INTEGRATED FINANCIAL PLAN

CALENDAR YEAR 1999

SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE

SOUTH FLORIDA ECOSYSTEM RESTORATION PROGRAM PROJECT ACTIVITIES

Notes: Financial requirements for individual projects within this edition of the Integrated Financial Plan are the best available at the time of printing. Project financial requirement information beyond FY 1999, should be verified with the lead agency and/or project manager prior to any use for budget formulation purposes.

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Integrated Financial Plan-1999

South Florida Ecosystem Restoration Project Activities

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Integrated Financial Plan-1999

1.0 Introduction

1.1 OVERVIEW - The IFP-1999 has been prepared by the South Florida Ecosystem Restoration Task Force to meet the requirements of the Water Resources Development Act of 1996 (WRDA). WRDA states that the Task Force is required to "prepare an integrated financial plan and recommendation's for a coordinated budget request for the funds proposed to be expended by agencies and entities represented in the Task Force for restoration, preservation, and protection of the South Florida ecosystem. "

The IFP-1999 includes the following sections:

1.0 Introduction
2.0 Index of Restoration Projects
3.0 Project Descriptions and Maps
4.0 Integrated Science Plan
5.0 Appendix

With this fourth edition of the IFP, the Task Force and the Working Group are continually expanding it's scope to be as comprehensive as possible and to include local government and private sector restoration project activities. Eventually, all Task Force and Working Group endorsed projects will be categorically grouped and "filed" in the IFP, with critical project linkages identified.

Prepared by Task Force and Working Group members, and compiled by the Office of the Executive Director, the IFP-1999 is designed to facilitate annual budget development. By serving as a key reference source for all South Florida Ecosystem restoration projects, the IFP-1999 will assist decision makers in undertaking their responsibilities and establishes a foundation for long-term project plans and financial requirements.

The IFP identifies the most up to date financial requirements for specific projects and is designed to facilitate the achievements of restoration goals of the South Florida Ecosystem. Accordingly, the IFP serves as a useful tool in planning and aligning interagency restoration to maximize coordination and eliminate duplication of efforts and/or resources.

1.2 ORGANIZATION OF RESTORATION PROJECTS -
The Projects sections of this document consists of two primary parts:

- Index of Restoration Projects:
Summary matrix table of all project descriptions contained in Section 3.
- Project Descriptions :
An individual summary sheet is provided in Section 3 for each restoration project and includes the information categories as described below.

1.3 INDEX OF RESTORATION PROJECTS –
The individual project descriptions in this document are indexed by sub-region and project ID number. The index includes the complete project title, the project ID, the sub-region in which the primary project activity will occur, project start and end dates, project plan manager (PPM), lead organization, financial requirement dollars, dollars appropriated to date and the number of the page in IFP-1999 where the project description is located. For convenience, the project summary index is presented immediately following this introduction.

1.4 PROJECT DESCRIPTIONS -
In Section 3.0, project descriptions are subdivided into 7 subsections. The first subsection, entitled "The Total System" includes "Total System" projects that affect most or all of the South Florida Ecosystem, e.g., the C&SF Project Comprehensive Review

Study. The subsequent 6 subsections describe projects that are physically located in or affect one or two of the 6 sub-regions which constitute topographic and physiographic subdivisions of the total South Florida Ecosystem (Note: multiple sub-regions affected by a particular project are indicated).

Each subsection of the IFP includes a map of the sub-region and a brief overview description of the ecological conditions in the sub-region. The topics discussed within the overview section include the following: "Ecological Setting;" "Linkage to the Total System;" "Ecosystem Problems and Restoration Objectives;" and "Restoration Projects." These narratives are intended to inform the reader and provide a linkage between the condition of the ecosystem in the sub-region and the need(s) for restoration activities.

The individual project summary sheets follow the ecological condition description. For the purposes of this IFP document a **"project"** is defined as:

"A single and/or multi-agency restoration activity, intended to achieve a pre-determined objective with identified time frames, milestones, and resources required for completion."

"A restoration support activity" is defined as:

" A single and/or multi agency restoration initiative where there is a definable commitment of resources in the form of personnel and/or support that has been determined by the working group to have a direct linkage to an approved IFP project or otherwise to be essential to the successful achievement of ecosystem restoration objectives and goals."

Projects and restoration support activities are presented on a **"Project Summary Sheet"(PSS)** containing the following fields of information:

TITLE - This field contains the official standardized name of the project.

SUB-REGION -For project nominations, the boundary of the South Florida Water Management District defines the South Florida Ecosystem ("total system") included in the restoration initiative. The "total system" has been subdivided into 6 sub-regions (as shown in Table 1 at the end of this section). This field contains the code (shown below) of the sub-region(s) in which the project is located. Projects with activities located in two or fewer sub-regions are identified using the numeric code of the sub-region(s), with the sub-region containing the primary activity shown first. Projects with activities located in three or more sub-regions are designated by the letters "TS," indicating the "total system". (Refer to the maps provided within each section for the sub-regional boundaries.)

PROJECT ID - This field provides a permanent, unique identification number for the project. Project ID numbers are assigned and distributed by the Office of the Executive Director. The number will subsequently be used for cross-reference and for identifying inter-dependent projects. Project ID numbers will include an alpha prefix (see above) that describes the sub-region in which the project is primarily located and the section of the IFP in which the Project Summary Sheet is filed.

PROGRAM CATEGORY - This field identifies the broad functional programmatic category. Projects are in *only one* of the following categories: Infrastructure, Land Acquisition, Management, Science, or Public Information and Education.

BUDGET CATEGORY - This field refers to the funding categories used in the FY 99 Federal Cross-Cut Budget for the South Florida Ecosystem restoration initiative: Area Management, Natural Resources Management, Water Quality and/or Habitat Protection, Information Management and Assessment, Monitoring, Research, Land Acquisition, or Infrastructure Investment.

(More than one type may be specified if appropriate).

PROJECT PLAN MANAGER - This field identifies the person (and telephone number) responsible for preparing or coordinating preparation of the Project Summary Sheet. The Project Plan Manager verifies the original information on the Project Summary Sheet, ensuring the sheet is completed fully and accurately, and updates the sheet periodically to reflect the latest project status. Once a project is filed in the IFP, the PPM is responsible for providing minor revisions to the Project Summary Sheet directly to the Office of the Executive Director for updating the on-line version and the next hard-copy revision of the IFP. Minor revisions include updating header information provided on the sheet and identifying completion of project milestones.

BASIS - This field provides general information on the basis or primary reason that the project is sanctioned by the Working Group as a component of the comprehensive restoration plan. That is, it provides a programmatic "justification" in the context of individual organization missions or Task Force overall restoration objectives, or both. The information is intended to assist policy and budget staff in determining the significance of a particular project to the restoration effort. The following numeric codes are used:

"1" - indicates one or more of the Task Force priorities identified in the original Interagency Agreement (September 1993) or revised Task Force priorities (June 1995).

"2" - indicates a project designed and intended expressly for the purpose of "Ecosystem Restoration."

"3" - indicates an agency programmatic or standard mission project that also results in significant restoration benefits.

LEAD ORGANIZATION (S*)* - This field identifies the project proponent Working Group member organization that agrees to provide programmatic management and inter-agency coordination, once the project is implemented. In some cases, projects may be managed jointly by two or more organizations. The "Lead Organization" may or may not provide a source of funding for the project, but, at a minimum, agrees to seek financial resources either internally, externally, or a combination.

SUPPORTING ORGANIZATION (S*)* - This field identifies organizations that provide a significant level of technical, consulting, regulatory, or financial support.

COUNTY - This field contains the name(s) of the county in which the project is located. "All" indicates projects, which affect all of the counties in the Total System.

LINKED PROJECTS - This field identifies other closely associated or linked projects that either are themselves "dependent on completion" of the subject project, or "critical to completion" of the subject project. Other projects, particularly science projects, may be neither "critical to" nor "dependent on" a particular project but, nevertheless, be significantly related; such projects are identified in this field as "associated with." Linked projects are identified by a permanent, unique project identification number assigned by the Office of the Executive Director (see above field, entitled "Project ID").

START and END - These fields refer to calendar years in which a project starts and ends.

FINANCIAL REQUIREMENT - This field describes the life-of-project cost, i.e., the total cost of the project (from implementation through conclusion), but excludes post-project operation and maintenance. Where more than one organization is involved in funding, the field includes the organizational "split" or share of the total funding requirement.

APPROPRIATED TO DATE - This field contains the amount of funding appropriated (but not necessarily expended) through the end of the fiscal year immediately preceding the current publication year of the IFP.

REMAINING FINANCIAL REQUIREMENT - This field shows the projected costs through the conclusion of the project, but excludes post-project operation and maintenance. Where more than one organization is involved in the funding, the field includes the organizational "split" or share of the total funding requirement. The amount of the "Remaining Requirement" generally will be reduced with each successive edition of the IFP as a result of work completed and funding expended during the previous year.

APPROVED - This field contains the date of the Working Group's approval of the project.

LAST REVISION - This field contains the date of the last revision of the Project Summary Sheet and is based on the date the IFP was sent to the printer for publication..

Table 1. Sub-region reference table

Numeric Sub-region Code	Sub-region Name	Alpha Prefix
TS	Total System	TS
01	Kissimmee Valley	KV
02	Greater Lake Okeechobee	GL
03	Central Everglades	CE
04	Southeast Urban and Coastal Areas	SE
05	Southwest Florida/ Big Cypress Basin	SW
06	Florida Keys	FK

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
C&SF Project Comprehensive Review Feasability Study (Including WPAs and EAA Storage)	TS01	Ornella	USACE	1997	2004	1,816,814,000	18,163,000	20
Manatee Protection Gate Modifications	TS02	Dollar	USACE	1997	2004	12,681,000	1,743,000	21
Melaleuca Quarantine Facility	TS03	Center	ARS	1997	2000	5,000,000	1,000,000	22
Agriculture Land Stewardship	TS04	Smola	NRCS	1997	2008	10,920,000	0	23
BMPs for Agriculture	TS05	Hendricks	NRCS	1997	2007	32,050,000	6,000,000	24
Comprehensive Wetlands Conservation, Mitigation, and Permitting Stratergy	TS09	Barron	USACE	1997	1999	1,465,000	815,000	25
Economic Analysis of Agricultural Land and Water Management	TS10	Caswell	USDA	1997	2002	1,845,000	0	26
Exotic Pest Plant Controls in South Florida Ecosystems	TS11	Center	ARS	1998	2006	10,317,000	1,190,000	27
Fire Management Plans for Public Lands	TS13	Folks	FDACS	1998	2003	2,600,000	0	28
Florida Greenways System Implementation - Federal Involvement	TS14	Caffin	USFS	1997	2010	366,000	0	29
Multi-Species Recovery Strategy	TS19	Slack	USFWS	1995	END	25,600,000	8,000,000	30
Pollution Prevention	TS22	Smola	NRCS	1999	2003	870,000	0	31
Supplemental Water Quality Treatment Technology Demonstration Projects	TS23	Gray	SFWMD	1997	2001	10,000,000	4,277,425	32
Technical Assistance to Seminole and Miccosukee Indian Reservations	TS24	Smola	NRCS	1998	2009	3,850,000	100,000	33
Wetland Reserve Program	TS27	Hendricks	NRCS	1997	2008	2,135,000	210,000	34
Regional Village and Public Outreach Communication System	TS38	Burger	OED	1997	2008	200,000	46,000	35
Models and Model Enhancements	TS40	Higer	USGS	1995	2001	15,485,000	9,183,000	36
Distributed Information System and Mapping	TS41	Higer	USGS	1995	2001	7,901,000	4,039,000	37
High Density Topographic Surveys	TS42	Higer	USGS	1997	2001	8,325,000	2,360,000	38
Limitations of Environmental Stresses and Physiological Resposes on Crop Productivity	TS43	Sinclair	ARS	1995	2000	250,000	70,000	39
Ecosystem History	TS44	Higer	USGS	1995	2001	5,597,000	3,091,000	40
Biological Control and Ecology of Invasive Pest Plants	TS50	Center	ARS	1997	2006	10,791,000	2,761,000	41
Geodetic Vertical Control Surveys	TS52	Harell	FDEP	1999	2004	2,155,500	0	42
Ecosystem History: Studies of Land Use and Ecological Change	TS53	Patterson	FDEP	1998	2004	1,062,000	0	43
Assessment of Endocrine-Disrupting Contaminants in the Florida Everglades	TS54	Axelrad	FDEP	1999	2002	644,000	0	44
Natural System Boundary Alternatives and Natural Lands Information System	TS55	Haddad	FDEP	1998	2000	310,000	0	45
Identification and Documentation of Ecosystem Reference Areas as a Biodiversity Monitoring Framework	TS56	Minasian	FDEP	1999	2000	200,000	0	46
Integrated Management Program for Invasive Species within High Quality Natural Areas of South Florida	TS61	Zattau	USACE	1999	2003	34,000,000	0	47
Public Education for the Restoration Project	TS62	Lewis	FDEP	1999	2001	50,000	0	48
Lygodium Microphyllum Control	TS63	Thayer	SFWMD	1998	2011	2,960,000	105,000	49
The Governor's Commission for a Sustainable South Florida	TS66	Kranzer	FDEP	1994	end	450,000	1,452,170	50
Mercury, Geochemistry, and Nutrient Process Studies	TS67	Higer	USGS	1995	2001	8,038,000	4,916,000	51
Coordinated Management Program for Invasive Plant Species On Public and Private Lands in South Florida	TS83	Zattau	USACE	1999	2003	40,000,000	0	52

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
Biological Control for Melaleuca and other Invasive Exotics Species Enhancement Program	TS84	Zattau	USACE	1999	2003	5,310,000	0	53
Seminole Tribe Data Collection and Monitoring	TS85	Tepper	Seminoles	1997	2010	2,356,000	400,000	54
Seminole Tribe Development of Water Quality Standards	TS86	Tepper	Seminoles	1995	2000	108,000	64,000	56
NOAA South Florida Ecosystem Restoration Research and Modeling Program	TS96	Thompson	NOAA	1995	2002	21,372,227	6,172,227	57
South Florida Nonpoint Source Pollution Prevention Learning Center	TS97	Setti	BSWCD	1998	2000	952,000	300,000	59
Subtotal for Total System:						2,105,029,727	76,457,822	
Kissimmee River Restoration Project	KV01	Brooks-Hall	USACE	1994	2009	658,300,000	135,188,000	66
Lake Istokpoga Ecosystem Restoration and Management	KV02	Ford	FGFC	1998	2002	17,325,000	5,155,000	67
Lake Wales Ridge National Wildlife Refuge and CARL Acquisition	KV03	Whitmore	USFWS	1997	END	44,783,000	26,486,950	70
Paradise Run	KV04	Rinaldi	SFWMD	1998	2001	12,281,656	2,281,656	71
Upper Lakes Basin Watershed	KV06	Rinaldi	SFWMD	1995	2001	38,135,319	13,230,519	72
Kissimmee Prarie Ecosystem	KV07	Rinaldi	SFWMD	1996	1997	25,611,290	21,953,790	73
Kissimmee Chain of lakes Drawdown/Restoration Project	KV09	Hulon	FGFWFC	1999	2010	23,000,000	0	74
Lake Tohopekaliga Wetland Acquisition	KV10	Hulon	FGFWFC	1998	2000	10,000,000	0	75
Hydrilla and Floating Plant Management in the Kissimmee Subregion	KV11	Zattau	USACE	1998	2003	36,744,000	0	76
Subtotal for Kissimmee Valley:						866,180,265	204,295,915	
Herbert Hoover Dike Stabilization	GL01	Brooks-Hall	USACE	1995	2006	250,000,000	3,879,000	90
Fisheating Creek	GL02	Rinaldi	SFWMD	1997	2001	5,000,000	5,000,000	91
Lake Okeechobee Regulation Schedule Study	GL03	Brooks-Hall	USACE	1996	1998	837,000	763,500	92
Buck Island Agroecology Study	GL04	Steinman	SFWMD	1991	2010	12,000,000	7,000,000	93
Lake Okeechobee Water Retention/ Phosphorus Removal	GL06	Rosen	SFWMD	1997	2002	12,000,000	1,825,000	94
Lake Okeechobee Tributary Sediment Dredging	GL07	Rosen	SFWMD	1997	2001	3,800,000	192,000	95
West Palm Beach Wetland Reclamation Project	GL08	Olson	COWPB	1996	2001	24,600,000	9,774,005	96
Atlantic Ridge Ecosystem	GL09	Rinaldi	SFWMD	1996	2002	54,000,000	30,869,250	97
Indian River Lagoon Land Acquisition	GL10	Rinaldi	SFWMD	1997	2002	15,915,500	15,915,500	98
Juno Hills Land Acquisition	GL11	Zebuth	FDEP	1997	1997	41,560,430	41,560,430	99
Loxahatchee River Land Acquisition	GL12	Rinaldi	SFWMD	1984	2001	11,927,120	11,927,120	100
Loxahatchee Slough Land Acquisition	GL13	Rinaldi	SFWMD	1996	2002	21,000,000	18,000,000	101
North Fork St Lucie River Land Acquisition	GL14	Rinaldi	SFWMD	1995	2002	14,312,000	7,332,000	102
North Savannas	GL15	Rinaldi	SFWMD	1997	2002	5,000,000	0	103
Pal-Mar	GL16	Rinaldi	SFWMD	1997	2002	24,000,000	14,626,000	104
South Fork St. Lucie River Land Acquisition	GL17	Rinaldi	SFWMD	1995	1996	2,480,000	2,480,000	105
Indian River Lagoon National Estuary Program	GL 18	Neal	IFAS	1997	2002	2,000,000	500,000	106
Indian River Lagoon Restoration Feasibility Study	GL19	Ornella	USACE	1997	2001	6,150,000	3,110,000	107
Agricultural Contribution to Carbon Cycling	GL22	Allen	ARS	1996	2001	1,797,980	719,192	108

