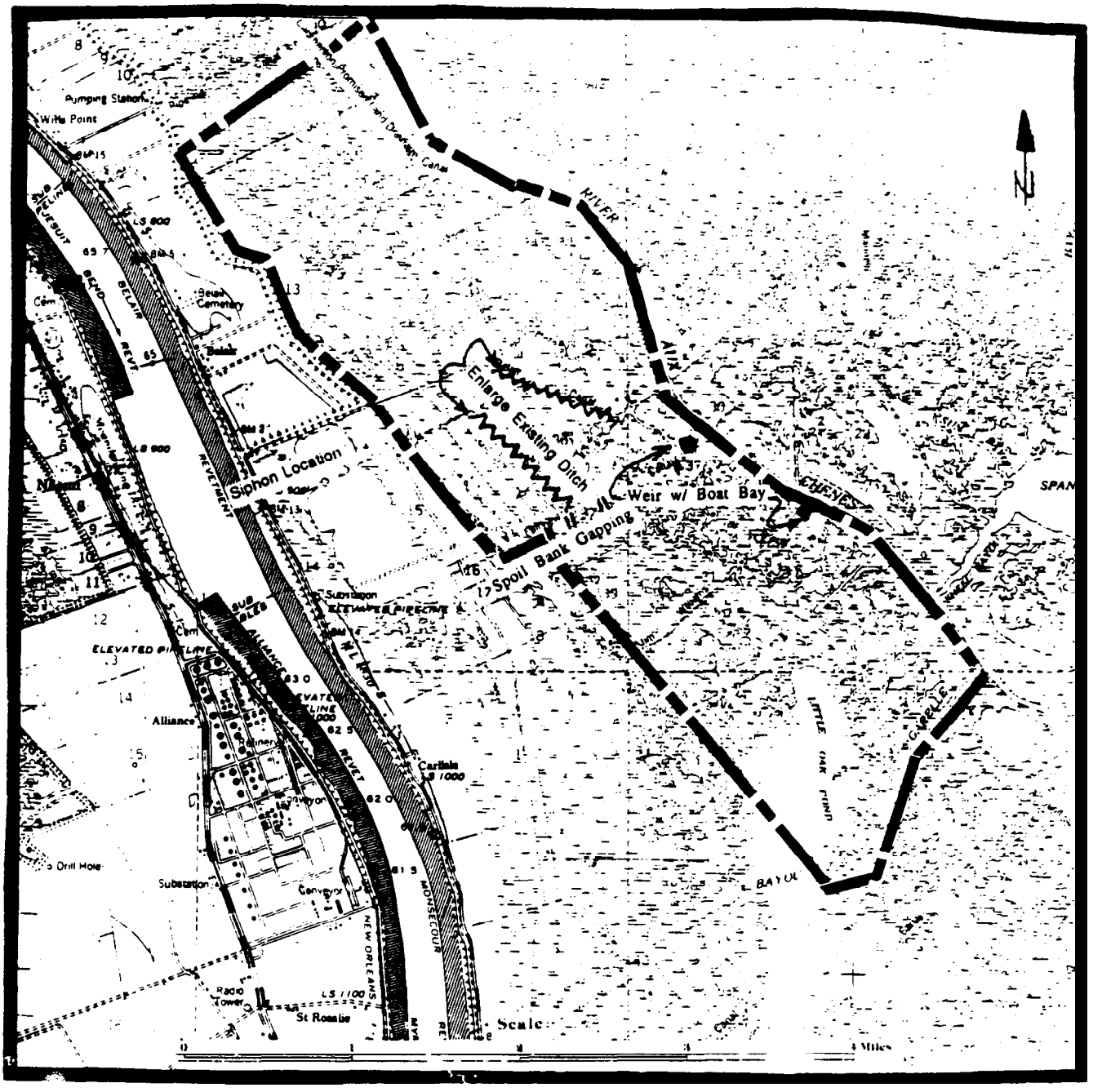
Justification

Point au Fer Island has lost about 15 percent of its land area since the 1930's. Reduction in marsh surface area is due to natural subsidence and natural shoreline erosion; oil and gas canal construction; impoundment and natural hydrologic pattern disruption by artificial levees associated with oil and gas canals; and pipeline canals breaching the gulf shoreline.

The rate of wetland loss on the island is decreasing due to sediment and freshwater input from Atchafalaya Bay. As the Atchafalaya delta has aggraded and accreted, the water level of Atchafalaya Bay has risen. As a consequence, water and sediment are entering the island from Atchafalaya Bay. Natural marsh recovery is occurring, especially in areas adjacent to Atchafalaya Bay, Four **League Bay, and** Oyster Bayou. Marshes throughout the islands are showing a freshening trend as evidenced by plant composition.

These processes are being defeated in the Lake Chapeau area by the presence of tidal circulation between Four League Bay and the southeastern portion of Atchafalaya Bay. This circulation pattern is made possible by the many natural and manmade waterways in this area, as well as large areas of open water and broken marsh. Major marsh loss has occurred in the area surrounding Lake Chapeau and continues to occur at a rate of nearly 15 acres per year.

The sediments accumulating in Atchafalaya Bay can be mined as a renewable resource. This project will utilize Atchafalaya Bay bottom sediments to fill open water and broken marsh areas. In addition a series of plugs will be established to reduce tidal exchange and scour. Plugs also will be installed to restore natural drainage pathways in the eastern section of the project area and to reduce rapid water movement and associated water level fluctuation, allowing the suspended sediments from the Atchafalaya River to settle, thus restoring and enhancing a portion of these central marshes.