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
L-8 Canal Water Catchment Area - Loxahatchee Slough Infrastructure Improvements	GL24	Olson	COWPB	1997	2002	32,000,000	2,832,000	109
Ten Mile Creek Water Preserve Area	GL25	Unsell	SFWMD	1996	2002	30,808,500	6,500,000	110
Loxahatchee Slough Ecosystem Restoration	GL26	Lund	SFWMD	1997	2000	6,850,000	0	112
Cypress Creek Restoration Project	GL28	Sexton	DCA	1997	1999	11,000,000	3,000,000	113
Allapattah Flats	GL29	Rinaldi	SFWMD	1997	2001	32,000,000	0	114
Bolles and Cross Canal Improvements	GL30	Moczynski	USACE	1997	end	1,100,000	570,000	115
Everglades Program	GL31	Goforth	SFWMD	1994	2014	866,823,000	214,148,000	116
EAA Lands/Water Management area(s) - Land from Willing Sellers for Water Storage, Detention and Water Quality Treatment	GL33	Rinaldi	SFWMD	1997	1999	136,600,000	136,600,000	117
Rotenberger/Holey Land Wildlife Management Areas	GL34	Hicks	FDEP	1984	END	16,746,665	11,728,040	118
Technical Assistance to EAA and C-139 Basin	GL36	Boyd	NRCS	1995	2005	17,498,000	3,000,000	119
Monitoring of Organic Soils in the Everglades	GL37	Hendricks	NRCS	1997	2011	1,236,400	36,400	120
Soil Survey Update for the Everglades Agricultural Area	GL38	Hendricks	NRCS	1997	2000	1,500,000	0	121
Sustainable Agriculture in the Everglades Agricultural Area	GL39	Miller	ARS	1998	2018	20,000,000	500,000	122
Development of Diverse Sugarcane Germplasm and its use in Development of Improved Varieties	GL40	Miller	ARS	1990	2010	29,250,000	7,785,000	123
Lake Okeechobee Demonstration ASR Project	GL41	Devillon	SFWMD	2000	2002	19,000,000	0	124
Charlotte Harbor National Estuary Program	GL45	Lutterman	EPA	1996	end	3,707,000	2,208,667	125
Cayo Costa Island	GL47	Outland	FDEP	1980	END	24,445,539	21,977,776	126
Charlotte Harbor Flatwoods	GL48	Outland	FDEP	1992	END	35,037,868	10,244,440	127
Ding Darling National Wildlife Refuge Complex	GL49	Hinds	USFWS	1997	END	6,027,500	0	128
Seminole Tribe Best Management Practices for the Brighton Reservation	GL53	Tepper	Seminoles	1998	2004	536,000	118,000	129
Seminole Tribe Comprehensive Surface Water Management System for the Brighton Reservation	GL54	Tepper	Seminoles	1998	2010	15,868,000	200,000	130
Palm Beach Co Water Utilities	GL55	Sharp	PBCo.	1997	2003	15,500,000	11,000,000	131
Floridan Aquifer Restoration	GL56	Smith	NRCS	1998	2002	1,200,000	100,000	132
Urban Mobile Irrigation Lab	GL57	Smith	NRCS	1997	2011	2,500,000	130,000	133
Caloosahatchee River	GL58	Dawdy	SFWMD	1997	2005	206,139,000	4,589,000	134
Stock Structure and Abundance of Bottlenose Dolphins along Florida's West Coast	GL59	Goodyear	NMFS	1990	2001	380,700	156,000	136
Fish Abnormalities as Environmental Quality Indicators in the St. Lucie - Lower Indian River	GL60	Browder	NMFS	1999	2004	134,200	29,200	137
Seagrass Studies in Indian River Lagoon	GL62	Kenworthy	NMFS	1987	2001	573,000	393,000	138
Lake Worth Lagoon Ecosystem Restoration Management Area	GL65	Powell	FDEP	1998	END	53,000,000	1,040,000	139
Ecosystem Management Initiative in the Loxahatchee River Watershed	GL66	McKee	DEP	1996	end	0	0	140
Lake Okeechobee Dredging Feasibility Analysis	GL67	Havens	SFWMD	2000	2001	1,000,000	0	141
Lake Okeechobee Torpedo Grass Research	GL68	Hanlon	SFWMD	2000	2001	150,000	120,000	142
Subtotal for Greater Lake Okeechoobee:						2,095,841,402	614,358,520	

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
WCA-2A Regulation Schedule Review	CE01	Brooks-Hall	USACE	1998	2001	500,000	0	155
Water Conservation Areas: Inholdings, Mineral Rights, and Other Interests	CE02	Rinaldi	SFWMD	1948	2010	18,028,792	9,228,792	156
Soil Survey for Everglades National Park& Water Conservation Areas	CE05	Hendricks	NRCS	1997	2002	4,280,000	0	157
Canal C-111 Project	CE06	Landers	USACE	1994	2005	154,917,000	101,937,000	158
East Cape and Homestead Canal Plugs Repair	CE07	Ring	USACE	1997	1997	374,000	235,000	159
Everglades National Park Water & Wastewater	CE08	Ring	NPS	1997	TBD	38,491,000	3,748,000	160
Hole-in-the-Donut	CE09	Norland	NPS	1994	2017	75,000,000	6,284,584	161
Modified Water Deliveries to Everglades National Park	CE10	Ring	ENP	1990	2006	131,500,000	43,774,000	162
Additional Lands - 8.5 Square Mile Area	CE11	Outland	FDEP	1998	END	76,000,000	0	163
East Everglades Addition to Everglades National Park	CE12	Ring	NPS	1997	2000	106,060,000	61,150,000	164
Experimental Program of Modified Water Deliveries to ENP	CE13	Landers	USACE	1985	2006	0	0	165
Nutrient Threshold/dosing	CE15	Fontaine	SFWMD	1994	2001	13,000,000	10,000,000	166
South Dade Wetlands	CE17	Rinaldi	SFWMD	1994	2007	40,000,000	26,250,000	167
Six Water Level Meteorological Stations	CE18	Harrell	FDEP	1998	2003	1,349,500	0	168
C-111 Basin Hydrologic Investigations and Model Department	CE19	Graham Gene	UF/FIU	1998	2001	2,040,600	0	169
Restoration of pineland and hardwood hammocks on previously rock plowed land in C-111 Basin in Dade County	CE21	Pybas	IFAS	1997	2001	1,200,000	0	170
Extension/Public Information to Support Ecosystem Restoration in C-111 Basin	CE23	Pybas	UF/IFAS	1997	2001	1,508,850	0	171
Grossman Hammock Restoration	CE24	DeVries	ENP	1998	2000	100,000	100,000	172
West Dade Wastewater Reuse Study	CE25	Landers	USACE	1997	1999	100,000	100,000	173
Exotic Plant Control and Restoration of Degraded Plant Communities	CE26	Anderson	GFWFC	1998	1998	424,000	475,000	174
Tree island Restoration Everglades Mgt Area	CE27	Anderson	GFWFC	1997	2003	253,000	108,000	175
Everglades Landscape and Everglades Water Quality Model Development	CE29	Fontaine	SFWMD	1994	2001	3,500,000	2,400,000	176
Everglades Tree Island Research and Monitoring Initiative: Phase 1	CE30	Sklar, Heisler	SFWMD	1997	1999	169,751	83,900	177
Inventory of Tree Islands in WCAs 2 and 3	CE31	Heisler	FGFWFC	1997	2002	512,800	171,400	178
Phosphorous Monitoring at Loxahatchee NWR	CE34	Musaus	USFWS	1992	END	13,000	78,000	179
Exotic Plant Control on Loxahatchee National Wildlife Refuge	CE35	Musaus	USFWS	1992	end	205,000	817,500	180
Miccosukee Tribe Water Management Area	CE36	Duncan	Miccosukee	1997	2002	42,113,000	0	181
Miccosukee Tribe Water Management	CE37	Duncan	Miccosukee	1997	ongoing	25,200,000	199,000	182
Subregional characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay and the southern Florida ecosystem	CE38	Scott	FDEP	1999	2001	300,000	0	183
Florida Bay Fisheries - Habitat Assessment Program	CE40	Robblee	FLDEP	1997	2000	480,000	218,000	184
Relationships between Inshore Populations of the Pink Shrimp, Penaeus duorarum, and Offshore Tortugas and Sanibel Fisheries	CE41	Robblee	USGS/BRD	1997	1999	150,000	75,000	185
Florida Bay Program Support	CE42	Robblee	USGS/BRD	1997	2001	270,000	108,000	186

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
Temporal and Spatial Variation in the Seagrass Associated Fish and Invertebrates in Johnson Key Basin, western Florida Bay	CE43	Robblee	USGS/BRD	1997	2001	450,000	150,000	187
High Resolution Bathymetry of Florida Bay	CE44	Robblee	USGS/BRD	1997	1999	549,000	366,000	188
Wading Bird Empirical Studies	CE45	DeAngelis	USGS/BRD	1997	2000	205,000	95,000	189
Fish recruitment, Growth and Habitat Use in Florida; An Integrated Team Approach	CE46	Robblee	USGS/BRD	1997	1998	825,000	275,000	190
Population genetic structure and the dispersal of freshwater fishes and prawns	CE47	Loftus	USGS/BRD	1996	2000	130,000	10,000	191
Freshwater mesocosm Studies	CE48	Loftus	USGS/BRD	1996	2002	187,000	82,000	191
Role of Aquatic Refuges in the ecology of wetland fishes	CE49	Loftus	USGS/BRD	1998	2001	150,000	0	193
Life History and Ecology of the Everglades Crawfish	CE50	Loftus	USGS/BRD	1996	2000	250,000	85,000	194
An Individual-Based Spatially -Explicit Model of the Cape Sable Seaside Sparrow Population in Florida Everglades	CE51	DeAngelis	USGS/BRD		1998	117,000	117,000	195
Critical Model Development for the Restudy	CE52	DeAngelis	USGS/BRD		1998	206,000	103,000	196
Public Lands Information Center	CE53	Ring	NPS	2000	2009	1,800,000	0	197
Development of trophic models for amphibians and reptiles in South Florida	CE54	DeAngelis	USGS	1997	1998	100,000	50,000	198
Computer simulation modeling of intermediate trophic models for ATLSS of the Everglades/ Big Cypress region	CE55	DeAngelis	USGS	1997	1999	87,907	179,000	199
Development of selected model components of an ATLSS for the wetland ecosystems of South Florida	CE56	DeAngelis	USGS	1997	2000	406,930	983,000	200
Network analysis of trophic dynamics in South Florida Ecosystems	CE57	DeAngelis	USGS	1997	1999	200,000	200,000	201
Experimental Studies of Population Growth and Predator-Prey Interactions of fishes in the Everglades National Park	CE58	Loftus	USGS		2001	75,100	0	202
Population Structure and Spatial Delineation of Aquatic Consumer Communities in the Everglades National Park	CE59	Loftus	USGS		2001	204,100	99,100,000	203
Vegetation Dynamics of Land-Margin Ecosystems: Mangroves of South Florida	CE60	Smith	USGS			250,700	0	204
Hydrologic Variation and Ecological Processes in the Mangrove Forest of South Florida	CE61	Smith	USGS		1999	100,880	0	205
Subtotal for Central Everglades:						744,334,910	369,336,176	
Homestead Air Reserve Base Realignment and Closure	SE01	Harvey	DOD	1997	2002	0	31,000,000	213
S-26 Salinity Control Structure Repair	SE02	Landers	USACE	1998	2000	526,000	123,000	214
Stormwater Treatment Area 1-East	SE03	Rinaldi	SFWMD	1995	2002	46,000,000	46,000,000	215
East Coast Buffer/Water Preserve Areas	SE05	Jackson	SFWMD	1994	2001	314,400,000	80,000,000	216
South Biscayne Bay Watershed Management Plan	SE06	Rawlinson	Dade	1998	2001	6,464,000	3,266,000	217
Freshwater Lake Belts EIS	SE07	Barron	USACE	1996	1997	0	0	218
Establishing BMPs for Agricultural and Urban Areas of the Eastern C-111 Basin	SE10	Klassen	IFAS	1997	2002	17,690,000	0	219
Agriculture and Rural Land Retention Study	SE11	Rawlinson	Dade	1998	2000	950,000	400,000	220
Hillsboro Pilot ASR Project	SE14	Devillion	SFWMD	1997	1999	8,000,000	0	221
North Fork of the New River Restoration	SE15	Schaufele	Broward	1997	2003	1,474,966	829,350	223

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
L31E Flow Redistribution Project	SE17	Alleman	SFWMD	1997	2000	1,200,000	0	225
Lake Worth Lagoon Restoration	SE19	Barry	SFWMD	1998	2001	2,000,000	0	226
Eastward Ho! Corridor Rival Development Trends Fiscal Impact Analysis (DCA)	SE20	Mofson	FDCA	1997	1998	150,000	150,000	227
East Coast Canal Structures: C-4 and C-6	SE21	Marban	SFWMD	1998	2001	2,326,000	0	228
A Program to Reduce Phosphorus, Nitrogen and Pesticide Runoff and Leaching from Turf/Grass into South Florida Surface and Ground Waters	SE24	Snyder	IFAS	1997	2000	280,000	0	229
Palm Beach County: Lake Worth Lagoon Florida Yards and Neighborhoods Program	SE25	Godwin	IFAS	1997	1999	300,000	0	231
Miami- Dade County Archipelago	SE26	Outland	FDEP	1997	1999	35,439,907	30,549,839	232
South Dade Wetlands Addition	SE27	Frost	NPS	1997	TBD	35,000,000	0	233
Biscayne Bay Feasibility Study	SE28	Landers	USACE	1997	2004	5,590,000	1,304,000	234
Comprehensive Water Quality Standards for Biscayne Bay	SE29	Frost	NPS	1997	1999	350,000	0	235
South Florida Community-Urban Resources Partnership Ecosystem Restoration Project	SE31	Hamilton	USDA	1998	2000	1,000,000	470,000	236
Ground-Water Quality Discharge Standards	SE32	Frost/Curry	FDEP	1997	1999	750,000	0	237
Ground-Water Quality in Coastal Environments	SE33	Frost/Curry	FDEP	1997	1999	400,000	0	238
Surface Water Management Master Plan for the former Homestead Air Force Base	SE34	Hernandez	USAF	TBD	TBD	0	0	239
New River Forest Restoration Project	SE35	Myers	BC DNRP	1997	2005	2,220,000	220,000	240
Miami-Dade County Environmentally Endangered Lands Program	SE37	Young	Dade Co.	1991	TBD	49,350,000	19,450,000	241
Military Canal Remediation	SE38	Frost	NPS	1997	end	0	0	243
Biscayne Bay Ecosystem Risk Assessment	SE39	Frost	NPS	1998	2001	1,200,000	0	244
Cumulative Effects of Natural and Anthropogenic Stressors	SE40	Goodyear	NOAA	1995	2001	6,250,000	4,450,000	246
Western Water Quality Treatment Project	SE41	Dollar	USACE	1997	2002	14,000,000	0	248
Palm Beach County Freshwater Chain-of-Lakes Project	SE45	Phipps	PBCo ERM	1998	2003	6,808,000	708,000	249
Eastward HO! Brownnfields Partnership	SE46	Manning	SFRPC	1998	2000	2,150,000	475,000	251
South Miami-Dade Stormwater Treatment and Distribution Area Demonstration Project	SE 47	Hefty	DERM	1996	2001	2,136,000	2,136,000	253
Subtotal for Southeast Urban & Coastal Areas:						564,404,873	221,531,189	
Intro for Southeast PCT								
Additional Water Conveyance Structures Under Tamiami Trail	SW01	Hibbard	DOT	1998	2002	4,355,000	0	262
Seminole Tribe Water Conservation Project for Big Cypress Reservation	SW03	Tepper	Seminoles	1998	2005	70,053,000	0	264
Belle Meade Land Acquisition	SW04	Boler	FDEP	1997	1999	33,726,136	10,916,425	266
Big Cypress National Preserve Addition	SW05	Hibbard	NPS	1998	2001	30,320,000	18,520,000	267
Big Cypress National Preserve Mineral Rights	SW06	Hibbard	NPS			0	0	268
Big Cypress National Preserve Private Inholdings	SW07	Hibbard	NPS	Ongoing	2001	165,261,364	154,561,364	269
Corkscrew Regional Ecosystem Watershed	SW08	Rinaldi	SFWMD	1995	2002	47,530,000	36,810,000	270
Fakahatchee Strand Land Acquisition Project	SW09	Boler	FDEP	1997	1999	23,310,945	19,044,116	271

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	
Southern Golden Gate Estates Hydrological Restoration	SW10	Kuester	FDEP	1998	2005	53,760,000	38,560,000	272
Land Adjacent to Dade County Training Jetport	SW11	Hibbard	NPS			0	0	274
Southern CREW Project Addition/Imperial River Flowways	SW12	Merriam	SFWMD	1997	2001	30,484,000	2,500,000	275
Twelve Mile Slough	SW13	Rinaldi	SFWMD	1998	2001	3,300,000	3,300,000	277
Seminole Tribe Best Management Practices for the Big Cypress Reservation	SW14	Tepper	Seminoles	1998	2001	4,013,000	0	278
Seminole Tribe Exotic Species Removal	SW15	Tepper	Seminoles	1998	2010	988,000	76,000	279
Picayune Strand State Forest Exotic Species Management	SW16	Folks	FDACS	1998	2010	24,914,000	0	280
Assimilative Capacity for Phosphorus of C&SF Canals on the Big Cypress Reservation	SW17	Tepper	Seminoles	1997	2004	400,000	100,000	281
Forested Wetland Nutrient Uptake Research	SW18	Tepper	Seminoles	1998	2004	400,000	110,000	282
Impacts of Sludge Deposition on Phosphorus Levels on the Big Cypress Reservation	SW19	Tepper	Seminoles	1998	1998	30,000	0	283
Melaleuca Control (Critical) on Big Cypress National Preserve	SW20	Hibbard	NPS	1998	2005	1,400,000	700,000	284
Characterization of the geologic framework of the subsurface coarse sand zone and its influence on Florida Bay	SW21	Scott	FDEP	1997	2000	1,500,000	0	285
Subsurface Sand Body Investigation (Sunniland)	SW22	Scott	FDEP	1996	1997	10,000	10,000	286
Southwest Surficial Aquifer System Investigation	SW23	Scott	FDEP	1997	1998	60,000	60,000	287
Henderson Creek/Belle Meade Restoration Project	SW24	Haner	FDEP	1997	2002	5,140,000	3,940,000	288
Lake Trafford Restoration	SW26	Boler	FDEP	1998	2002	8,243,000	43,000	290
Estero Bay Land Acquisition Program	SW28	Boler	FDEP	1985	end	20,784,050	7,973,750	292
Lake Park Restoration Project	SW29	Boler	FDEP	1997	2003	5,000,000	2,541,000	293
Town Of Ft. Myers Beach Storm Water Retrofit Program	SW30	Boler	FDEP	1998	2000	120,000	0	294
Rookery Bay Land Acquisition Project	SW31	Boler	FDEP	1997	1999	38,826,750	31,355,418	295
Collier Seminole Resource Management/Acquisition Project	SW33	Henry	FPS	1998	2000	808,000	404,000	296
Fakahatchee Strand State Preserve Exotic Removal Project	SW34	Toppin	FDEP	1998	2001	200,000	0	298
Estero Bay Aquatic Preserve and Buffer Reserve Enhancement and Exotic Removal Project	SW35	Stafford	FDEP	1998	2001	1,365,000	50,842	299
Long-term Study of Fire Regimes in Pineland and Associated Cypress Wetlands	SW36	Snyder	USGS/BRD	1994	2002	660,000	282,000	300
Strand Structure and Productivity of Short-hydroperiod Graminoid Wetlands	SW37	Snyder	USGS/BRD	1999	2002	470,000	0	301
Aquatic Animal Dynamics in Big Cypress Habitats	SW38	Loftus	USGS/BRD	1999	2004	210,000	0	302
Seminole Critical Project for the West side of the Big Cypress Water Conservation Project	SW39	Tepper	Seminoles	1998	2002	45,198,000	0	303
Plant Biodiversity of Big Cypress National Preserve	SW40	Snyder	USGS/BRD	1998	2000	48,000	48,000	305
Hydrologic Reconnaissance of the gray limestone aquifer of South Florida	SW41	Reese	USGS/BRD	1996	1999	817,000	323,600	306
Stratigraphy and hydrogeology of the surficial aquifer system of Southwest Florida	SW43	Wardlaw	USGS	1996	1999	939,177	635,050	307
Okaloacoochee Slough	SW44	Rinaldi	SFWMD	1998	2001	20,352,060	20,352,060	308
Southwest Florida Water Management Model and Natural System Model	SW50	Merriam	USFWS	2000	2005	2,000,000	0	309