White's Ditch Outfall Management (BS-4a)

COSTS

Item	Amount ($)
Construction Cost	200,000
Contingencies	50,000
Engineering and Design	40,000
Supervision and Administration	14,000
Supervision and Inspection	15,000
Real Estate	40,000
Total	359,000
Annual Charges	
Operation and Maintenance	4,000
Project Monitoring	8,093

Note: Monitoring cost as established by the Monitoring Work Group is limited to 50 percent of the project's fully funded cost.

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not **initiated**
Section l0/404	necessary, **not initiated**
Louisiana Coastal Management Program	necessary, not **initiated**
Louisiana Water Quality Certification	necessary, not **initiated**
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Mar94
Engineering and Design Finish Date:	Dec94
Construction Start Date:	Mar 95
Construction Finish **Date:**	**Jun 95**

ANTICIPATED BENEFITS

Types and acres of coastal wetlands enhanced, and the degree and nature of the enhancement

Management of freshwater in the outfall area is expected to enhance 562 acres of brackish marsh by increasing sediment deposition on the marsh surface and increasing the amount of submerged aquatic vegetation. Managing the outfall area is expected to offset land loss to a large extent in the project area. These changes will increase the project areas carrying capacity for wildlife and waterfowl as well as increasing species diversity for vegetation.

Twes and acres of coastal wetlands protected

The project is expected to protect approximately 37 acres of brackish marsh habitat.

Twes and acres of coastal wetlands restored

None anticipated.

Duration (life expectancy) of coastal wetland benefits

The project has an expected life of at least twenty years.

Benefits to coastal wetland dependent fish and wildlife populations

Fresher conditions in the project area are expected to directly benefit furbearer, and waterfowl populations by improving habitat suitability.

Other significant benefits

This project will improve conditions for furbearer trapping.

ANTICIPATED ADVERSE EFFECTS

Twes and acres of coastal wetlands and other habitats adversely affected by the project

None expected.

Conflicts with other projects and programs

No conflicts with other programs are apparent at this time.

White's Ditch Outfall Management

BS-4a

Proposed by: U.S. Department of Agriculture Soil Conservation Service

PROJECT DESCRIPTION

Location

The White's Ditch Diversion Outfall Management area is located on the east bank of the Mississippi River near Belair, Louisiana, in Plaquemines Parish. The project area is bounded by the hurricane protection levee to the west, River aux Chenes to the east, and an unnamed pipeline canal and Bayou Garelle to the north and south, respectively. The area comprises 5,249 acres of brackish marsh and open water habitat.

Justification

Construction of the Mississippi River levees has effectively stopped annual flooding of the area by the river, which served to nourish the marshes with sediments, nutrients, and freshwater. As a result, this area is currently suffering marsh loss at a rate of approximately 4 acres per year. The existing White's Ditch diversion consists of two 50-inch diameter steel pipes that discharge approximately 250 cfs of river water into the Belair Canal during normal high river stages. The siphons were constructed in 1963 to improve conditions for muskrat trapping in the area. This project will manage the outfall area to increase the siphon's ability to crate marsh, reduce salinity, and enhance wetland habitat.

Objectives

This plan proposes to manage the outfall area for wetland creation and enhancement through gapping spoil banks and constricting channels to encourage sediment deposition, freshwater overflow, and nutrient retention in the marsh and increasing the size of ditches to increase freshwater distribution.

Project Features

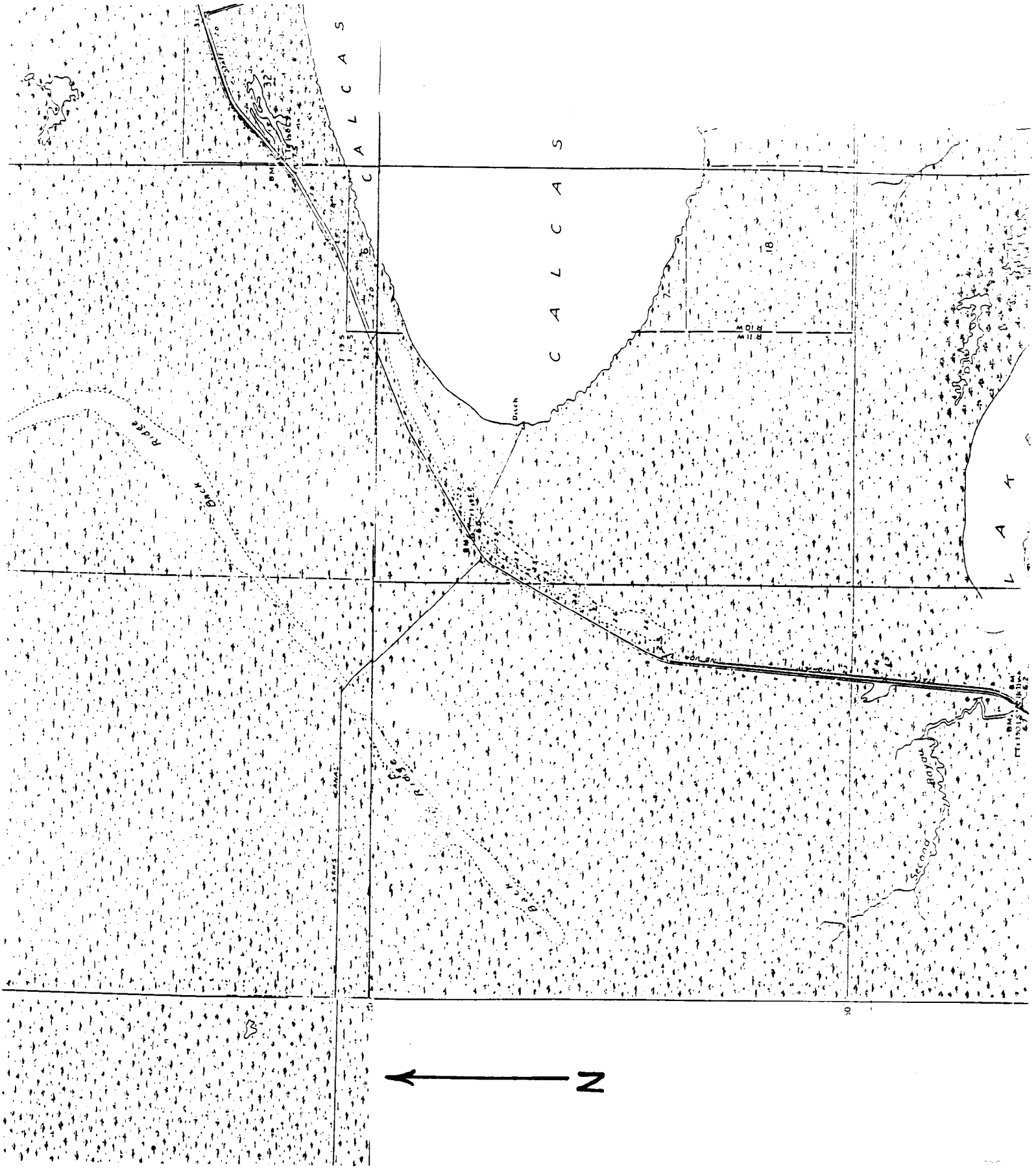
Structural components of the plan area as follows:

1. Widening and deepening of approximately 2.5 miles of existing ditches to average widths of 50 feet and depths of 4 feet to improve outfall distribution to the marsh. Existing depths are from 1 to 2 feet.

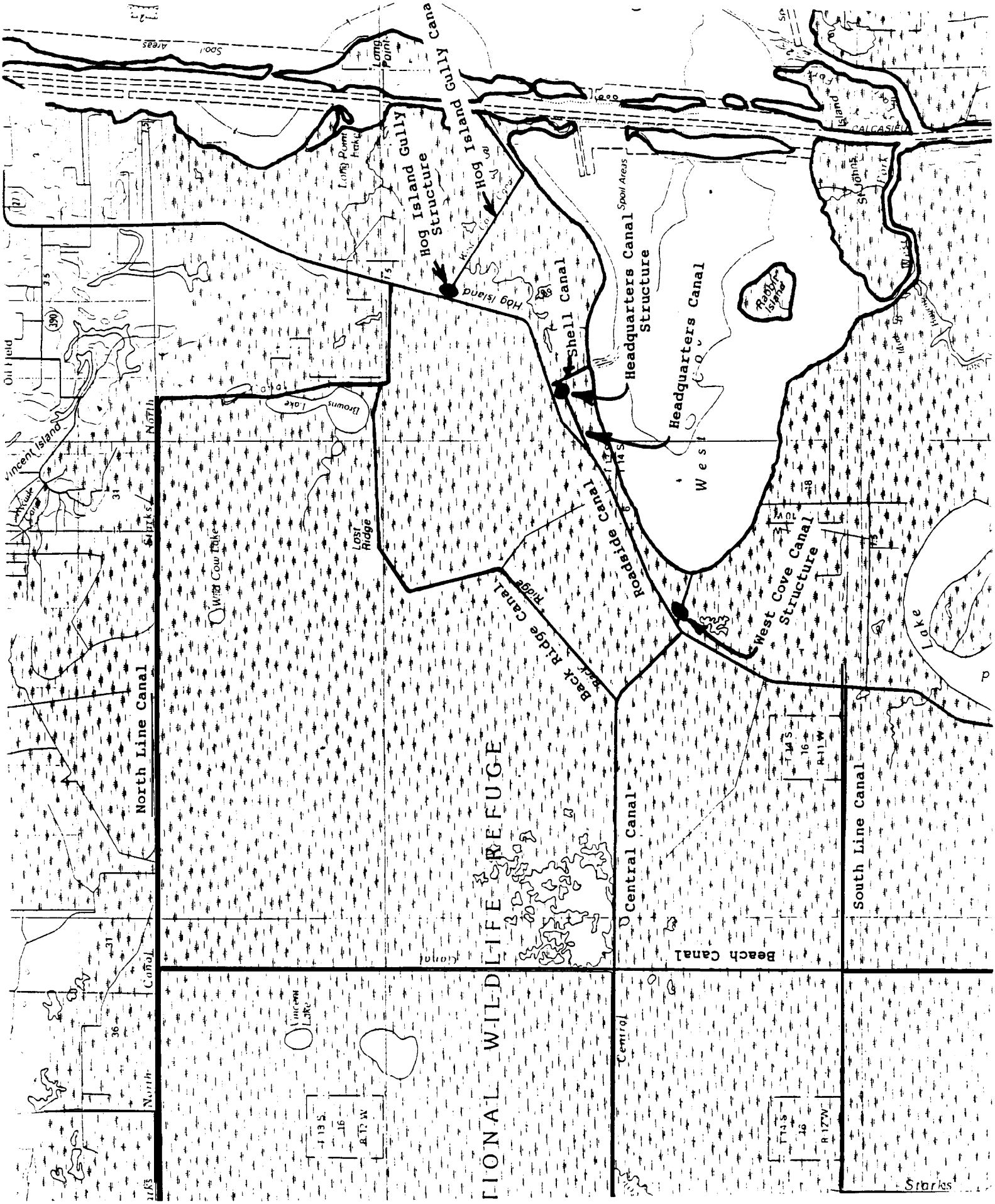
2. Spoil bank gapping to marsh level along the Fairview Canal (50 feet every 500 feet).