	Project ID No.	PPM	Lead Organization	Start	End	Financial Requirement	Appropriated to Date	Page
Conservation Easements for Multi-Species Recovery and Water Quality Maintenance	SW51	Eller	USFWS	1999	2008	50,700,000	0	310
Subtotal Southwest/Big Cypress:						697,696,482	353,216,625	
Complete Land Acquisition for Biscayne National Park	FK02	Frost	NPS	1998	2000	3,600,000	0	318
Complete Crocodile Lake National Wildlife Refuge	FK03	Steiglitz	USFWS	1998	2000	786,000	400,000	319
Complete Florida Keys Ecosystem CARL Project	FK05	Outland	FDEP	1992	END	37,692,832	29,696,425	320
Complete Key Deer National Wildlife Refuge	FK06	Steiglitz	USFWS	1997	2001	14,000,000	0	321
Complete North Key Largo Hammocks State Botanical Site	FK07	Outland	USFWS	1983	END	73,733,875	74,374,416	322
Florida Keys Carrying Capacity Study	FK14	Pattison	DCA	1998	2000	6,000,000	500,000	323
Florida Keys Nutrient Feasibility Study	FK15	Teague	DOH	1996	1998	566,000	566,000	325
Florida Keys National Marine Sanctuary Water Quality Protection Program	FK18	McManus	EPA	1995	1999	5,800,000	3,475,200	326
Florida Keys Cesspit Identification and Ilimination Program – Administrative	FK21	Teague	FDEP	1997	END	250,000	1,030,500	327
Florida Keys Tidal Creek Restoration Project	FK28	Hebling	FDEP	1998	2000	1,224,000	250,000	329
Florida Keys Invasive Exotic Plant Control Stratergy	FK31	Steiglitz	USFWS	1998	2000	4,190,000	0	330
Big Pine and No Name Keys Multi- Species Habitat Conservation Plan	FK32	Symroski	FDCA	1999	2000	250,000	0	331
Team Ocean	FK42	Tagliarini	NOAA	1997	2001	680,000	40,000	332
Coral Reef Classroom	FK43	Kelly	NOAA	1997	2001	110,320	20,515	333
Biscayne Aquifer Groundwater Investigation	FK46	Scott	USGS	1997	1997	27,450	27,450	334
Florida Keys National Marine Sanctuary: Zone Monitoring Program	FK57	Haskell	NOAA	1997	2002	2,730,000	1,040,000	335
Subtotal for Florida Keys:						151,640,477	111,420,506	
Grand Total all Subregions:						**7,225,128,136**	**1,950,616,753**	

3.0 Project Descriptions and Maps

3.1 *THE TOTAL SYSTEM*
Kissimmee through the Keys

ECOLOGICAL SETTING

The South Florida ecosystem encompasses an area of approximately 18,000 square miles extending from Orlando to the reef tract in the Keys and the Gulf of Mexico to the Atlantic Ocean. It is a system dominated by the watersheds of the Kissimmee River, Lake Okeechobee, and the Everglades. Interconnected by water, the system functions as an integral mosaic of wetlands, uplands, coastal and marine areas.

Prior to drainage and development in the late 1800s, wetlands dominated the landscape. That landscape consisted of swamp forest; sawgrass plains; mosaics of sawgrass, tree islands, and ponds; wet prairies; cypress strands; pine rocklands; hardwood hammocks; and other subtropical landforms. .

ECOSYSTEM PROBLEMS AND RESTORATION OBJECTIVES

Beginning with channelization of the Caloosahatchee River and its connection to Lake Okeechobee, and culminating with construction of the Central and Southern Florida Project (C&SF) authorized by Congress in 1948, the system was forever altered. Drainage fostered development, which, in turn, required more drainage to protect against flooding. Flood control made possible massive land-use changes that decreased the availability of land for water storage and recharge and altered both the direction and rate of runoff. Today, the hydrology of South Florida is vastly changed from what it was prior to the 1800s. Changes in the hydrologic regime directly and indirectly caused other physical and biological changes.

The first annual report of the Interagency Working Group (1994) highlighted ecosystem problems that now exist and generically describes an overall approach to restoration. Major ecosystem problems identified in that annual report include:

- Diminished floodplain habitat diversity, reduction of wading birds, fishery forage.
- Nutrients in water.
- Soil subsidence.
- Spread of exotic animal and plant species.
- Altered hydroperiods.
- Uncoupling of wetlands and estuaries from rainfall.
- Loss of hydraulic head and recharge.
- Mercury contamination of water.
- Fire regime changes.

The ideal conceptual restoration target for South Florida is re-establishment of pre-drainage topography, hydrology, and vegetative cover. “In reality, the irreversible loss of significant wetland areas, as well as the almost complete urbanization of the East Coast ridge and the need to accommodate agriculture make the restoration target only approachable.” (1994 Annual Report, Interagency Working Group).

RESTORATION OBJECTIVES:

The restoration objectives of critical importance for the Total System have been identified by the working group and are listed as follows:

- Maximize the system’s spatial extent and hydrologic interconnection.
- Reestablish natural hydrologic functions.

- Decompartmentalize Water Conservation Areas (WCA's).
- Recover threatened and endangered species.
- Restore natural biological diversity and natural vegetation communities.
- Halt and reverse the invasion of exotic plants and animals.
- Reestablish sustainable wading bird populations and colonies.
- Reestablish wildlife corridors.
- Evolve current agriculture to be compatible with the natural hydrologic regime.
- Promote water conservation.
- Prevent point source and non-point source pollution.
- Restore natural estuarine and coastal productivity.
- Increase hard coral cover on reefs.
- Implement best urban and agricultural management practices to improve water quality and reduce water consumption.
- Link Agricultural and urban growth management with ecosystem management.
- Minimize groundwater seepage.

RESTORATION PROJECTS

Important restoration projects in progress or proposed for the Total System are identified on the following pages:

TITLE: C&SF Project Comprehensive Review Feasibility Study			
SUBREGION : Total System	***PROJECT ID:*** TS01	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infra Invest	USACE - $12,826,500 SFWMD - $12,826,500 ***TOTAL:*** $25,653,000	
PROJECT PLAN MANAGER: Mike Ornella, 904-232-1600	***BASIS:*** 1	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USACE		USACE - $8,250,000 SFWMD - $4,907,000 ***TOTAL:*** $13,157,000	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): SFWMD Boundaries			
LINKED PROJECTS: **Dependent on:** **Critical to :** **Associated with:** CE01,CE04, CE13, GL01, GL03, GL19, GL52, GL30, SE07, SE28,		***REMAINING FINANCIAL REQUIREMENT:*** USACE - $4,576,000 SFWMD - $7,919,000 ***TOTAL:*** $12,496,000	
START: 1997	***END:*** 2004	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The Central and Southern Florida (C&SF) Project was authorized in 1948. Since that time, 13 additional Congressional authorizations have modified the project. The Comprehensive Review Study (Restudy) is the first comprehensive review of the entire project. The study is addressing the long-term water resources needs of South Florida with a view toward enhancing the region's natural resources while maintaining or enhancing other authorized project purposes. The Restudy will be accomplished through a series of interim reports. WRDA 96 requires that a report recommending a Comprehensive Plan be submitted to Congress in July 1999, along with a Programmatic EIS. More detailed studies will be continued after the report is submitted. The Water Preserve Areas study is being performed as a component of this study and its costs are included in this estimate.

RESTORATION BENEFITS: This study will develop a comprehensive plan for the entire project and will provide more detailed plans for the creation of water preserve areas in the east coast buffer strip area. The scope of work and plan of study is documented in a Project Study Plan dated May 1997. The studies will focus on restoring hydrologic conditions in South Florida's natural areas for the purpose of restoring historic patterns of diversity and abundance of native species of flora and fauna. At the same time opportunities to protect and enhance authorized project purposes of water supply and flood control will be investigated.

Time Line and Fiscal Year Budget (in thousands of dollars) for C&SF Project Comprehensive Review Study

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Comprehensive Plan																
Water Preserve Areas Study																
L-28 Modification Study																
Project																
USACE		2814	1088	904	656	86										5548
SFWMD		2995	1846	1521	611	107										7080
																$12,628

TITLE: Manatee Protection Gate Modifications		
SUBREGION : Total System	***PROJECT ID:*** TS02	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infra Invest	USACE $10,564,00 SFWMD $2,117,000
PROJECT PLAN MANAGER: Melissa Dollar, 904-232-3848	***BASIS:*** 2	***TOTAL:*** $12,681,000
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***
SUPPORTING ORGANIZATION(S): USFWS, DEP, SFWMD		
COUNTY(S): Charlotte, Glades, Martin, St Lucie, Palm Beach, Broward, Dade		***TOTAL:*** $1,743,000
LINKED PROJECTS: **Dependent on:** **Critical to:** TS19 **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $10,938,000
START: 1997	***END:*** 2004	***APPROVED:*** 11/97 ***LAST REVISION:*** 8/98

DESCRIPTION: Project Modification Reports (Parts 1 & 2) recommending modifications to 27 locks and water control structures in the Central and Southern Florida (C&SF) Project have been prepared and approved. Manatee mortality associated with the operations of the structures is a substantial problem. It is second in numbers only to manatee mortalities caused by boat collisions. Implementation will be on an incremental basis to allow for testing and refinement of the modifications during the process.

RESTORATION BENEFITS: The purpose of the modifications is to avoid or minimize manatee mortality caused by the operation of C&SF Project structures and locks. The Florida manatee is listed as an endangered species by the U.S. Fish and Wildlife Service. The proposed modifications would substantially reduce the second largest cause of manatee mortality and, therefore, would be instrumental in recovery of the species. Installed the mechanical pressure-sensing device on S25B for system check in July 1998. Development of plans and specifications for an acoustic sensing device is in progress. Will begin installation of an acoustic sensing device for a similar check on St. Lucie Lock in August 1998. Construction is scheduled to be completed in FY2002.

Time Line and Fiscal Year Budget (in thousands of dollars) for Manatee Protection Gate Modifications																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
		593	2799	3772	2339	1704	227	97								11,531
Subtotal																**$11,531**

TITLE: Melaleuca Quarantine Facility			
SUBREGION : Total System	***PROJECT ID:*** TS03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infra. Investment	USDA $5,000,000	
PROJECT PLAN MANAGER: Ted Center (954) 475-0541	BASIS***:*** 2	***TOTAL:*** $5,000,000	
LEAD ORGANIZATION(S): ARS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE			
COUNTY(S): All		***TOTAL:*** $1,000,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS01, TS50 **Associated with:** TS11, TS12		***TOTAL:*** $4,000,000	
Start: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** **7**/98

DESCRIPTION: The project consists of constructing a quarantine facility to enable the testing of candidate organisms for biological control and reversal of the spread of exotic plant species, particularly melaleuca, in South Florida. The facility would be constructed on the University of Florida campus in Davie by the Corps and then turned over to the USDA for operation. Melaleuca trees are rapidly invading the natural Everglades habitat. Their growth is so dense that the typical characteristics of native habitat us completely destroyed. They currently are spreading at such a rapid rate, they represent a threat to the Everglades that is comparable to the problems of altered water conditions. There is an immediate need to test several insects identified in Australia as potential control agents. Currently, many Federal, State, and local agencies are devoting substantial resources and funding to conventional control, but biological techniques may be both more economical and more effective.

RESTORATION BENEFITS: Biological control agents have the potential of providing greater efficiency and improved economy. Ultimately, they may prove to be the only truly effective large-scale means of reversing and halting the effects of non-native species on the South Florida habitat.

Time Line and Fiscal Year Budget (in thousands of dollars) for Melaleuca Quarantine Facility																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Construction																
Project																
ARS	1000			1000	1800	1200										5,000
Subtotal																**$5,000**

TITLE: Agriculture Land Stewardship			
SUBREGION : Total System	***PROJECT ID:*** TS04	***FINANCIAL REQUIREMENT:*** USDA	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource management		
PROJECT PLAN MANAGER: Smola (561) 686 8800x2857	***BASIS:*** 2	***TOTAL***: $10,920,000	
LEAD ORGANIZATION(S): NRCS – DACS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ERS, IFAS, FDEP			
COUNTY(S): All		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS05, TS22, TS26, TS27 **Associated with:** TS06, TS10, TS17, TS21, TS25, TS29		***TOTAL:*** $10,920,000	
START: 1997	***END:*** 2008	***APPROVED:*** 11/97	***LAST REVISION***: **2/98**

DESCRIPTION: Assist the Florida Departments of Agriculture and Consumers Services, Commerce and Environmental Protection in developing incentives targeting farming operations that address sound land stewardship. 1) Whole Conservation Planning - A programs approach to meet environmental regulatory goals on private lands through delivery of conservation technical assistance and planning with landowners on a voluntary basis. 2) Team Agricultural Permitting - Procedures developed that allows State, regional, and local regulatory authorities to execute agreements and memorandums that will expedite and improve the agricultural permitting process for landowners/operators. 3) Development Rights Program for Agriculture - A cooperative program with the Florida DACS that will encourage local governments to pursue where applicable, purchase and transfer of development rights for agriculture land. 4) - Green Labeling - An Agricultural products labeling and marketing system that identifies farm products that have been grown, harvested, transported, processed and delivered to the grocery shelf which exceed minimum quality requirements established. These quality requirements will begin with on farm land stewardship practices and management procedures that ensure the public that these products have been produced without harming the local environment.

RESTORATION BENEFITS: Through these initiatives and incentives, agricultural producers will be more willing to participate, accept and implement state of the science technology and marketing procedures. These benefits will allow for a viable agricultural economy to function within the region, while not adversely impacting the Everglades ecosystem restoration efforts or its long -term sustainability.

Time Line and Fiscal Year Budget (in thousands of dollars) for Agriculture Land Stewardship																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS	300	300	300	300	300	300	300	300	300	300	300	300				3,600
DACS	300	300	300	300	300	300	300	300	300	300	300	300				3,600
ERS	10	10	10	10	10	10	10	10	10	10	10	10				120
IFAS	300	300	300	300	300	300	300	300	300	300	300	300				3,600
Subtotal	910	910	910	910	910	910	910	910	910	910	**910**	**910**				**$10,920**

TITLE: BMPs for Agriculture			
SUBREGION : Total System	***PROJECT ID:*** TS05	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Management	USDA $32,050,000	
PROJECT PLAN MANAGER: Greg Hendricks (561) 795-5451	***BASIS:*** 3	***TOTAL:*** $32,050,000	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:*** USDA $6,000,000	
SUPPORTING ORGANIZATION(S): IFAS/ES, ARS, ERS, CSREES			
COUNTY(S): All		***TOTAL:*** $6,000,000	
		REMAINING FINANCIAL REQUIREMENT: USDA 26,050,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS04, TS24, TS26, TS27, TS22 **Associated with:** TS25, TS29		***TOTAL:*** 26,050,000	
START: 1997	***END:*** 2007	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: In cooperation and coordination with the Florida Department of Environmental Protection, the South Florida Water Management District, and other agencies as appropriate, NRCS will provide technical assistance to landowners and managers that will encourage the adoption of Best Management Practices (BMPs) into sustainable agricultural resource management systems. Barriers to adoption of BMPs will be determined and the effectiveness of incentives for adoption assessed. Landowners will integrate the latest technology and management techniques as a part of a dynamic resource management plan incorporating all aspects of their routine land management functions.

1. Develop Resource Management Plans - Develop practical agricultural resource management plans on all lands purchased as part of ecosystem restoration.

2. Farm-level economic and environmental impacts of BMPs will be characterized with respect to crop choices, water and chemical management, and economic costs and returns. The impacts of restoration options on farmers' choices of agricultural practices and changes in profitability will be estimated for each area. The effectiveness of the use of BMPs and incentives to encourage the adoption of practices to enhance water and nutrient flows will be assessed.

3. Technical Assistance to Beef Cattle Operators - Accelerate technical assistance to beef cattle operators to assure these landowners have the necessary information and guidance to meet State water quality standards.

RESTORATION BENEFITS: Through these initiatives agricultural and beef cattle landowners/operators will be given the necessary tools and technology to manage their lands, as well as those publicly acquired, for ecosystem restoration in a more environmentally friendly manner. Resource management plans developed with farmers/ranchers will meet their primary agricultural objectives while at the same time meeting all State, Federal and local environmental regulations and rules. Through the application of this technical assistance and conservation planning program agriculture will function economically and socially within the region, while not adversely impacting the Everglades ecosystem restoration efforts. Through these efforts agricultural lands will provide benefits and values to a restored south Florida ecology as a nutrient and pollution buffer between urban and natural areas, landscape diversity and wildlife habitat and corridors.

Time Line and Fiscal Year Budget (in thousands of dollars) for BMPs for Agriculture																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS-funded	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000					20,000
NRCS-unfunded	1000	1000	1000	1000	1000	1000	1000	100	1000	1000	1000					10,000
IFAS-unfunded	175	175	175	175	175	175	175	175	175	175	175					1,750
ERS-unfunded	20	20	20	20	20	20	20	20	20	20	20					200
ARS-unfunded	10	10	10	10	10	10	10	10	10	10	10					100
Subtotal	3205	3205	3205	3205	3205	3205	3205	3205	3205	3205	3205					**$32,050**

TITLE: Comprehensive Wetlands Conservation, Mitigation, and Permitting Strategy

SUBREGION : Total System	***PROJECT ID:*** TS09	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Habitat Restoration	
PROJECT PLAN MANAGER: Bob Barron (904) 232-2203	***BASIS:*** 1	***TOTAL:*** $1,465,000
LEAD ORGANIZATION(S): USACE & EPA		***APPROPRIATED TO DATE:***
SUPPORTING ORGANIZATION(S): FDEP, SFWMD, USFWS, NRCS, and counties		
COUNTY(S): SFWMD Boundary		***TOTAL:*** $815,000
		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: **Dependent on:** TS55S **Critical to:** TS17M, TS26M, TS49S, TS66M **Associated with:** TS1I, TS13M, TS42S, TS53S, TS61I		***TOTAL:*** $ 650,000
START: 1997	***END:*** 1999	***APPROVED:*** 9/97 ***LAST REVISION:*** 8/98

DESCRIPTION: This is an interagency effort to develop a process and plan to improve agency decisions regarding the conservation, management, and restoration of lands. Major tasks include:

1 - implementation of GIS tools (FY97 - $400,000)
2 - functional assessment implementation/calibration (FY97 - $430,000)
3 - interagency coordination (FY97 - $200,000)

Funding needed for FY98 - $650,000; FY99 - $650,000. The process will identify how the roles and activities of each agency can be improved during the decision-making process. The process will also identify a mechanism for sharing information among agencies and the information required for making sound decisions. The plan will establish how to complement the process and identify specific goals, objectives, actions, responsible agencies and time lines. Mechanisms for feedback, maintenance and refinement of the plan will also be established.

RESTORATION BENEFITS: The goal is to facilitate and coordinate ecosystem-based management of natural and developed areas by the participating agencies.

Time Line and Fiscal Year Budget (in thousands of dollars) for Comprehensive Wetlands Conservation, Mitigation, and Permitting Strategy

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
EPA	165	650	650													1,465
Subtotal	165	650	650													**$1,465**

TITLE: Economic Analysis of Agricultural Land and Water Management			
SUBREGION : Total System	***PROJECT ID:*** TS10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Management	USDA $1,845,000	
PROJECT PLAN MANAGER: Caswell (202) 694-5500	***BASIS:*** 2	***TOTAL:*** $1,845,000	
LEAD ORGANIZATION(S): USDA- ERS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NRCS, ARS, IFAS/ES			
COUNTY(S): All		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to :** TS1,TS4, TS5, TS26, TS27 **Associated with:** TS25, TS29		***TOTAL*** : $1,845,000	
START: 1997	***END:*** 2004	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Economic analysis of regional agricultural activities as part of Everglades ecosystem restoration program. Assessments of allocations of land and water resources between agriculture, urban development and environmental services. Characterization of impacts of structural and non-structural options on land use, cropping patterns, water and chemical management, and the regional economy. Structural options could include canals, pumps, or reservoirs. Non-structural restoration policies could include easements, transfer of development rights or land acquisition. Estimation of economic trade-offs to agricultural producers, urban development, and environmental uses associated with land and water -use options and cropping practices.

RESTORATION BENEFITS: This project will contribute to the design of cost-effective policies to increase both the quantity and quality of water flowing to the Everglades ecosystem. Impacts on the agricultural sector and the regional economy of land retirement policies, water storage structures, and land-use changes will be available to decision makers.

Time Line and Fiscal Year Budget (in thousands of dollars) for
Economic Analysis of Agricultural Land and Water Management

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program			[redacted]													
Project																
ERS			100	200	300	250	250	200								1300
NRCS			50	55	60	65	65									295
IFAS/ES			50	50	50	50	50									250
Subtotal			200	305	410	365	365	200								**$1,845**

TITLE: Exotic Pest Plant Controls in South Florida Ecosystems			
SUBREGION : Total System	***PROJECT ID:*** TS11	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality, Habitat Protection/ Restoration Research	USDA: $9,832,000 **Dade Co.** 485,000	
PROJECT PLAN MANAGER: Center (954) 475-0541	***BASIS:*** 1	***TOTAL:*** $10,317,000	
LEAD ORGANIZATION(S): ARS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): IFAS/ES, NRCS, USFS , Dade Co.		***TOTAL:*** $1,190,000	
COUNTY(S): **All**		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS01, TS03, TS14, TS27, TS61 **Associated with:** TS4, TS5		***TOTAL:*** $9,127,000	
START: 1998	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Assist in developing and enacting mitigation requirements that encourage fast removal of melaleuca and other exotic pest plants from private property (Governor's Commission Recommendation Nos. 42, and 44). Management strategies and biological control agents will be developed that are efficient, economical, and environmentally safe. Biological control agents will be mass-reared or collected and re-distributed throughout infested areas or provided to appropriate resource managers for distribution. This involves quarantine isolation to exclude parasites and diseases (requiring quarantine facilities) of insects introduced to control melaleuca and other invasive plant species that hamper restoration efforts; release and establishment of biological control agents integrated into management systems for melaleuca and other invasive plants; evaluation of biological control efficacy in conjunction with broader overall studies on the autecology of invasive weeds, particularly as this pertains to effects of weed invasions on ecosystem functioning; and development of methods to establish or encourage replacement native plant species in area where invasive species have been removed or suppressed.

RESTORATION BENEFITS: The project will provide research and biological control agents essential to the suppression of invasive noxious plants that displace native species in restored ecosystems thereby thwarting restoration efforts; will assist in the re-establishment of diverse native plant communities and provide information critical to the development of incentives that encourage removal or replacement of invasive species on private properties that serve as staging areas for invasions into restored ecosystems.

Time Line and Fiscal Year Budget (in thousands of dollars) for Exotic Pest Plant Controls in South Florida Ecosystems

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Dade Co.		97	97	97	97	97										485
IFAS		60	60	60	60	60	60	60	60	60						540
ARS		1008	1008	1008	1008	1008	1008	1008	1008	1008						9,072
NRCS		15	15	15	15	15	15	15	15	10						130
USFS		10	10	10	10	10	10	10	10	10						90
Subtotal																**$10,317**

TITLE: Fire Management Plans for Public Lands			
SUBREGION : Total System	***PROJECT ID:*** TS13	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:***	FDEP $1,300,000 DOI $1,300,000	
PROJECT PLAN MANAGER: John Folks (850)414-9928	***BASIS:*** 3	***TOTAL:*** $2,600,000	
LEAD ORGANIZATION(S): FDACS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FDEP, NPS, USFWS, BIA, FGFWFC			
COUNTY(S): Total System		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** SW04, SW10 **Associated with:** SW09		***TOTAL:*** $2,600,000	
START: 2000	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The FDACS Division of Forestry, with input from the FDEP, FGFWFC, SFWMD, USFWS and BIA and local fire districts, will develop and implement, through their statutory and delegated authority addressing open burning, a Fire Management Plan for public lands. The plan (and associated model) will be based on a holistic, total ecosystem approach that will provide coordinated smoke management and assure prescribed burning will continue as a management tool in restoring and maintaining the fire-based ecosystem of South Florida.

RESTORATION BENEFITS: The plan will provide and assure the use of fire as a management tool; through the reduction of smoke related problems and wildfires, and the use of appropriate seasonal burns, in the restoration and maintenance of the South Florida ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Fire Management Plans for Public Lands

Agency	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
FDEP				550	175	125	120	120	110	100						1300
DOI				550	175	125	120	120	110	100						1300
Project																
Subtotal				1100	350	250	240	240	220	200						$2,600

TITLE: Florida Greenways System Implementation – Federal Involvement			
SUBREGION : Total System	***PROJECT ID:*** TS14	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	**USDA** $366,000	
PROJECT PLAN MANAGER: Debbie Caffin (904) 942-9376	***BASIS:*** 2	***TOTAL:*** $366,000	
LEAD ORGANIZATION(S): USFS, FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NRCS, IFAS/ES, ARS, ERS			
COUNTY(S): All		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS04, TS05, TS06 **Associated with:**		**USDA** $366,000 ***TOTAL:*** $366,000	
START: 1997	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Cooperate and communicate with the Florida Greenways Coordinating Council through the U.S. Forest Service and the regional greenways task force federal representatives in all aspects of agency programs: media; land acquisition and exchanges; management techniques; research projects; access; trails; etc. (Governor's Commission Recommendation No. 63).

RESTORATION BENEFITS: Take advantage of the organization which already exists through the Florida Greenways Coordinating Council. Assure a continuity of communications among various agencies and organizations having interests in the restoration of South Florida ecosystems. Other related issues and activities which must be coordinated include Federal/State land acquisition, ecosystem management, mitigation opportunities, land management, public education and involvement, and exotic/invasive weed management.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Greenways System Implementation – Federal Involvement

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS	15	15	15	15	15	15	15	15	15	15	15	15	15	15		210
FS	10	10	10													30
IFAS	5	5	5	5	5	5	5	5	5	5	5	5	5	5		70
ERS	2	2	2	2	2	2	2	2	2	2	2	2	2	2		28
ARS	2	2	2	2	2	2	2	2	2	2	2	2	2	2		28
Subtotal	34	34	34	24	24	24	24	24	24	24	24	24	24	**24**		**$366**

TITLE: Multi-Species Recovery Strategy			
SUBREGION : Total System	***PROJECT ID:*** TS19	***FINANCIAL REQUIREMENT:*** USFWS	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: Slack (561) 562-3909	***BASIS:***	***TOTAL:*** $25,600,000	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): EPA, USACE, USAF, USFS, NPS, NMFS, FGFC, FDEP, counties			
COUNTY(S): All		***TOTAL:*** $8,000,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $17,600,000	
START: 1995	***END:*** until complete	***APPROVED:*** 11/97	***LAST REVISION:*** 10/98

DESCRIPTION: The multi-species recovery strategy will address the recovery needs of all of the federally-listed threatened and endangered species in the South Florida ecosystem. This strategy consists of two parts. The first part is the preparation of the Recovery Plan that will be one of the first recovery plans specifically designed to meet the needs of multiple species that do not occupy similar habitats. The strategy will provide information to support the design and construction of projects associated with the restoration of the South Florida ecosystem. The second part of the strategy will be the implementation of the Plan. Implementation will be ongoing activities that will be integrated into all program activities of the FWS, other Federal State and local agencies, and Tribal governments ultimately conserving and recovering threatened and endangered species in South Florida.

RESTORATION BENEFITS: The 68 federally threatened and endangered species in the South Florida Multi-Species Recovery Plan are indicators of the health of the ecosystem and its component habitats. There are very few terrestrial or aquati communities in the South Florida Ecosystem that do not support one or more of these species or are not critical elements of their ecology. The recovery of most of these species will be indicative of the effectiveness of the coordinated restoration efforts.

Time Line and Fiscal Year Budget (in thousands of dollars) for Multi-Species Recovery Strategy

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Preparation																
Implementation																
Project																
Subtotal																**$25,600**

TITLE: Pollution Prevention			
SUBREGION : Total System	***PROJECT ID:*** TS22	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Mgmt.	USDA: $870,000	
PROJECT PLAN MANAGER: Ron Smola (561).682-2857	***BASIS:*** 2	***TOTAL:*** $870,000	
LEAD ORGANIZATION(S): NRCS, FDACS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): IFAS, ARS, ERS			
COUNTY(S): All		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE20 **Associated with:** SE15, SE19, CE22,		***TOTAL:*** $870,000	
START: 1999	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: In cooperation with the FDEP, FDCA, and the EPA, develop a pollution prevention and control program for the South Florida Ecosystem. This project will target the development of an enhanced urban and agriculture pollution prevention control program through public and private cooperation in the development of best management practices. Expand existing programs such as Farm-A-Syst Program, and develop new and innovative agricultural BMP's. Develop and provide information materials targeted to the urban populace to reduce pollution to the ecosystem. (Governor's Commission recommendation #31.)

RESTORATION BENEFITS: This project will result in a reduction of the release of pollutants to water bodies from urban and rural residences and agricultural producers.

Time Line and Fiscal Year Budget (in thousands of dollars) for Pollution Prevention

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
NRCS																
IFAS																
ARS																
ERS																
Project																
NRCS			100	120	120	120	120									
IFAS			50	50	50	50	50									
ARS			10	10	10	10	10									
ERS			2	2	2	2	2									
Subtotal			162	182	182	182	182									$870

TITLE: Supplemental Water Quality Treatment Technology Demonstration Projects			
SUBREGION : Total System	***PROJECT ID:*** TS23	***FINANCIAL REQUIREMENT:*** (Proposed)	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality and Habitat Protection	State: Federal:	
PROJECT PLAN MANAGER: Gray (561) 682-6919	***BASIS:*** 2	***TOTAL:*** $10,000,000 (Demonstration projects only)	
LEAD ORGANIZATION(S): SFWMD, FDEP		***APPROPRIATED TO DATE:*** State: $ 3,153,425	
SUPPORTING ORGANIZATION(S): USACE, NPS, EPA		Federal: $ 1,124,000	
COUNTY(S): Palm Beach, Broward, Dade, Hendry, Okeechobee		***TOTAL:*** $ 4,277,425	
		REMAINING FINANCIAL REQUIREMENT: State:	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL31, CE06, CE10 **Associated with:**		Federal: ***TOTAL:*** $ 5,722,575	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The purpose of these projects is to demonstrate the feasibility, define design criteria, and estimate long-term costs for a number of candidate water quality treatment technologies for reducing concentrations to levels that will not create adverse effects on (or an imbalance in) natural biological communities in the Everglades ecosystem. Stormwater Treatment Areas (STAs) are being designed to achieve an interim restoration target of 50 ppb phosphorus. Currently, the primary focus of Supplemental Technology projects is on reducing phosphorus concentrations to 10 ppb or less. This program will evaluate water treatment technologies that can be used: 1) as part of a treatment train in conjunction with STAs to reduce phosphorus concentrations below to 10 ppb or less, or 2) as stand-alone water quality treatment facilities. Candidate technologies include, but are not limited to, the following: managed wetlands, low-intensity chemical dosing, submerged aquatic vegetation/limerock, chemical treatment/direct filtration, chemical treatment/high-rate sedimentation, chemical treatment/dissolved-air floatation, microfiltration, and periphyton STAs. Based on recommendations developed by the Governor's Commission and the SFER Working Group, the need for water treatment technologies has been identified for the EAA (e.g., Everglades Program), the ECB/WPA, the Mod Waters Project (e.g., Water Control Structure S-9), the Canal 111 Project (e.g., Water Control Structure S-332), the Big Cypress Basin (Levee 28 Interceptor), the Caloosahatchee Basin, and the Upper East Coast. Depending on the location for implementation, inflow phosphorus concentrations may range from 20 to 150 ppb. Different technologies will likely be needed to handle site-specific conditions and requirements. Because of the many questions that must be answered before implementation of superior water quality treatment technologies (e.g., feasibility of achieving low P concentrations under a range of inflow concentrations; effectiveness at high flow rates; cost effectiveness; long-term performance and O & M costs; "marsh readiness" of effluent waters; permitability of technologies) and because of the many near-term needs and aggressive implementation schedules, funding is needed now to accelerate these demonstration projects.

RESTORATION BENEFITS: Ecosystem restoration benefits of these water quality treatment technologies will be improved water quality to receiving water bodies. Along with efforts to restore or maintain natural hydropatterns, these technologies will help to maintain or restore natural biological communities in the ecosystem.

NOTE: *Cost estimates above cover only the actual demonstration projects. Detailed design, construction and operation costs associated with implementation of full-scale water treatment technologies will require substantially greater investments.*

Time Line and Fiscal Year Budget (in thousands of dollars) for Superior Water Quality Treatment Technology Demos																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Federal	1218	1935														
State	824	300														
Subtotal	2042	2235	1830	2435	1458											**$10,000**

TITLE: Technical Assistance to Seminole and Miccosukee Indian Reservations			
SUBREGION : Total System	***PROJECT ID:*** TS24	***FINANCIAL REQUIREMENT:*** USDA	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management		
PROJECT PLAN MANAGER: Smola (561) 682-2857	***BASIS:***	***TOTAL:*** $3,850,000	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): IFAS			
COUNTY(S):		***TOTAL:*** $100,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS01, TS05M **Critical to:** SW03, SW14, TS85, TS86 **Associated with:** TS22,25,29,EAA7M		***TOTAL:*** $3,750,000	
START: 1998	***END:*** 2009	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Accelerate technical assistance to the Seminole and Miccosukee Indian Reservations to plan and implement resource management systems on a volunteer basis. Technical assistance will be provided at the direction of the Tribal Councils to each agricultural producer to assist in their planning, design, application and management of appropriate BMPs that will improve water quality, land stewardship, agricultural outputs, and the ecological integrity of the landscape.

RESTORATION BENEFITS: This project activity will improve water quality and availability through application of BMPs and other natural resource management techniques. Technical assistance will center upon surface and ground water management infrastructure, irrigation water management facilities, pasture and rangeland management systems, livestock grazing systems, and wildlife habitat improvement practices. Through the application of this project, comprehensive land management actions will be applied which will complement other south Florida restoration efforts currently underway.