3. A rock weir at the mouth of the Williams Canal (50 feet wide by 4 feet deep).

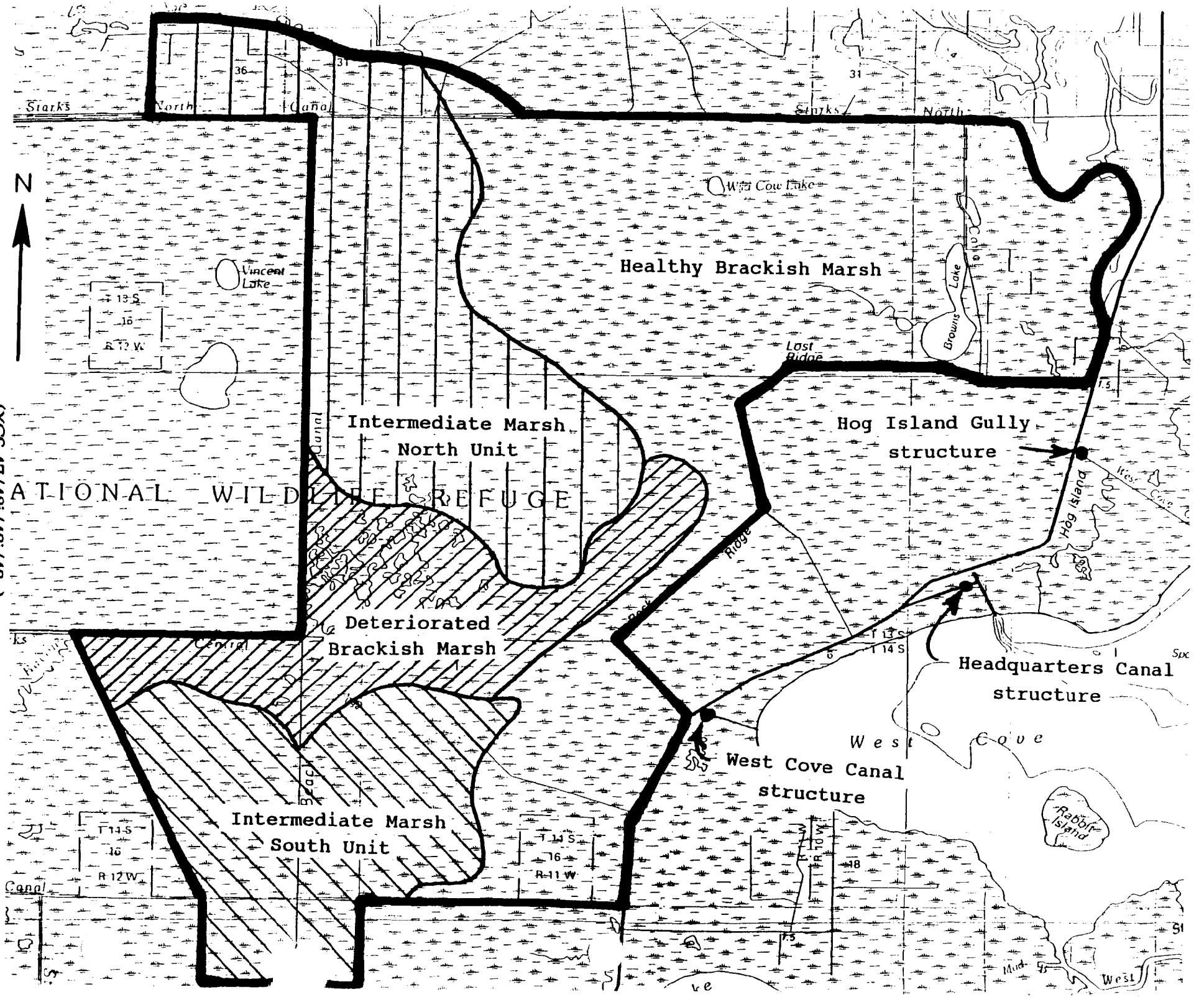
4. A rock weir with a boat bay on the Belair Canal at River aux Chenes (150 feet wide by 7 feet deep with a 20-foot-wide by 5-foot-deep boat bay).