Time Line and Fiscal Year Budget (in thousands of dollars) for Technical Assistance to Seminole and Miccosukee Indian Reservations

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS funded		50	50	50	50	50	50	50	50	50	50	50				550
NRCS unfunded		200	200	200	200	200	200	200	200	200	200	200	200			2,400
IFAS funded		75	75	75	75	75	75	75	75	75	75	75	75			900
Subtotal		325	325	325	325	325	325	325	325	325	325	325	275			**$3,850**

TITLE: Wetland Reserve Program			
SUBREGION : Total System	***PROJECT ID:*** TS27	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	NRCS $2,135,000	
PROJECT PLAN MANAGER: Greg Hendricks (561) 795-5451	***BASIS:*** 3	***TOTAL:*** $2,135,000	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:*** $ 210,000	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): All		***TOTAL:*** $ 210,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:**		NRCS $1,925,000	
Critical to:	TS04, TS05, TS5 TS26		
Associated with:	TS15, TS23, TS24	***TOTAL:*** $1,925,000	
START: 1997	***END:*** 2008	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Accelerate assist to private landowners participating in the 1996 Farm Bill, Wetland Reserve Program (WRP). WRP is a voluntary program to restore wetlands. Participating landowners can establish conservation easements of either permanent or a 30-year duration, or can enter into restoration cost-share agreements without easements. In exchange for permanent easements, the landowner receives payment up to the agricultural value of the land and 100 percent of the restoration cost for restoring the wetland. In exchange for 30-year easements, the landowner receives payment up to 75 percent of the agricultural value of the land, and 75 percent of the wetland restoration cost. Voluntary cost-share agreements without easements are for a minimum 10-years duration, and provide up to 75 percent of the restoration cost to restore the wetlands. Easements, when applicable establish limitations on how the land can be used during the contract period. Restoration cost-share agreements establish wetland protection and restoration as the primary land use for the duration of the agreement.

RESTORATION BENEFITS: Healthy and functioning wetlands are an essential part of a restored south Florida ecosystem. Wetlands provide habitat for migratory birds, threatened and endangered species, and important flora and fauna components. Wetlands contribute to the biological diversity, open space, floodwater retention, ground water recharge, and the buffering and filtration of nutrients. WRP potentially will increase the amount of wetlands available, as well as protect and enhance wetland ecosystems throughout south Florida's agricultural landscape.

Time Line and Fiscal Year Budget (in thousands of dollars) for Wetland Reserve Program																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS unfunded	100	110	120	135	145	160	175	195	215	235	260	285				2,135
Subtotal																**$2,135**

TITLE: Regional Village and Public Outreach Communication System			
SUBREGION : Total System	***PROJECT ID:*** TS38	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Public Information and Education	***BUDGET CATEGORY:*** Public Outreach		
PROJECT PLAN MANAGER: Burger (305) 348-1665	***BASIS:***	***TOTAL:*** $200,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): OED			
SUPPORTING ORGANIZATION(S): USACE, SFWMD		***TOTAL:*** $ 46,000	
COUNTY(S): All		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $154,000	
START: 1997	***END:*** 2008	***APPROVED:*** 8/96	***LAST REVISION:*** 9/98

DESCRIPTION: Phase One: Purchase hardware and software for regional village information and communication management system. Work with the Information Management Council to upgrade web server system hardware/software and required operational/maintenance costs. Phase Two: Work with the Public Outreach Steering and Support Team to design and develop a state of the art Task Force home page on the Internet. WEB presentations will be expanded for new media, such as full animation segments, color images of restoration activities, and other electronic technologies via the Internet. The World Wide Web access to South Florida information will grow as a medium of communication. New developments in access tools, new bandwidth for faster access and the interest in a multi-media augmentation will drive the development of new WEB sites and expansion to existing WEB sites. Funding for the staff, hardware and software and system O&M will be required throughout the project.

RESTORATION BENEFITS: Phase one greatly enhances collaborative upgrade communication and also provides a medium to further meet the requirements of the Water Resources Development Act regarding public participation. Web users are very efficient in seeking and transferring information. Agency labor to service requests is drastically reduced because one installation of information can support thousands of requests. Access to information can be supported for twenty-four hours a day via the Internet. Phase two will move beyond administrative public information to the continued development and enhancement of the home page, listservers and video teleconferencing capabilities.

Time Line and Fiscal Year Budget (in thousands of dollars) for Regional Village and Public Outreach Communication System

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase 1																
Phase 2																
Project																
OED	20	12	14	14	14	14	14	14	14	14	14	14	14	14		$200
Subtotal	20	12	14	14	14	14	14	14	14	14	14	14	14	14		**$200**

TITLE: Models and Model Enhancements			
SUBREGION : Total System	***PROJECT ID:*** TS40	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Water Quality, Habitat Protection, and Natural Resources Management	USGS $13,545,000 NPS 1,940,000	
PROJECT PLAN MANAGER: Higer, 561-687-6560	***BASIS:*** 2	***TOTAL:*** $15,485,000	
LEAD ORGANIZATION(S): USGS,		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USCOE, NPS, SFWMD		USGS $8,359,000 **NPS 824,000**	
COUNTY(S): Broward, Collier, Dade, Hendry, Monroe		***TOTAL:*** $9,183,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		USGS $5,186,000 **NPS 1,116,000** ***TOTAL:*** $6,302,000	
START: 1995	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This program supports modeling and modeling requirements for regional models being developed or maintained by the SFWMD, the USACE, and the ENP. The program includes the following topics of research and applications: evapotranspiration modeling of the Everglades; seepage modeling under protective levees; surface geophysical delineation of fresh/saltwater interfaces; ground/surface water exchange fluxes in the Everglades; geochronology of the Buttonwood Ridge; defining and modeling vegetative resistance to flow; quantity of flow from the Shark River, Harney River, and Broad River; quantity of flow through the Seminole and Miccosukee Tribal Reservations; measurement of surface and ground-water flows from the Everglades into Florida Bay; modeling sheet flow entering Florida Bay; measurement of ground-water discharges into Biscayne Bay; measurement of surface water flow into Biscayne Bay and intercoastal waters; measurement of canal and wetland interactions; and defining the hydrogeology of the surfical aquifer in southwestern Florida. Hydrologic process results are integrated into the sheet flow model. Flow measurements continue and are expanding into ungaged areas. Technical work is shifting from field to analysis. Technical products are in preparation and synthesis products are being planned. Florida Bay boundary conditions are being provided for use in management models.

RESTORATION BENEFITS: Supports Across-Trophic Level System Simulation (ATLSS) Model, the Everglades Landscape Model (ELM), and the Natural Systems Model which are required for science-based decision making for the restoration of south Florida.

Time Line and Fiscal Year Budget (in thousands of dollars) for Models and Model Enhancements																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USGS																15,485
Subtotal																**$15,485**

TITLE: Distributed Information System and Mapping			
SUBREGION : Total System	***PROJECT ID:*** TS41	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** All	USGS $7,901,000	
PROJECT PLAN MANAGER: Higer, 561-687-6560	***BASIS:*** 2	***TOTAL:*** $7,901,000	
LEAD ORGANIZATION(S): USGS,		***APPROPRIATED TO DATE:*** USGS $4,039,000	
SUPPORTING ORGANIZATION(S): FDEP, SFWMD, DOI			
COUNTY(S): All		***TOTAL:*** $4,039,000	
		REMAINING FINANCIAL REQUIREMENT: USGS $3,862,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $3,862,000	
START: 1995	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This program provides digital mapping products and a data base with established transfer format definitions and spatial integration that promotes dissemination of scientific data and information in a cost effective manner. Cross sections of the digital data and other information available from ecosystem research will be accessible through a USGS gateway on the World Wide Web. The primary products from the program will include color infrared digital orthophoto maps, vegetative and elevation digital format maps, technical and synthesis reports, model results, audio and video explanations, and more.

RESTORATION BENEFITS: Mapping and informational products will enhance regional hydrologic models and landscape models such as the ATLSS and ELM. These are needed for the development of criteria to evaluate the success of restoration efforts. Research results and data will be easily accessible to everyone and provide a user-friendly means to learn about south Florida ecosystem research for management application.

Time Line and Fiscal Year Budget (in thousands of dollars) for Distributed Information System and Mapping																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USGS																7,901
Subtotal																**$7,901**

TITLE: High Density Topographic Surveys			
SUBREGION : Total System	***PROJECT ID:*** TS42	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Natural Resource Management	NPS $8,325,000	
PROJECT PLAN MAANGER: Higer (561) 687-6560	***BASIS:*** 2	***TOTAL:*** $8,325,000	
LEAD ORGANIZATI ON(S): USGS, NPS		***APPROPRIATED TO DATE:*** NPS $2,360,000	
SUPPORTING ORGANIZATION(S): USACE, SFWMD			
COUNTY(S): all		***TOTAL:*** $2,360,000	
		REMAINING FINANCIAL REQUIREMENT: NPS $5,965,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $5,965,000	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: To model sheet flow, highly accurate elevation data that defines the surface topography is required. It is also a critical input parameter to the landscape models, Natural Systems Model, and hydrologic models. These data are necessary for calculating water surface elevation, slope, depth, velocity, and direction of flow. Accuracy requirements are so stringent that any standard available data products would not suffice for this modeling application due to the flat terrain. Good progress is being made to define topography in ENP, South Dade County, and WCA's.

RESTORATION BENEFITS: These data represent a critical need for the infrastructure changes that will be part of the south Florida restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for High Density Topographic Surveys																
Task	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Unprog	Total
Program																
Project																
NPS	1600	1600	1600	1600												8,325
Subtotal																**$8,325**

TITLE: Limitations of Environmental Stresses and Physiological Responses on Crop Productivity			
SUBREGION : Total System	***PROJECT ID:*** TS43	***FINANCIAL REQUIREMENT:*** ARS $250,000	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	***TOTAL:*** $250,000	
PROJECT PLAN MANAGER: Sinclair (352) 392-6180	***BASIS:*** Task Force Priority 3	***APPROPRIATED TO DATE:*** ARS $70,000	
LEAD ORGANIZATION(S): ARS		***TOTAL:*** $70,000	
SUPPORTING ORGANIZATION(S): IFAS			
COUNTY(S): All		***REMAINING FINANCIAL REQUIREMENT:*** ARS $180,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **GL39, GL40** **Associated with:**		***TOTAL:*** $180,000	
START: 1995	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: ARS scientists in Gainesville have developed a family of simple, mechanistic crop growth models that have proved beneficial in evaluating and predicting crop responses to the environment. These models have predicted crop responses to soil water availability and nutrient availability. Australian scientists have proposed extending this modeling approach to sugarcane.

Research has been initiated to identify sugarcane germplasm that might have the potential to withstand flooded conditions. The approach is to search for sugarcane lines that have well developed aerenchyma cells in their roots to facilitate oxygen transport when the roots are flooded.

RESTORATION BENEFITS: Models already in existence can be used to help predict evapo-transpiration and nutrient runoff impacts of several crop management options throughout the South Florida ecosystem. If this work is extended to higher water table conditions for sugarcane then these benefits can be extended to the Everglades Agricultural Area. Knowledge of agricultural evapo-transpiration and nutrient runoff could then be incorporated by hydrologists into regional and system-wide hydrological models. Since aerenchyma are critical in allowing crop plants such as rice to be productive under flooded or near-flooded conditions, the incorporated of this trait into commercial sugarcane lines opens the possibility of allowing sugarcane to be grown also under high water table conditions. The development of sugarcane lines with this trait would greatly expand the options for the water management of sugarcane fields. In particular, the necessity of pumping water from sugarcane fields following high rainfall events might be greatly decreased, or eliminated completely.

Time Line and Fiscal Year Budget (in thousands of dollars) for Limitations of Environmental Stresses and Physiological Responses on Crop Productivity

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
ARS																
Project																
ARS	35	35	35	35	35											175,000
Subtotal																**$175,000**

TITLE: Ecosystem History			
SUBREGION : Total System	***PROJECT ID:*** TS44	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	USGS - $5,597,000	
PROJECT PLAN MANAGER: Aaron Higer (561) 687-6560	***BASIS:*** 2	***TOTAL:*** $5,597,000	
LEAD ORGANIZATION(S): USGS,SFWMD		***APPROPRIATED TO DATE:*** USGS - $3,091,000	
SUPPORTING ORGANIZATION(S): ENP			
COUNTY(S): All		***TOTAL:*** $3,091,000	
		REMAINING FINANCIAL REQUIREMENT: USGS - $2,506,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS40 **Associated with:** TS53		***TOTAL:*** $2,506,000	
START: 1995	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This program examines floral and faunal remnants in dated material from sediment cores to reconstruct the historic South Florida ecosystem and to provide an understanding of past changes in the system. The products from this program are essential for the completion of ecosystem models and for development of indicators of restoration success. Technical work is shifting from field to analytical. Technical products are in preparation and synthesis products are being planned.

RESTORATION BENEFITS: This science effort will provide restoration success targets.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ecosystem History																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USGS																5,597
Subtotal																**$5,597**

TITLE: Biological Control and Ecology of Invasive Pest Plants			
SUBREGION : Total System	***PROJECT ID:*** TS50	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Water Quality, Habitat Protection/ Restoration, Research	USDA: $9,067,000 others: 1,724,000	
PROJECT PLAN MANAGER: Center (954) 475-0541	***BASIS:*** 1	***TOTAL:*** $10,791,000	
LEAD ORGANIZATION(S): ARS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, USACE, SFWMD, NRCS, USFS		USDA: $1,836,000 others: 925,000	
COUNTY(S): All		***TOTAL:*** $2,761,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS03 **Critical to:** TS11 **Associated with:** TS61 TS63		USDA: $7,231,000 others: 799,000 ***TOTAL:*** $8,030,000	
START: 1997	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Expand research on the use of biological control agents to control melaleuca, hydrilla, waterhyacinth, waterlettuce, climbing ferns, and other invasive species that interfere with ecosystem restoration efforts. Research will develop safe biological control agents that stress these invasive weeds, and develop management strategies that are efficient, economical, and environmentally sound. The research includes field studies overseas; safety studies in domestic quarantine facilities; release and field colonization technique development; autecology of the targeted weeds, particularly with regard to the effects of the introduced biocontrol agents; development of methods to facilitate recovery of native species after removal of the exotics; and development of integrated management systems incorporation biological control agents.

RESTORATION BENEFITS: Expanded research efforts will increase the numbers of biological control agents available and will accelerate the efficient, economical, and environmentally sound reduction of infestations of invasive pest plant species as well as reduce their rate of spread. Water flow will be increased in many drainages and native habitat will be reclaimed, thus effectively increasing diversity of natural communities. Autecological studies of the invading species will aid in learning why some systems seem more susceptible than others and how to better protect these systems from unwanted plants. These studies will also increase our understanding of the biology of these invasive plants. This increased knowledge base is critical to identifying exploitable weakness of these species that can be used to develop affective management strategies.

Time Line and Fiscal Year Budget (in thousands of dollars) for Biological Control and Ecology of Intrusive Pest Plants

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	65	65	65													195
FDEP	250	170	109	100	100	100	100									929
SFWMD	150	225	225													600
ARS	783	1008	1008	1008	1008	1008	1008	1008	1008							8,847
NRCS	10	15	15	15	15	15	15	15	15							130
FS	10	10	10	10	10	10	10	10	10							90
Subtotal	1268	1493	1493	1133	1133	1133	1133	1033	1033							**$10,791**

TITLE: Geodetic Vertical Control Surveys			
SUBREGION : Total System	***PROJECT ID:*** TS52	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** Monitoring, Infrastructure Invest.		
PROJECT PLAN MANAGER: Randy Harrell **(850) 488-2427**	***BASIS:*** **1**	***TOTAL:*** $2,155,500	
LEAD ORGANIZATION(S): **FDEP**		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NOAA ,NPS, SFWMD, USGS			
COUNTY(S): Broward, Charlotte, Collier, Dade, Lee, De Soto, Glades, Hendry , Highlands, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie		***TOTAL:*** **0**	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on :** **Critical to :** 4-4-I, 7-3-I, 7-7-I, T41S **Associated with:** 5-6-M,6-4-I,6-6-I,7-10-M		***TOTAL:*** **$2,155,500**	
START: 1999	***END:*** 2004	***APPROVED:*** 5/97	***LAST REVISION:*** 8/98

DESCRIPTION: 1, 250 Miles of Second-order, Class I Geodetic Vertical Control Surveys

RESTORATION BENEFITS: Improved accuracy and precision of geodetic vertical control data is an acute need in South Florida. Improved geodetic vertical surveys are of importance for design and performance of infrastructure projects, and for improved accuracy of natural system data, analysis, modeling and restoration measures.

Time Line and Fiscal Year Budget (in thousands of dollars) for Geodetic Vertical Control Surveys

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ist 250 Miles Level Line																
2nd 250 Mile Level Line																
3rd 250 Mile Level Line																
4th 250 Mile Level Line																
5th 250 Mile Level Line																
Project																
State		**203**	**209.1**	**215.35**	**221.8**	**228.5**	**0**									1077.75
Federal		**203**	**209.1**	**215.35**	**221.8**	**228.5**	**0**									1077.75
Subtotal		**406**	**418.2**	**430.7**	**443.6**	**457**	**0**									**$2,155.5**

TITLE: Ecosystem History: Studies of Land Use and Ecological Change			
SUBREGION : Total System	***PROJECT ID:*** TS53	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research, Information, Management and Assessment		
PROJECT PLAN MANAGER: Tim Patterson (850) 488-4910	***BASIS:*** 3	***TOTAL:*** $1,062,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDEP, USGS			
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Broward, Charlotte, Collier, Dade, Lee, DeSoto, Glades, Hendry, Highlands, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, and St. Lucie		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** T41S **Associated with:**		***TOTAL:*** $1,062,000	
START: 1998	*END:* 2004	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Ecosystem History: Studies of land use and ecological change using archived records transformed to digital data and analyzed through the use of imaging, data base and GIS technologies.

RESTORATION BENEFITS: Goals and objectives for ecosystem restoration require consideration of the original condition of surface resources at the time of initial European contact, or first historic record. Subsequent incremental change up to the present also provides knowledge important for restoration objectives.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ecosystem History: Studies of Land Use and Ecological Change

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Process Design																
Development																
Data Acquisition																
Data Analysis																
Project																
State		123	82	82	82	82	82	80								531
Federal		123	82	82	82	82	82	80								531
Subtotal		246	164	164	164	164	164	160								**$1,062**

TITLE: Assessment of Endocrine-Disrupting Contaminants in the Florida Everglades			
SUBREGION : Total System	***PROJECT ID:*** TS54	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research, Water Quality and/or Habitat Protection		
PROJECT PLAN MANAGER: Don Axelrad 850-414-1347	***BASIS:*** 1	***TOTAL:*** $644,000	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): EPA,FDACS,FGFC ,NPS, SFWMD, USGS,USFWS, UF			
COUNTY(S): Broward, Charlotte, Collier, Dade, Lee, De Soto, Glades, Hendry , Highlands, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie		***TOTAL:*** 0	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS22, TS41 **Associated with:** TS24		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $644,000	
START: 1999	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Breeding populations of long-legged wading birds have declined by over 90% in the Everglades since 1940, and a massive restoration effort is now underway aimed at ameliorating the hydrological conditions thought to have precipitated the decline. However, wading bird reproduction now remains depressed even during years with favorable hydrological conditions, and the populations are showing reproductive anomalies that are consistent with endocrine disruption (e.g., late breeding, low threshold to nest abandonment, poor reproductive success, large proportion of the population inactive during the breeding season, possible sex ratio skew). In addition, endocrine disrupting contaminants (EDCs - e.g. pesticides, dioxins, PCBs, mercury) have been implicated in reproductive anomalies of largemouth bass and Florida panthers within the ecosystem.