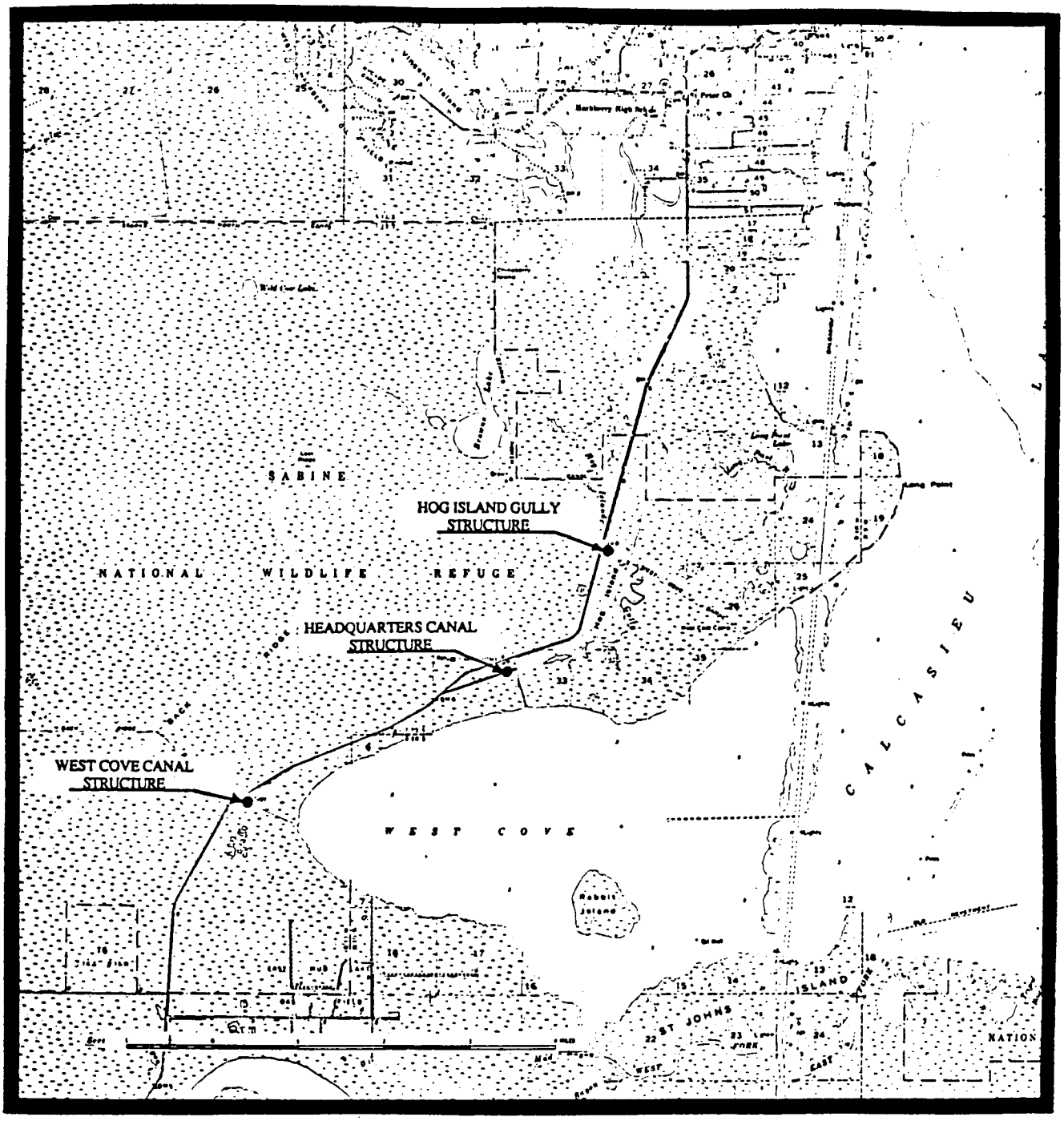
(XCS-47/48i/48j/48p)
Location of Back Ridge and an unnamed ridge breached by Central Canal / West Cove Canal



(XCS-48/48i/48j/48p)
Canals within the project area.



Project area boundaries, subunit boundaries, and the water control structures. (XCS-47/48i/48j/48p)



Replace Hog Island Gully, West Cove, and Headquarter Canal Water Control Structures (XCS-47/48i/48j/48p)

ANTICIF'ATED ADVERSE EFFECTS

Tyeps and acres of coastal wetlands and other habitats adversely affected by the project

During periods of high salinity, structure operation may restrict or halt all water exchange thus adversely impacting ingress and egress. Managers plan to compensate for this by increasing flows during peak recruitment and egress periods to enhance ingress and improve fisheries productivity. Overall, it is anticipated that the project will result in a no net adverse effect and will provide a potential for positive effects on fisheries productivity within the project area.

Conflicts with other projects and programs

No conflicts with other programs are anticipated at this time.

Anticipated Adverse Effects

The project will not conflict with other known programs or projects.

COSTS

Item	Amount ($)
Construction Cost	1,950,000
Contingencies	488,000
Engineering and Design	135,000
Supervision and Administration	120,000
Supervision and Inspection	130,000
Real Estate	0,000
Total	1,823,000
Annual Charges	
Operation and Maintenance	25,000
Project Monitoring	25,875

STATUS OF ENVIRONMENTAL COMPLIANCE

NEPA	necessary, not initiated
Section l0/404	necessary, not initiated
Louisiana Coastal Management Program	necessary, not initiated
Louisiana Water Quality Certification	necessary, not initiated
Endangered Species Act	necessary, not initiated

PROJECT IMPLEMENTATION SCHEDULE

Engineering and Design Start Date:	Feb 94
Engineering and Design Finish Date:	Mar 95
Construction Start Date:	Jun 95
Construction Finish Date:	Dec 95

Objectives

The replacement of the existing water control structures at Hog Island Gully, West Cove, and Headquarters Canals with structures having features as discussed above. This will allow refuge managers to accomplish the following objectives:

1. Increase water discharge potential to reduce marsh inundation following periods of excess precipitation or saline storm surges.

2. Increase management flexibility and allow for the more effective reduction of canal-induced saltwater intrusion.

3. Improve ingress and egress of estuarine organisms by moving larger volumes of water during periods of estuarine organism movement.