RESTORATION BENEFITS: Restoration of breeding populations of wading birds is one of the key objectives for south Florida ecosystem restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for Assessment of Endocrine-Disrupting Contaminants in the Florida Everglades

Task	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Unprog	Total
Program design																
Data Collection																
Analysis																
Produce Report																
Project																
State		20	20	20	20											80
Federal		189	186	189	0											564
Subtotal		209	206	209	20											$644

TITLE: Natural System Boundary Alternatives and Natural Lands Information System			
SUBREGION : Total System	***PROJECT ID:*** TS55	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Information Management/Assess		
PROJECT PLAN MANAGER: Haddad (813) 896-826	***BASIS:*** 1	***TOTAL:*** $310,000	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): EPA, SFWMD, USACE			
COUNTY(S): Broward, Charlotte, Collier, Dade, De Soto, Glades, Hendry, Highlands, Lee, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St.Lucie		***TOTAL:*** $0	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS11, TS34, TS41 **Associated with:** TS35, CE06, SE7		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $310,000	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project identifies and characterizes the natural areas and potential management boundaries of the south Florida ecosystem at a management level to assist in the priorities for land and water management. The project provides information that serves to maintain existing ecological functions and restores degraded ecological systems in order to have a sustainable ecosystem. This is currently an unfunded multi-institutional effort under the request of the Governor's Commission for a Sustainable South Florida. The effort is ARCVIEW GIS-based and includes selected natural systems information and other management-oriented data that can assist in planning, acquisition, and management for the south Florida ecosystem. The resultant ARCVIEW tool will allow investigators and managers to view priority natural and restorable places based on the relative ranking of management criteria. A prototype for south Florida has been developed and endorsed by the Governor's Commission. The tool contains land and wetland polygons representing natural, restorable places or places considered for purchase and describes the status of each polygon in terms of management criteria such as hydrologic conditions, habitat quality and use, wildlife distribution, and water quality. The Florida Department of Environmental Protection's Florida Marine Research Institute is conducting the data gathering and GIS system development in cooperation with the SFWMD, USEPA, FDEP Water Facilities Division, and USACE through the Comprehensive Wetlands and Permitting Strategy. The funding request is for a dedicated staff person, travel, and software refinement.

RESTORATION BENEFITS: This is a high priority project requested by the Governor's Commission for Sustainable South Florida. The interactive ARCVIEW GIS application will make accessible to public and private users information about natural resources and human impacts. This will facilitate both strategic and action planning for land acquisition, management, and restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for Natural System Boundary Alternatives and Natural Lands Information System

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Natural system boundaries app.																
Natural lands information sys.																
Info. update/ Maintenance																
CDROM/Internet for distribution																
Interactive natu-ral system app.																
Project																
State		65	45	45												155
Federal		65	45	45												155
Subtotal		130	90	90												**$310**

TITLE: Identification and Documentation of Ecosystem Reference Areas as a Biodiversity Monitoring Framework			
SUBREGION : Total System	***PROJECT ID:*** TS56	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** **Research, Information Managment and Assessment**		
PROJECT PLAN MANAGER: Leo Minasian (904) 488-8346	***BASIS:*** **1**	***TOTAL:*** $200,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDEP, NBS, NPS, USFWS, EPA			
SUPPORTING ORGANIZATION(S): GFC, NOAA, NRCS, SFWMD			
COUNTY(S): Broward, Charlotte, Collier, Dade, Lee, De Soto, Glades, Hendry , Highlands, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on :** **Critical to :** **Associated with:**	TS41	***TOTAL***: $200,000	
START: 1999	***END:*** 2000	***APPROVED:*** 5/97	***LAST REVISION:*** 08/98

DESCRIPTION: Biodiversity conservation needs a monitoring program which accounts for status and change in our best remaining natural areas. Ecosystem reference areas (ERAs), defined, identified and studied at appropriate scales, would serve as benchmarks for ecological integrity and change, as is now done for aquatic environments through FDEP's Biocriteria Program. This hierarchical framework of ERAs for the South Florida Ecosystem will address biodiversity in a broad ecological range of upland and wetland communities throughout South Florida, where biodiversity, endangerment and the need for knowledge is greatest. This proposes a two-year study to to develop integrative concepts and methodologies, and to identify highest quality remnant ecosystems/natural communities, on regional and local scales. These ERAs will help us focus future monitoring and research, to answer questions and aid in decisions about other ecosystems which are of comparable type, but usually lower quality.

RESTORATION BENEFITS: ERAs will serve as benchmarks for ecological integrity, biodiversity, landscape character, and similar measures representing minimal impairment of natural systems. Knowledge of ecosystem structure and function from such areas is an essential basis for ecosystem management and restoration objectives.

Time Line and Fiscal Year Budget (in thousands of dollars) for Identification and Documentation of Ecosystem Reference Areas as a Biodiversity Monitoring Framework

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Process Design, analysis and Development																
Project																
State		100														100
Federal		100														100
Subtotal		200														**$200**

TITLE: Integrated Management Program for Invasive Species within High Quality Natural Areas of South Florida			
SUBREGION : Total System	***PROJECT ID:*** TS61	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Mgmt/Habitat Protection		
PROJECT PLAN MANAGER: Bill Zattau 904/232-2215	***BASIS:***	***TOTAL:*** $34,000,000	
LEAD ORGANIZATION(S): USACE, SFWMD, ENP, BCNP, FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ARS, BIA, DOI, EPA, FDACS, FGFWFC, FDOT, IFAS/ES, NPS, NRCS, USDA, USFWS, USFS, USGS			
COUNTY(S): All		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS11 **Critical to:** TS31 **Associated with:** TS01, GL03, SW15, CE09		***TOTAL:*** $34,000,000	
START: 1999	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Implementation of a coordinated program of invasive species management in high quality natural areas of the south Florida ecosystem. This program will focus on efforts to protect such high quality natural areas as Everglades National Park and Big Cypress National Preserve. It will include management of invasives inside these natural areas and in adjacent lands to prevent re-infestation. The program will concentrate on actual removal operations targeting invasive species, such as melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina equistifolia)*, Brazilian pepper (*Schinus terebinthifolius*), latherleaf (*Colubrina asiatica*) and the old world climbing fern (*Lygodium micorphyllum*). An intergrated pest management strategy will be utilized relying heavily upon proven chemical control, mechanical control, biological control and environmental manipulation techniques. In the absence of such, new and/or emerging techniques will be developed and/or refined to provide the array of management methods necessary to meet the program goals. Additional program components may include the following: delineation of the extent of invasive plant populations; pre- and post-treatment site documentation; post-treatment monitoring and control of invasive species regrowth; and replanting with native species. Work may begin in FY 98 and continue through FY 02.

RESTORATION BENEFITS: The spread of invasive exotic species is producing profound environmental consequences in high quality natural areas of the South Florida ecosystem, such as the Everglades National Park and Big Cypress National Preserve. As invasives are controlled and deteriorated areas restored, beneficial vegetative communities will be reestablished. Native plant and animal diversity will return, with a resultant shift to a healthy ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Integrated Management Program for Invasive Species within High Quality Natural Areas of South Florida

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
ENP			3000	3000	1500	1500	1200									10200
BCNP			1000	1000	500	500	400									3400
SFWMD			4000	4000	2000	2000	1600									13600
FDEP			750	750	375	375	300									2550
DOI-BIA			750	750	375	375	300									2550
Other/Misc.			500	500	250	250	200									1700
Subtotal			10000	10000	5000	5000	4000									$34,000

TITLE: Public Education for the Restoration Project

SUBREGION : Total System	***PROJECT ID:*** TS62	***FINANCIAL REQUIREMENT:*** $25,000 match (in kind contribution by Env. Ed. Director, Env. Ed specialist and graphics staff and printing, available awaiting federal match.)
PROGRAM CATEGORY: Public Education	***BUDGET CATEGORY:*** Natural Resource Management	***TOTAL:*** $50,000
PROJECT PLAN MANAGER: Jim Lewis (904) 488-9334	***BASIS:*** 2 and 3	***APPROPRIATED TO DATE:***
LEAD ORGANIZATION(S): FDEP		
SUPPORTING ORGANIZATION(S): SFWMD/EPA/COE/Audubon		***TOTAL:*** $0
COUNTY(S): All		***REMAINING FINANCIAL REQUIREMENT:*** Federal partner to be determined: $25,000
LINKED PROJECTS: **Dependent on:**		
Critical to:		FDEP: $25,000
Associated with: TS30, TS33		***TOTAL:*** $50,000
START: 1999	***END:*** **2001**	***APPROVED:*** 11/97 ***LAST REVISION:*** **2/98**

DESCRIPTION: Develop public education materials and programs for the overall Ecosystem Restoration effort, but with special concentration on each of the individual sub-regions. The effort will include, but would not necessarily be limited to materials and programs with the multiple aim of educating local citizens on what is being done, why it is being done, and how they can become involved and help in the effort. Any material or program developed under this effort must show how the restoration will affect citizens in the area or sub-region as well as how they would be adversely affected if it is not done. Educational emphasis would be placed on the benefits of the restoration to the entire sub-regional ecosystem. Products would include publications, development of local volunteer groups and programs to undertake community activities that educate the local population. Other means of bringing the message to the public include educating local media (print and broadcast) on the importance of the effort. Education staff would work with the Sub-region teams to develop programs that appropriately reflect the key issues and priorities of the sub-region.

RESTORATION BENEFITS: On-the-ground restoration will be much more difficult if the citizens who live in and around the area being restored do not understand, or support, the activities being undertaken. Properly conducted public education activities will increase citizen support for, and assistance with, the restoration activities for the South Florida Ecosystem as a whole and for the individual sub-regions. A citizenry that understands the reasons for the restoration effort and how it will benefit them, will be more willing to support--and even to help through volunteer activities--the effort. The result will be fewer delays in the implementation of projects in the sub-regions because of confrontation and controversy over the merits of the restoration effort.

Time Line and Fiscal Year Budget (in thousands of dollars) for Public Education for the Restoration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Development																
Implementation																
Project																
State		25														25
Federal		25														25
Subtotal																**$50**

TITLE: Lygodium Microphyllum Control			
SUBREGION : Total System	***PROJECT ID:*** TS63	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management/Science	***BUDGET CATEGORY:*** Natural Resource Management		
PROJECT PLAN MANAGER: Dan Thayer (561) 687-6129	***BASIS:*** 2	***TOTAL:*** $2,960,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE, FDEP, USDA		SFWMD: $85,000	
COUNTY(S): All		FDEP: $20,000	
		TOTAL: $105,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS11 **Associated with:** TS03		***TOTAL:*** $2,750,000	
START: 1998	***END:*** 2011	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: *Lygodium microphyllum* (Old World climbing fern), native to Australia, Asia and Africa was first found in Florida in the late 1960s. From its introduction site near the Martin/Palm Beach county line, this exotic twining fern has now spread into more than 39,000 acres of undisturbed south Florida wetlands. Undetected in 1990, *Lygodium microphyllum* now occupies more than 17,000 acres of the Loxahatchee National Wildlife Refuge.

Lygodium microphyllum can climb tens of meters into cypress forests, overtop and smother everglades tree islands, and spread horizontally into open wetland marshes. Once established, this plant seriously alters fire ecology. Prescribed burns and wildfires that normally terminate at cypress sloughs in the wet season now continue through. Burning mats of fern break free during fires, and are kited away by heat plumes, leading to distant fire spotting. Additionally, the plant acts as a "ladder" carrying fire into native tree canopies. Preliminary data on spore counts (724 spores/cubic meter/hour) indicates that *Lygodium microphyllum* is capable of long distance dispersal. Plants have recently been discovered in Collier County's Fakahatchee Strand.

This project will develop chemical and biological controls for *Lygodium*. Preliminary herbicide trials have resulted in variable control, and long-term results are not yet available. Investigations into herbicidal and physical control methods need to be explored further in areas where *Lygodium microphyllum* already has a strong foothold. The successful establishment of biological controls will be important in reducing the exponential rate of expansion now occurring in south Florida. The potential for biocontrol of *Lygodium microphyllum* is high due to few native and economic plant conflicts. Preliminary and brief examinations of a few populations in its native range have already identified several natural enemies. Biocontrol is essential if this invader is to be effectively contained, much less controlled.

RESTORATION BENEFITS: The uncontrolled expansion of *Lygodium microphyllum* in south Florida constitutes a serious threat to the Everglades ecosystem. Ecosystem restoration benefits of *Lygodium microphyllum* control research will be conservation of native plant communities and improved maintenance of historic fire regimes.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lygodium Microphyllum Control																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Biocontrol	0	75	75	150	150	150	150	150	150	150	150	150	150	150		
Moniitoring	15	0	15	50	50	50	50	50	50	50	50	50	50	50		
Herbicide Trials	10	10	10	50	50	50	50	50	50	50	50	50	50	50		
Subtotal																**$2,960**

Note: FY 97,98 & 99 are actual appropriations. Out-year dollars are projections of need.

TITLE: The Governor's Commission for a Sustainable South Florida			
SUBREGION : TS	***PROJECT ID:*** TS66	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Management	Federal: $1,003,707 In-kind match: $1,369,873	
PROJECT PLAN MANAGER: Kranzer (941) 338 2929	***BASIS:*** 2	***TOTAL:*** $2,373,580 per year	
LEAD ORGANIZATION(S): FDEP, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NOAA, DCA, SFERTF, USEPA, Americorps, DACS, Audubon, SFRPC		Federal: $1,003,707 In-kind match: $1,369,873 ***TOTAL:*** $2,373,580 From June 1994-June 30 1999	
COUNTY(S): All		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:***	
START: 1994	***END:*** When no longer needed	***APPROVED:***	***LAST REVISION:*** 11/98

TBD Commission is currently authorized through June 1999.

DESCRIPTION: The Governor's Commission for a Sustainable South Florida was created by Executive Order 94-54 to make recommendations for achieving a healthy Everglades Ecosystem that can coexist and be mutually supportive of a sustainable South Florida economy and quality communities. Moreover, the Commission is specifically referenced in the 1996 Water Resources and Development Act as a body to receive guidance from in the development of the Comprehensive Plan for the Restudy of the central and Southern Florida Project. Since its inception, the Commission has set a precedent in consensus building resulting in the unanimous adoption of three documents (Initial Report, A Conceptual Plan for the C&SF Restudy, and the Interim Report for the C & SF Restudy), which set the vision and framework for sustainability in the South Florida region. The Commission will be responsible for completing a number of projects including a sustainability video in December 1998, a supplement to the Initial Report that presents a conceptual plan for the human system, and a second report to the COE on the Restudy. By Executive Order, Commission members are appointed to two-year terms, with the opportunity for reappointment. The Commission will continue to meet until June 30, 1999.

RESTORATION BENEFITS: The Commission is critical to building consensus among various interests in South Florida. One of the roles of the Commission is to improve coordination among and within the private and public sectors regarding activities impacting the Everglades ecosystem. To accomplish this, the Commission is involved in many efforts with the Working Group, such as public outreach strategies, social science issues, and advisory work with the Restudy. It is also charged with developing recommendations to improve the quality of life in South Florida, including the economy, environment and society. Through these recommendations, it has spurred the development and subsequent adoption of the sustainable communities legislation, and Eastward Ho! Initiative geared toward reducing urban sprawl in Dade, Broward and Palm Beach Counties. The Commission will continue to provide guidance on the integration of land use and water planning issues as they relate to the restoration of the Everglades ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for The Governor's Commission for a Sustainable South Florida																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Commission																
Project																
																295,044
Subtotal																**295,044**

TITLE: Mercury, Geochemistry, and Nutrient Process Studies			
SUBREGION : Total System	***PROJECT ID:*** TS67	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	USGS $8,038,000	
PROJECT PLAN MANAGER: Higer, 561-687-6560	***BASIS:*** 1	***TOTAL:*** $8,038,000	
LEAD ORGANIZATION(S) USGS, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): WIDNR, USEPA		USGS $4,916,000	
COUNTY(S): Broward, Dade, Monroe, and Palm Beach		***TOTAL:*** $4,916,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		USGS $3,122,000	
		TOTAL: $3,122,000	
START: 1995	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This program is determining the effect that environmental factors such as concentration of dissolved organic carbon, nutrients, and sulfur as well as hydrologic conditions have on the transport, sedimentation, volatilization, and methylation of mercury in the Everglades and its ultimate entry into the food chain. The results will be useful for predicting the effects of restoration on environmental mercury levels in the Everglades. Process studies are shifting from field to analytical work. Technical products are in preparation and synthesis products are being planned. Long-term monitoring networks are being designed.

RESTORATION BENEFITS: This effort will provide managers with geochemical process information to help make crucial decisions on changes to the infrastructure in South Florida.

Time Line and Fiscal Year Budget (in thousands of dollars)for Mercury, Geochemistry, and Nutrient Process Studies																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USGS																8,038
Subtotal																**$8,038**

TITLE: Coordinated Management Program For Invasive Plant Species On Public And Private Lands In South Florida			
SUBREGION : *Total System*	***PROJECT ID:*** TS83	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Mgmt.		
PROJECT PLAN MANAGER: Bill Zattau 904/232-2215	***BASIS:*** 2,3	***TOTAL:*** $40,000,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ARS, BCNP, BIS, DOI, ENP, EPA, FDACS, FDEP, FGFWFC, FDOT, IFAS/ES, NPS, NRCS, SFWMD, USDA, USFWS, USFS, USGS			
COUNTY(S): All		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01, TS03, TS11, GL03		***TOTAL:*** $40,000,000	
START: 1999	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Implementation of a coordinated program of invasive species management on public and private lands of the South Florida ecosystem that are not included in the project targeting high quality natural areas. The program will concentrate on actual removal operations targeting invasive species, such as melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina equistifolia)*, Brazilian pepper (*Schinus terebinthifolius*), latherleaf (*Colubrina asiatica*), torpedograss (*Panicum repens)* and the old world climbing fern (*Lygodium micorphyllum*). An intergrated pest management strategy will be utilized relying heavily upon proven chemical control, mechanical control, biological control and environmental manipulation techniques. In the absence of such, new and/or emerging techniques will be developed and/or refined to provide the array of management methods necessary to meet the program goals. Additional program components may include the following: delineation of the extent of invasive plant populations; pre- and post-treatment site documentation; post-treatment monitoring and control of invasive species regrowth; and replanting with native species. Work may begin in FY 99 and continue through FY 03.