Project Features

The existing structures would be removed and replaced with new structures. The structures at Hog Island Gully and West Cove would have as many deep gates as possible and would be located approximately 200 feet downstream of the existing structures. The gates would be similar those of the Lambert Bayou structure except that flow through each opening would be controlled by one gate, not two. The existing culvert at Headquarters Canal would be replaced by three 60-inch-diameter culverts. Each culvert would have a flapgate on the outside and a sluice-gate on the inside. All structures would be equipped with electric motors, programmable timers, and automation equipment. This equipment would be used to operate gates to enhance ingress and egress of estuarine organisms and to preclude excessive saltwater intrusion into interior marshes.

ANTICIPATED BENEFITS

Recently project-area marshes are suffering waterlogging stress and deterioration. The proposed project would allow excess water to be more rapidly discharged from project-area marshes, thus reducing adverse waterlogging impacts. The project would also allow managers to more effectively control excessive saltwater intrusion into interior low-salinity marshes. Over a twenty year project life, the project is expected to conserve and restore approximately 953 acres of marsh and result in 452 additional acres of submerged aquatic vegetation.

Improved water exchange capacity associated with the proposed structures will more rapidly discharge excess water, allowing quicker resumption of tidal exchange and recruitment of estuarine organisms following periods of heavy rainfall. Managers may also open additional gates to increase water exchange during ingress and egress periods, thus improving fisheries productivity and reducing cold-weather related fish kills within the project-area marshes.

Cove Canals structures consisted of a fixed-crest weir having a tainter gate located in the center of the channel. The minimum widths of the tamter gates are 7 and 11 feet, respectively, for the West Cove and Hog Island Gully structures. At the Headquarters Canal, a single 48-inch-diameter flapgated culvert was installed to regulate water exchange between Calcasieu Lake and interior marshes via Headquarters Canal. The flapgate was mounted on a sluice-gate like device that could be lowered into operative position or raised above the water to allow unobstructed flow through the culvert.

From 1981 till 1988, gates of the water control structures were maintained in an open position to determine if the reduction in channel cross-sectional area associated with the structures would provide sufficient salinity control. Refuge staff concluded that additional saltwater intrusion control was desired and began temporarily closing the gates to reduce the flow of salt water from the Calcasieu Ship Channel into interior marshes.

Intensive salinity monitoring during 1990 revealed that despite gate closures, tides flowing over the fixed-crest portion of the West Cove and Hog Island Gully structures resulted in potentially damaging levels of salt water flowing via canals into sensitive interior marshes. Because no mechanism to stop flows over the fixed-crest weir portion of the Hog Island Gully and West Cove Canal structures exists, those structures are not totally effective in controlling saltwater intrusion. Because of the proximity of those structures to the Calcasieu Ship Channel, salinities of incoming water at times may range between 20 and 30 parts per thousand.

During periods of excessive precipitation, project-area marshes often experience prolonged periods of high water levels. The Highway 27 embankment blocks over-marsh sheet flow, forcing drainage from the area only through the water control structures. Because of the limited cross-sectional area of the existing tainter gates and culvert, the structures retain excess water several weeks longer than marshes east of the highway. In recent years, interior marsh vegetation within the project area has shown signs of waterlogging stress. Should a saline storm surge inundate project-area marshes, the inundation impact would likely be much more damaging to the marsh than that due to excess fresh water. Residents of Hackberry and Johnson's Bayou also complain that the water control structures are impeding drainage of pastures and developed properties. Because the existing Hog Island Gully and West Cove Canal structures have limited discharge potential, they are also not well suited to accommodate ingress and egress of estuarine organisms.

As discussed above, the existing water control structures are inadequate in that they do not provide enough discharge potential to discharge excess water and can not be operated to effectively preclude saltwater intrusion. These inadequacies are the result of structure designs that did not provide sufficient management flexibility. The intent of the proposed project is to overcome the problems discussed above by replacement of the existing structures with ones that have substantially greater discharge potential and greater management flexibility.

Replacement of Water Control Structures **at Hog Island Gully, West Cove,** and Headquarter **Canal**

XCS-47/48i/48j/48p

Proposed by: U.S. Department of the Interior: U.S. Fish and Wildlife Service, Sabine National Wildlife Refuge and the Lafayette LA, Ecological Services Field Office

PROJECT DESCRIPTION

Location

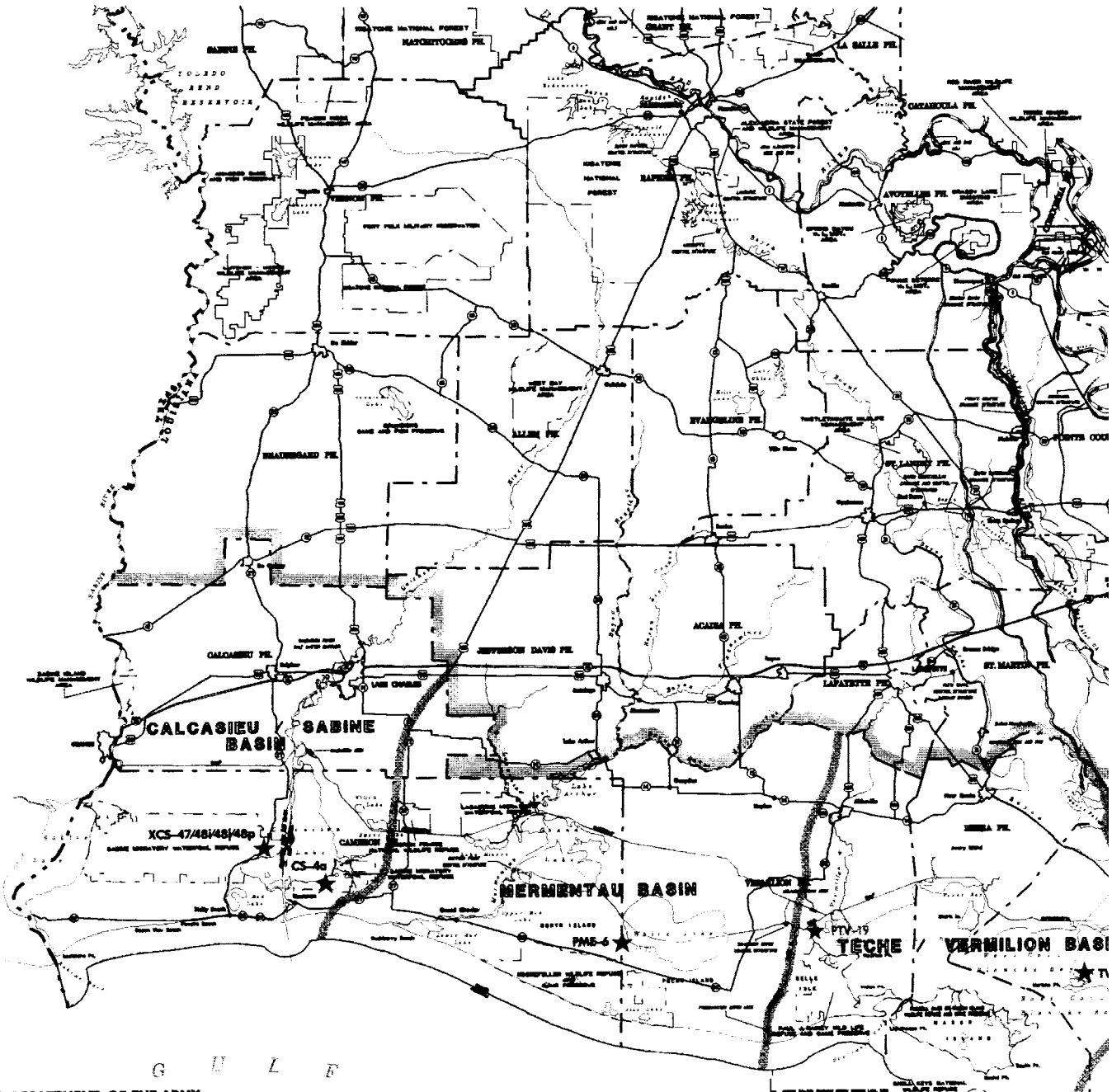
The project is located on the Sabine National Wildlife Refuge in western Cameron Parish, Louisiana. The Hog Island Gully and West Cove Canal water control structures are located adjacent to Louisiana Highway 27. The Headquarters Canal water control structure is located at the Sabine National Wildlife Refuge headquarters complex on Louisiana Highway 27. The project area consists of 42,247 acres of fresh/intermediate and brackish marshes.

Justification

Prior to dredging of the Calcasieu Ship Channel the 3- to 6- foot-deep bars located at both the north and south ends of Calcasieu Pass restricted tidal exchange between Calcasieu Lake and the Gulf of Mexico. After the Calcasieu Ship Channel was dredged, salt water entering Calcasieu Lake could flow through a series of previously existing smaller access canals into interior project-area marshes. Hog Island Gully Canal influences hydrology in the northeast portion of the project area because of its connections to Roadside Canal, Back Ridge Canal, and North Line Canal.

At the extreme western end of West Cove, a small canal known locally as West Cove Canal also allows salt water to flow from Calcasieu Lake into interior marshes via Roadside Canal and Central Canal. From Roadside Canal water may flow westward via South Line Canal along the southern boundary of the project area. From Central Canal, water may also flow into Back Ridge Canal along the east central project area, and into Beach Canal along the western boundary of the project area. Unlike the Hog Island Gully Canal/North Line Canal system, West Cove Canal/Central Canal established a water exchange route between interior marshes and Calcasieu Lake where none previously existed. Back Ridge, a low-level chenier, and another small marsh ridge just east of Louisiana Highway 27 precluded any such direct exchange. Historically, the unbroken project-area marshes west of Back Ridge may have drained via overland sheetflow into either the upper Hog Island Gully Bayou or Old North Bayou watersheds.

Marshes within the project area experienced substantial loss and conversion to more brackish communities during the 1960's and 1970's. These changes have been attributed to saltwater intrusion and excessive water exchange associated with the construction and enlargement of the Calcasieu Ship Channel. In 1980 and 1981, water control structures were installed at Hog Island Gully, West Cove, and Headquarters Canals, to reduce saltwater intrusion. The Hog Island Gully and West



U. S. DEPARTMENT OF THE ARMY
XPO-71 M.R.G.O. Disposal Area Marsh Protection
XMR-10 Channel Armor Gap Crevasse
PMR-8/9a Pass-a-Loutre Crevasse

U. S. DEPARTMENT OF AGRICULTURE
BA-4c West Point-a-la-Hoche Outfall Management
TV-4 Cote Blanche Hydrologic Restoration
CS-40 Cameron-Creole Maintenance
BS-4a White's Ditch Outfall Management
PTE-26b Brady Canal Hydrologic Restoration
PO-90 Violet Freshwater Distribution
PME-6 SW Shore White Lake Demonstration
BS-5 Bayou Lamoqua Outfall Management (Deferred)

u. S. DEPARTMENT OF COMMERCE
XBA-65a Restoration o? Bayou Perot / Bayou Rigole ttes Marsh
XTE-67 East Timbalier Restorotion
PTE-23/26a/33 Loke Chapeou Marsh Creation and Hydr'ologic Restoration
BA-15 Lake Salvador Shoreline Protection Demostration
PTV-19 Little Vermilion Bay Sediment Tropping (Deferred)