RESTORATION BENEFITS: Invasive exotic plants, of one species or another, are located throughout the entire South Florida ecosystem. In order to truly protect any area of the ecosystem from the habitat degradation associated with the invasion, colonization and subsequent proliferation of these invasive plants, they will need to be managed throughout the entire ecosystem. This project will allow a coordinated, ecosystem-wide management program to be established which targets all invasive exotic plant species. As invasives are controlled and deteriorated areas restored, beneficial vegetative communities will be reestablished. Native plant and animal diversity will return, with a resultant shift to a healthy ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Invasive Coordinated Management Program For Plant Species On Public And Private Lands In South Florida

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE			1000	833	666	500	333									3332
SFWMD			2000	1667	1334	1000	667									6668
DOI			1000	833	666	500	333									3332
FDEP			1000	832	666	500	333									3331
Other Misc.			7000	5835	4668	3500	2334									3337
Subtotal																$40,000

TITLE: Biological Control For Melaleuca And Other Invasive Exotic Species Enhancement Program			
SUBREGION : Total System	***PROJECT ID***: TS84	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Mgmt.		
PROJECT PLAN MANAGER: Bill Zattau 940/232-2215	***BASIS:*** 1	***TOTAL:*** $5,310,000	
LEAD ORGANIZATION(S): USACE, USDA-ARS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): DOI, SFWMD, FDEP, FDACS, FGFWFC, USFWA			
COUNTY(S): All		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS03, TS11, GL03, SW15, CE09		***TOTAL:*** $5,310,000	
START: 1999	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The project addresses three avenues to increase the capability of land managers to utilize biological control technologies in the management of melaleuca and other invasive exotic species in the south Florida ecosystem. Two avenues are detailed below:

1) Upgrading and retrofitting of the current quarantine facility in Gainsville, Florida.

2) Large-scale rearing of approved biological control organisms for release at multiple sites against a number of invasive species.

RESTORATION BENEFITS: Melaleuca trees and other invasive exotic species are rapidly invading the natural Everglades habitat. Their growth is so dense that the typical characteristics of native habitat are completely destroyed. Biological control agents re needed to provide a truly integrated management approach to many of the invasive species problems facing the ecosystem today. This approach will provide the means to establish a viable biological control program.

Time Line and Fiscal Year Budget (in thousands of dollars) for Biological Control For Melaleuca And Other Invasive Exotic Species Enhancement Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Upgrade facility																
Operations																
Project																
Upgrade facility			560													560
Operations			950	950	950	950	950									4750
Subtotal			1510	950	950	950	950									$5,310

TITLE: Seminole Tribe Data Collection and Monitoring			
SUBREGION *:Total System*	***PROJECT ID:*** TS85	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality		
PROJECT PLAN MANAGER: Craig Tepper, 954-966-6300	***BASIS:*** 3	***TOTAL:*** $2,356,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): **):** BIA, USGS, EPA, SFWMD, BCNP/NPS		BIA $40,000 NPS $156,000 EPA $100,000 Seminole tribe $104,000	
COUNTY(S): Hendry, Glades, Broward, Collier, St. Lucie		***TOTAL:*** $400,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS8, CB16, BCB3, BCB14, TS82, BCB20, BCB21, BCB22, BCB23, BCB24		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $1,956,000	
START: 1997	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Water quality monitoring consists of water sampling, analyses, data management, and reporting. Data collection and water quality monitoring efforts are needed for the Big Cypress, Brighton, Immokalee, and Hollywood Reservations as well as the Coconut Creek and Fort Pierce Trust Lands. The Tribe will also work with the Big Cypress National Preserve to conduct water quality, water quantity, and biological monitoring along the common border. In addition, under an agreement with the SFWMD, the Tribe is required to monitor the quality of the water discharged from the Big Cypress Reservation. The Tribe has been conducting water quality monitoring for some time, however, the Tribe plans a more comprehensive program. Due to funding below requested levels and expectations, the Tribe's water quality monitoring work is behind the Tribe's internal schedule. This monitoring effort is a major undertaking with an appropriate price tag through FY 2010, the tribe estimates that its comprehensive data collection and monitoring program will cost $2,356,000. The bulk of that funding need is unmet.

RESTORATION BENEFITS: Data analysis and reporting is necessary for Tribal development and implementation of protective surface water quality standards and establishment of baseline conditions. Biological, meteorological, and air quality sampling is needed to provide feedback on proposed success criteria necessary for operation and adaptive management of the Big Cypress Reservation Water Conservation Plan and implementation of BMP's on the Big Cypress Reservation. It will also be necessary to characterize the surface water for the L-28 Borrow canal, L-28 Interceptor Canal, North and West Feeder canals, and for the proposed network of 22 wetland monitoring sites on the Big Cypress Reservation. For the Brighton Reservation, a comprehensive monitoring and assessment program will be designed which will help evaluate the impacts of Tribal activities and support adaptive management.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe Data Collection & Monitoring

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Big Cypress																
Brighton																
Immokalee																
Hollywood																
Trust Lands																
Project																
NPS	78	78	78	78	78	78	78	78	78	78	78	78	78	78		1,092
BIA	20	20	20	20	20	20	20	20	20	20	20	20	20	20		280
EPA	28	72	0	0	0	0	0	0	0	0	0	0	0	0		100
Seminole Tribe	39	65	65	65	65	65	65	65	65	65	65	65	65	65		884
Subtotal	165	235	163	163	163	163	163	163	163	163	163	163	163	163		$2,356

TITLE: Seminole Tribe Development of Water Quality Standards			
SUBREGION : Total System	***PROJECT ID:*** TS86	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality		
PROJECT PLAN MANAGER: Craig Tepper, 954-966-6300	***BASIS:*** 1	***TOTAL:*** $108,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:*** STOF $64,000	
SUPPORTING ORGANIZATION(S): EPA, SFWMD			
COUNTY(S): Hendry, Glades, Collier, Broward, St. Lucie		***TOTAL:*** $64,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS81, TS08		***TOTAL:*** $44,000	
START: 1995	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Environmental Protection Agency (EPA) certified the Seminole Tribe to be "treated as a State" under the Clean Water Act (CWA). The Tribe is authorized to establish and enforce water quality Standards on its Reservation under Section 518(e) of the CWA. Standards for the Big Cypress Reservation were adopted by the tribal Council in September, 1996 and were certified by the EPA in October 1997. Development of standards for the Brighton Reservation began August, 1997 and are expected to be adopted by the Tribal Council in July, 1998. Standards for the Hollywood and Immokalee Reservation, as well as the Fort Pierce and Coconut Creek Trust Lands, will be completed by December 2000.

RESTORATION BENEFITS: Establishment and enforcement of water quality standards will improve the quality of water entering and leaving the Reservations. Required certification of restoration activities in and around the Reservations will insure compliance with water quality standards and supply additional opportunities for public input.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe Development of Water Quality Standards

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Hollywood																
Immokalee																
Ft. Pierce																
Coconut Creek																
Project																
Seminole Tribe		64	33	11												108
Subtotal		64	33	11												$108

TITLE: NOAA South Florida Ecosystem Restoration Research and Modeling Program			
SUBREGION : Total system	***PROJECT ID:*** TS96	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Nancy Thompson 305-361-4284	***BASIS:*** 1, 3	***TOTAL:*** $26,900,000	
LEAD ORGANIZATION(S): NOAA		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, NPS, USGS, FWS, EPA, COE, SFWMD			
COUNTY(S): Palm Beach, Broward, Dade, Monroe, Collier		***TOTAL:*** $11,300,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS1 **Associated with:**		***TOTAL:*** $15,600,000	
START: 1995	***END:*** 2002	***APPROVED:***	***LAST REVISION:*** 11/30/98

DESCRIPTION: The NOAA South Florida Ecosystem Restoration Research and Modeling Program consists of two major components supported through two NOAA line offices: the Coastal Ocean Program (COP) and the National Marine Fisheries Service (NMFS). Each component supports projects in support of restoration within the region. While the focus of the COP component is Florida Bay, the NMFS component includes all marine and estuarine waters in South Florida. NOAA is unique in that it is the only agency that focuses entirely on the marine and estuarine waters of South Florida and recognizes that changes upstream must be evaluated relative to impacts in the marine waters and estuaries. The COP component supports monitoring of ocean processes and rainfall through an expanded network of ocean measurement buoys and the use of NEXRAD over the total Everglades system. COP research includes: a) measuring the physical dynamics of Florida Bay and boundary waters; b) sediment dynamics and core analysis to describe historical conditions; c) nutrient dynamics and fates, including atmospheric inputs; d) trophic dynamics from secondary productivity to higher trophic levels; and e) the fate and biological impacts of nonpoint-source contaminants. NMFS research and monitoring focuses on living marine resources and their habitats and includes: a) expanded fishery-dependent and fishery-independent monitoring; b) determining causes of shifts in biodiversity and trophic dynamics; c) protected resources research utilizing sea turtles and bottlenose dolphins as indicators of coastal health; d) modeling fishery populations to predict environmental determinants and predict productivity under changes implemented upstream. Both components support research and monitoring under the Coral Reef Initiative within the Florida Keys National Marine Sanctuary and other waters of South Florida. Specific projects are supported by multiple investigators to describe and model changes in the marine/estuarine waters as the timing, quantity and quality of freshwater delivery changes. Each of the components supports an education/outreach project which coordinates annual science panel reviews and workshops, and supports minority participation in research, monitoring, and other activities.

RESTORATION BENEFITS: This research is critical to recovery of South Florida's marine/estuarine waters and habitats and management of fishery resources and protected resources within its waters. The effort will improve models and predictions of benefits and changes to the marine ecosystem resulting from restoration. It will assess changes resulting from restoration efforts and will allow those efforts to be fine-tuned or altered as necessary in a more efficient, more timely, and less costly manner. This effort is long term and will continue as long as the adaptive management process proceeds over the next 30 years. There will be long-term research and monitoring requirements to ensure that South Florida waters and habitats sustain living marine resources.

Time Line and Fiscal Year Budget (in thousands of dollars) for
NOAA Research and Modeling Program

Task	95	96	97	98	99	00	01	02	03	04	05	06	07	08	Unprog	Total
Program																
Project																
	1,400	1,900	2,600	2,600	2,800	5,200	5,200	5,200								$26,900
Subtotal	1,400	1,900	2,600	2,600	2,800	5,200	5,200	5,200								$26,900

TITLE: South Florida Nonpoint Source Pollution Prevention Learning Center			
SUBREGION : Total System	***PROJECT ID:*** TS97	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Public Information, Environmental Education	***BUDGET CATEGORY:*** Water Quality,, Natural Resource Mgmt, Pollution Prevention		
PROJECT PLAN MANAGER: **Setti (954) 792-1984**	***BASIS:*** **2, 3**	***TOTAL:*** $952,000	
LEAD ORGANIZATION(S): Broward Soil and Water Conservation District (BSWCD)		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): School Board of Broward County USDA-NRCS, USDA-UCAP, SFC-URP, SFWMD,EPA			
COUNTY(S): ALL		***TOTAL:*** $300,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SE31		***TOTAL:*** $652,000	
START: 1998	***END:*** 2000	***APPROVED:***	***LAST REVISION:*** 9/98

DESCRIPTION: Over the past 25 years, the United States has made significant inroads to clean the aquatic environment by controlling pollution from industries and sewage treatment, however, very little has been to control pollution from diffuse or nonpoint sources. This project will provide the necessary vehicles to stimulate environmental awareness and education for curbing Nonpoint Source Pollution (NSP) and the use of Best Management Practices (BMP's) in South Florida through meetings, seminars and workshop. The construction of the learning Center will serve as the conduit for dissemination of information and knowledge on NPS and BMP's. The Learning Center will be centrally located in the 650 acres complex known as the South Florida Education Center in Davie, Florida. The learning Center is approximately two acres south of the Broward County Public Schools Instructional Television Center, west of McFatter Vocational Center, north of Broward Community College and east of the University of Florida-- Agricultural Research and Educational Center.

RESTORATION BENEFITS: Improve the quality of stormwater discharge to the Everglades Protection Area, Coral Reef Systems, lakes, rivers, canals, groundwater and surface water. Serve as a learning center for teachers, students, governmental agencies, organizations, businesses and interested people for the implementation of Best Management Practices. Reduce Nonpoint Source Pollution from urban, municipal, rural and agricultural runoff. Provide information and educate the new generation of students to protect and conserve the quality of water and natural resources by preventing pollution.

Time Line and Fiscal Year Budget (in thousands of dollars) for South Florida Nonpoint Source Pollution Prevention Learning Center

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Subtotal		300	326	326												$952

3.2 *KISSIMMEE VALLEY*
Sub-Region 1

ECOLOGICAL SETTING

The 3,000-square-mile Kissimmee River basin forms the headwaters of the Everglades System. It extends southward from Orlando about 90 miles to Lake Okeechobee and includes an upper and lower basin. The upper basin contains a series of interconnected lakes, of which Lakes Tohopekaliga, Hatchineha, Cypress, and Kissimmee are the largest. The lower basin contains Canal-38 and remnants of the Kissimmee River.

Historically, the Kissimmee River meandered approximately 103 miles from Lake Kissimmee to Lake Okeechobee through a 1-2 mile wide floodplain. The River and its flanking floodplain consisted of a mosaic of wetland plant communities and supported a diverse group of waterfowl, wading birds, fish, and other wildlife. The historic Kissimmee River was hydrologically unique among North American river systems in that it had prolonged periods of extended floodplain inundation. The headwater lakes once were the deeper portions of a vast marsh complex. During the wet summer months and periods of heavy rainfall, natural drainage occurred by the overtopping of the upper lakes and the overflow of water across the wide shallow marshes. The broadleaf marsh and wet prairie communities once dominated the vast wetlands marsh complex which connected the headwater lakes.

The basin was modified for navigation and flood control purposes in the late 1800s when the lakes were connected. The most significant alterations occurred between 1962 and 1971, as a result of the C&SF Project. That project established a regulation schedule for the upper basin lakes and culminated in channelization of the 103-mile system of Kissimmee River oxbows and floodplains into the 56-mile C-38. Six water control structures in C-38 maintain water elevation, control water releases, and provide lockage.

Most of the upland portions of the lower basin have been converted to large tracts of improved pasture and some row crop cultivation. However, native prairie, scrub, and pine flatwoods remain on both sides of the historic river floodplain. This native upland vegetation provides habitat for a number of threatened and endangered species, including red-cockaded woodpecker, Florida scrub jay, Florida grasshopper sparrow, and Audubon's crested caracara. In addition to native mammals such as black bear and bobcat, the basin once supported a notable warm-water fishery for species such as bass, bluegill, and black crappie. The lakes are important nesting areas of the endangered snail kite, and the wetlands support significant wading bird populations. The basin also provided important over-wintering habitat for migratory waterfowl.

The River was channelized between 1962 and 1971. Two thirds of the historical floodplain was drained. One third of the channel was destroyed by excavation of the canal and placement of the spoil material. Along with the channelization the headwater lakes were regulated for flood control purposes as part of this flood control project. This regulation eliminated the natural water level fluctuations in the lakes. The interconnecting marsh was drained and the extreme highs and lows which provide critical functions in the maintenance of fish and wildlife habitat were eliminated. Implementation of the Kissimmee Flood Control project led to drastic declines in wintering waterfowl, wading bird and game fish populations, as well as loss of ecosystem functions.

LINKAGE TO THE TOTAL SYSTEM

As the headwaters of the entire Everglades system, the Kissimmee River basin is critical to restoration success. The broad wetland/riverine connection between the Kissimmee River and Lake Okeechobee needs to be re-established because basin wetlands provide critical habitat for a number of endangered and threatened species; support a diversity of game fish, wading birds and waterfowl; and improve the quality of

waters entering Lake Okeechobee. Lying just south of the extensive urban development surrounding Orlando, the Upper Chain of Lakes is threatened by anthropogenic impacts. The large tourist area of Kissimmee-Walt Disney World is within the borders of the Sub-region.

ECOSYSTEM PROBLEMS AND RESTORATION OBJECTIVES

Ecological impacts in the Kissimmee basin include diminished floodplain habitat diversity, reduction of wading bird populations and loss of fishery forage and riverine fish species.

The impacts of flood control, navigation, agriculture, and development in the Kissimmee basin are well documented. The impacts of channelization are significant. In addition to direct physical destruction of the river and floodplain habitat from canal excavation and deposition of soil, channelization and lake regulation has impacted the basin primarily by altering hydrologic regimes.

The nature and rate of energy exchange between the river and floodplain also have been disturbed, affecting the functional integrity of the system. Lack of flow has degraded water quality, caused excessive sedimentation, diminished habitat quality and diversity, and degraded biological communities. The impacts of channelization were quickly recognized, and calls for restoration of the river began before the Kissimmee River Flood Control Project was complete. Several major studies have been conducted to evaluate restoration alternatives. A collaborative effort of numerous Federal and State agencies reached the conclusion that re-establishing a fully functional river and floodplain required recovery of the natural hydrologic regime. That could only be done by backfilling a long, continuous section of C-38, connecting the remnant portions of the original river, and delivering water from the upper basin in a manner that mimics the natural system.

Efforts are now underway to restore the ecological integrity of the River and floodplain by implementing these recommendations. The Kissimmee River Restoration Project is the world's largest such effort and the first of its kind in the United States. While Kissimmee River Restoration is the largest restoration effort in the basin other efforts are being implemented to address the impacts to the ecosystem beyond river/floodplain ecosystem. These efforts are critical to the holistic ecosystem response in the basin.

RESTORATION OBJECTIVES:

The restoration objectives of critical importance for the Sub-region 1 have been identified by the Working Group and are listed as follows:

- Restore the ecological integrity of the water bodies and their associated flood plain ecosystem.
- Restore historical hydrologic conditions to the greatest extent possible.
- Recreate the historical watershed connectivity to the greatest extent possible.
- Restore basin wetlands, while maintaining or enhancing adjacent upland habitats.
- Improve water quality of surface waters.
- Restore/enhance fish and wildlife habitat.
- Decrease the standing populations of aquatic invasive plant to lowest possible level in the Kissimmee subregion.