ENVIRONMENTAL PROTECTION AGENCY
PTE-15bl whiskey Island Restorotion
XTF-43 Modified Red Mud Demostration

u. s. DEPARTMENT OF THE INTERIOR
XCS-47/48I/48J/48p Replace Hog Island, West Cove. and Headquaters Water Control Structures

COASTAL **WETLANDS** PUNNING, PROTECTION AND **RESTORATION** ACT

3nd Priority Project List

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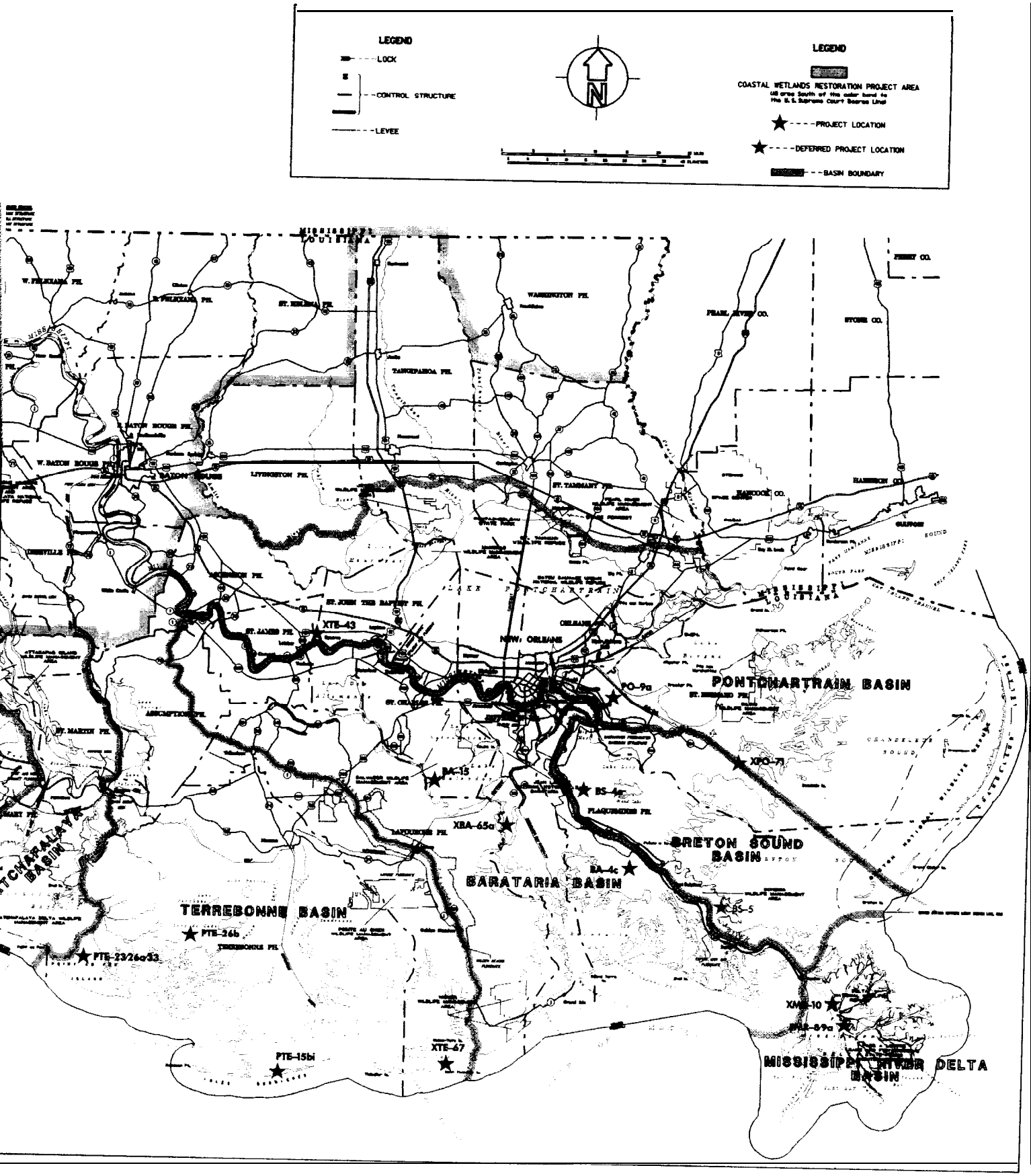
LEGEND
LOCK
CONTROL STRUCTURE
LEVEE
LEGEND
COASTAL WETLANDS RESTORATION PROJECT AREA
PROJECT LOCATION
DEFERRED PROJECT LOCATION
BASIN BOUNDARY
PONTCHARTRAIN BASIN
BRETON SOUND BASIN
BARATARIA BASIN
TERREBONNE BASIN
MISSISSIPPI RIVER DELTA BASIN
NEW ORLEANS
XTE-43
PO-9a
XPO-71
BA-15
BS-4c
XBA-65a
BA-4c
BS-5
PTE-26b
PTE-23/26a/33
PTE-15bi
XTE-47
XMR-10
PTE-89a

Plate 1