RESTORATION PROJECTS

Important restoration projects in progress or proposed for the Sub-region are identified on the following pages:

TITLE: Kissimmee River Restoration Project			
SUBREGION : 1	***PROJECT ID:*** KV01	***FINANCIAL REQUIREMENT:***	
CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE - $247,400,000 SFWMD - $404,500,000	
PROJECT PLAN MANAGER: Brooks-Hall, (904) 232-3155	***BASIS:*** Task Force Priority V, Ecosystem Restoration	***TOTAL:*** $652,900,000	
LEAD ORGANIZATION(S): USACE, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USFWS		USACE - $34,188,000 SFWMD - $101,000,000	
COUNTY(S): Osceola, Polk, Okeechobee, Glades		***TOTAL:*** $135,188,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS39, KV05 **Critical to:** KV02 **Associated with:** KV04		USACE - $213,212,000 SFWMD - $303,500,000 ***TOTAL:*** $516,712,000	
START: 1994	***END:*** 2009	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Kissimmee River Restoration Project will restore the ecological integrity of the historical Kissimmee River/floodplain ecosystem through two major construction components: Headwaters Revitalization and Lower Basin Restoration. The Headwaters Revitalization component will restore more natural water level fluctuations in Lakes Kissimmee, Cypress, and Hatchineha in the upper Kissimmee basin. Two existing canals and the Lake Kissimmee outlet structure (S-65) that discharges to the river will be enlarged. In the lower basin, natural flows will be restored to the river channel and floodplain. This will be accomplished by backfilling 22 miles of the existing Canal 38 (C-38), reconstructing 9 miles of remnant river channel, and removing two water control structures and the adjacent locks (S-65B and S-65C).

RESTORATION BENEFITS: The project will restore the ecological integrity of the historical Kissimmee River/floodplain ecosystem by recreating approximately 40 square miles of the river/floodplain ecosystem, including 43 miles of contiguous river channel and 27,000 acres of floodplain wetlands. Other benefits include: restoration of critical fish and wildlife habitat necessary to recreate biological diversity in the floodplain ecosystem; improved water quality (e.g., increased dissolved oxygen in the river channel and reduced nutrient loads to Lake Okeechobee).

Time Line and Fiscal Year Budget (in thousands of dollars) for Kissimmee River Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Upper Basin																
Design																
Real Estate																
Construction																
Lower Basin																
Design																
Real Estate																
Construction																
Project																
USACE		3000	27300	25800	30100	25900	37900	18400	10300	9200	9300	16200	2629	0		216029
SFWMD		72373	46400	12800	3605	7	2230	18400	10300	9200	9300	16200	2085	0	157,087	202900
Subtotal		75373	73700	38600	33705	25907	40130	26800	20600	18400	18600	32400	4714	0	157087	**418929**

TITLE: Lake Istokpoga Ecosystem Restoration and Management			
SUBREGION : 1	***PROJECT ID:*** KV02	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Management	Partial Remove tussock Complete Remove shoreline aquatic weeds	
PROJECT PLAN MANAGER: **Clell Ford**	***BASIS:***	***TOTAL:*** $17,325,000 Through FY02	
LEAD ORGANIZATION(S): FGFC, Highlands Board of County Commissioners ***SUPPORTING ORGANIZATION(S):*** FDEP, SFWMD, USACE		***APPROPRIATED TO DATE:*** SFWMD Tussock $-0- FGFWFC Tussock $1,250,000 FDEP Hydrilla $3,500,000 thru FY98 USACE Water Levels $405,000	
COUNTY(S): Highlands		***TOTAL:*** $5,155,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** KV01 **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** Remove Tussocks $6,250,000 Assess Water Quality $125,000 Remove shoreline Aquatic weeds $3,450,000 Restore Natural Water Levels $2,345,000 ***TOTAL:*** $9,670,000	
START: 1998	***END:*** 2005	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Water levels in Lake Istokpoga, the largest lake in Highlands County, and the second largest in the Kissimmee River Basin, were stabilized for flood control and water supply in the 1960s as part of the Central and South Florida Flood Control Project. This stabilization, along with development in the watershed and the invasion of hydrilla and other exotic weeds, has affected the Lake Istokpoga ecosystem. These impacts range from degradation of fish and wildlife habitat, and restrictions on human activities, to severely impaired lake access, devaluation of riparian property, and deterioration of flood control capabilities. Unlike other systems in the Kissimmee River Basin, large-scale drawdowns of Istokpoga to remove tussock and control shoreline vegetation are not feasible due to the limited ability to refill the lake using water stored upstream. Expected endpoints or restoration goals for the Lake Istokpoga ecosystem are being developed for application to this and other restoration projects.

Tussock islands, estimated by the FGFWFC to occupy approximately 10%, or 2500 acres of the 27692 acre lake, have greatly expanded over the last several years as a result of stabilized water levels. These islands displace habitat for desirable game fish as well as waterfowl and other species. Tussocks also are a serious threat to the ability of the lake to store, and flood control structures to move water in the event of a flood. The FGFWFC and Highlands County are working with the FDEP to develop a plan for removal of tussock islands. SFWMD and the FGFWFC have committed funding to remove ½ of the tussock currently found in Lake Istokpoga over the next 5 years. The proposed work request would fund removal of the remaining 1250 acres of tussock as well as provide for water and sediment quality analysis to determine impacts to the lake ecosystem from tussock removal, and provide for reporting on ecosystem-level impacts.

Lake Istokpoga, classified as a eutrophic lake based on nutrient and algae levels, has relatively good water quality. Preventing degradation or improving water quality is critical to ecosystem restoration. Development both within Istokpoga and upstream, has caused large changes in nutrient inputs to the surface water. Both SFWMD and volunteers for Florida Lakewatch have collected water quality information regularly for a number of years, but this information has not been compiled or analyzed in a comprehensive manner. Several aspects of water quality in Lake Istokpoga critical to evaluating ecosystem restoration and management, including net flux of phosphorus and nitrogen from both Arbuckle and Josephine Creeks, impact of proposed tussock removal, impact of cyclic large-scale hydrilla control efforts, and impact potential changes in water level regulation on water quality and sedimentation are all unknown. Each of these areas is of concern to ecosystem restoration, both within Istokpoga and downstream. Funding for water and sediment quality analysis associated with each task is included in that task. The required funding for the task of assessing water quality will be directed toward development of a nutrient budget, comprehensive analysis of the sediments including benthic invertebrate population, sedimentation rate

changes and general sediment quality, and a comprehensive overview of water quality in the lake. Currently, no agency includes funding for a Lake Istokpoga water quality evaluation in its budget.

Aquatic macrophytes, most notably cattails, dominate much of Istokpoga's once sandy shoreline, taking over the shore and inhibiting the maintenance of cypress swamps. Cattails occupy habitat that was once available for spawning, nesting and fishing activities currently limited by monoculture stands of cattails. Selected removal of the cattails would also open areas of the shore to bank fishing by anglers, and enhance riparian property values. The required budget for removal of shoreline aquatic weeds includes funding for aquatic plant surveys, assessment of most appropriate areas for removal and mechanisms for removal, actual opening of shoreline and evaluation of the long-range impact of the activity. Currently, no agency includes funding for large-scale removal of aquatic macrophytes from the Istokpoga shore. Highlands County has included funding for control of macrophytes interfering with navigational access in its FY 1998 budget.

Hydrilla control, discussed in detail in the proposed Hydrilla and Floating Plant Management in the Kissimmee Basin project, is critical to the viability of the Lake Istokpoga ecosystem. When hydrilla is uncontrolled in the lake, Istokpoga serves as a continuous source for the hydrilla throughout the lower portion of the Kissimmee River Basin. Much effort has been expended toward maintenance control of hydrilla and floating aquatic plants in Istokpoga. Stable funding for management of hydrilla is critical to restoration and long-term management of the Lake Istokpoga ecosystem. FDEP has committed $3,500,000 to hydrilla control for FY 1997 and FY1998. Further funding for hydrilla control is not expected from this source. The success of this project is dependent on funding the Hydrilla and Floating Plant Management in the Kissimmee Basin project.

Restoration of natural water level fluctuations is central to the long-term restoration of the Lake Istokpoga ecosystem. Lake Istokpoga is used for water supply, flood control, and recreation; in order to satisfy these project purposes, the existing water management strategy has been to significantly reduce natural water level fluctuations, switching the seasons of highest and lowest water levels for flood control purposes. As noted previously, these stabilized water levels have prevented the seasonal exposure of the shoreline, effected the degradation of the cypress swamp, the growth of tussock islands and the loss of open shoreline to cattails. Additionally, development of tussock islands may significantly impair the flood control capacity of the structures downstream of the lake. During construction of the C&SF Project, not all of the authorized water management features for Lake Istokpoga were built. Therefore, an evaluation of options for completing the authorized project is being considered under the General Reevaluation Report of the USACE. The purpose of the GRR is to evaluate alternatives for operational and / or structural modifications to improve environmental conditions in the lake and to improve flood control while maintaining its authorized project purposes (recreation, water supply and flood control). The water level solution to Istokpoga's woes hinges on restoring more natural water level fluctuations. To date, the USACE has appropriated $405,000 for the GRR portion of this project, with an estimated $600,000 additional required to complete the reevaluation and report on its outcome. The remaining financial requirements for this project include administrative costs of modifying the regulation schedule, evaluations of whether existing flood control is adequate for projected storms given natural water level fluctuations, upgrades as necessary to the flood control system, and environmental monitoring to estimate the effects of changes to the water level fluctuation schedule.

RESTORATION BENEFITS: This project will restore the ecological integrity of the Istokpoga ecosystem by removal of tussock, removal of shoreline cattails, and control of hydrilla, tasks that will improve the diversity of habitat available to native, threatened and endangered species. Restoring more natural water level fluctuations, and the accompanying improvements to the flood control system will help prevent the buildup of tussock islands, the recolonization of shoreline by less desirable species and lead toward restoration of the cypress swamp habitat that has declined since water levels were stabilized. Hydrilla control, funded through another proposed project, is critical to the restoration of both Istokpoga, and the lower Kissimmee River. Continuous assessment of sediment and water quality is essential to ultimately determining the success of this project. The net economic impact of this project may be seen in terms of a more stable sport fishery, development of ecotourism, increased use of Lake Istokpoga by the general public and improved riparian property values.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Istokpoga Ecosystem Restoration and Management																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
Hydrilla	3500															3500
Remove Tussock					1500	2500	2000	1000	500							7500
Improve Water quality				25	25	25	25	25								125
Remove shoreline aquatic weeds				250	500	2000	500	200								3450
Remove natural level flucts.				50	100	550	2000	50								2750
Subtotal	3500			325	2125	5075	4525	1275	500							$17,325

TITLE: Lake Wales Ridge National Wildlife Refuge and CARL Acquisition			
SUBREGION : 1	***PROJECT ID:*** KV03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:***	State: 50% Federal: 50%	
PROJECT PLAN MANAGER: Whitmore (407) 861-0667	***BASIS:*** 2 and 3	***TOTAL:*** $44,783,000	
LEAD ORGANIZATION(S): USFWS/FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): The Nature Conservancy			
COUNTY(S): Polk, Highlands, Osceola, Okeechobee		***TOTAL:*** $26,486,950	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **TS19** **Associated with:**		***TOTAL:*** $18,296,050	
START: 1997	***END:*** Until Acquired	***APPROVED:*** 11/97	***LAST REVISION:*** 10/98

DESCRIPTION: The proposed refuge was authorized in November 1993 and would comprise 21,750 acres in Polk and Highlands Counties. The area forms the headwaters boundary between the Kissimmee River basin and the Peace River basin. It is the oldest terrestrial ecosystem in the southeast region of the US, and is probably the most threatened ecosystem in South Florida due to citrus conversion, residential housing construction, and commercial development. It supports 24 species of endangered, threatened, and candidate plant species as well as four threatened or endangered animal species. 12,861 acres have been acquired to date.

RESTORATION BENEFITS: Acquisition would effect recovery of most of these listed species. The proposed refuge represents the last opportunity to protect these remaining upland habitats in the Kissimmee River drainage. Without these acquisitions, conversion of these lands will probably continue until these habitats completely disappear. Land acquisition began in FY 95. Some parcels will be managed as conservation easements.

Time Line and Fiscal Year Budget (in thousands of dollars) for Multi-Species Recovery Strategy

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Preparation																
Implementation																18,296
Project																
Subtotal																**$18,296**

TITLE: Paradise Run			
SUBREGION : 1	***PROJECT ID:*** KV04	***FINANCIAL REQUIREMENT:*** approx. $12,281,656	
PROGRAM CATEGORY: restoration, acquisition	***BUDGET CATEGORY:*** Land acquisition	***TOTAL:*** approx. $12,281,656	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 2, 3	***APPROPRIATED TO DATE:*** SFWMD $2,281,656	
LEAD ORGANIZATION(S): SFWMD		**Total** $2,281,656	
SUPPORTING ORGANIZATION(S): FGFWFC			
COUNTY(S): Glades, Okeechobee		***REMAINING FINANCIAL REQUIREMENT:*** approx. $10,000,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** approx. $10,000,000	
START: FY98	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This 4,265 acre project lies west of canal C-38, between Water Control Structure S-65E and Lake Okeechobee in Glades and Okeechobee Counties. Current land use is predominantly improved pasture and cattle grazing but agricultural activities in the area are intensifying as exemplified by new, nearby row crops (potatoes), sod extraction, and citrus. The remnant river run and adjacent wetlands remain largely intact but have no continuous water flow; hence water quality (especially dissolved oxygen) has become poor and organics have accumulated deeply in the remnant river run. This area consistently has greater wading bird and waterfowl use than most any area of the Kissimmee River. Its close proximity to Lake Okeechobee puts it in foraging flight distance of the large wading bird rookeries. Restoration would be fairly simple because the remnant river run and wetlands are largely intact, and water could gravity flow from Pool E (elevation 21 feet msl) one-half mile to Paradise Run (elevation 16 feet msl). The C-38 canal would be bypassed. At least 2 landowners (John Pearce and John Austin Collier) have expressed an interest in selling their land along Paradise Run.

RESTORATION BENEFITS: Conduct engineering studies to determine feasibility and estimate costs more accurately.

Time Line and Fiscal Year Budget (in thousands of dollars) for Paradise Run

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Studies																
Land Acquisition																
Construction																
Project																
Subtotal	2,282														10,000	**$12,282**

TITLE: Upper Lakes Basin Watershed			
SUBREGION : *1*	***PROJECT ID:*** KV06	***FINANCIAL REQUIREMENT:*** SFWMD: $30,811,694 Polk County: $ 7,323,625 ***TOTAL:*** $38,135,319	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Rinaldi (561) 682-8537	***BASIS:*** 3	***APPROPRIATED TO DATE:*** SFWMD: $10,904,800 Polk County: $ 2,325,625 ***Total:*** $13,230,519	
LEAD ORGANIZATION(S): SFWMD			
SUPPORTING ORGANIZATION(S): Polk			
COUNTY(S): Polk, Osceola			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** KV01		***REMAINING FINANCIAL REQUIREMENT:*** SFWMD: $19,904,800 Polk County: $ 5,000,000 *TOTAL:* **$24,904,800**	
START: 1995	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This 43,500-acre project is located at the headwaters of the Kissimmee-Okeechobee-Everglades ecosystem in Polk and Osceola Counties. The project area includes a substantial portion of Reedy Creek and Lake Marion Creek drainage basins, of which the SFWMD already owns substantial acreage. The land contains large expanses of endangered scrub, mesic and wet flatwoods, hydric hammock, and floodplain forest, including habitat for several threatened and endangered plants and animals. Land management will be carried out by the SFWMD and local Government.

RESTORATION BENEFITS: The primary purpose of this project is to preserve this watershed which is a critical link in the restoration of the Kissimmee-Lake Okeechobee-Everglades-ecosystem. Reedy Creek is the headwater drainage for Lake Russel and Cypress Lake. Peak Discharges from major storm events are modified and stored within the swamp and provide year-round base flow to these downstream lakes. The Lake Marion Creek portion of the project is of critical importance to the recharge of the Floridian Aquifer. Lake Marion serves as the headwaters to Lake Marion Creek, which combines with Snell and Horse Creeks to probed a constant supply of high-quality water to Lake Hatchineha, which in turn discharges to Lake Kissimmee, and eventually the Kissimmee River and Lake Okeechobee. All three of these water bodies are primary components of the SFWMD's water management system.

Time Line and Fiscal Year Budget (in thousands of dollars) for Upper Lakes Basin Watershed																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Land Acqusition				3000	6000	6000	2100								7800	24900
Subtotal																**$24,900**

TITLE: Kissimmee Prairie Ecosystem			
SUBREGION : 1 ***PROGRAM CATEGORY:*** Land Acquisition/restoration/ Enhancement	***PROJECT ID:*** KV07 ***BUDGET CATEGORY:***	***FINANCIAL REQUIREMENT:*** SFWMD: $7,943,517 FDEP: $16,970,340 ***TOTAL:*** $24,913,857	
PROJECT PLAN MANAGER: G. Ritter (941) 462-5260	***BASIS:*** 3	***APPROPRIATED TO DATE*** SFWMD $5,293,850 FDEP: $16,970,340 TOTAL: $22,264,190	
LEAD ORGANIZATION(S): SFWMD and FDEP			
SUPPORTING ORGANIZATION(S): USFWS, NAS, FDOC, FD, FGFWFC		***REMAINING FINANCIAL REQUIREMENT:*** SFWMD $2,649,667 FDEP $0 ***TOTAL:*** $2,649,667	
COUNTY(S): Okeechobee			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**			
START: 1996	***END:*** 1997	***APPROVED:*** 8/96	***LAST REVISION:*** 11/98

DESCRIPTION: This project involves acquisition and restoration of wetland and dry prairie habitat in Okeechobee County. The SFWMD and FDEP purchased 38,282 acres of land in 1997 for conservation as the Kissimmee Prairie State Preserve. Restoration has been initiated on the Preserve as well as the adjacent 7,315 acre Ordway-Whittell Kissimmee Prairie Sanctuary owned and managed by the National Audubon Society. The project will restore 13,100 acres of wetlands that were over drained or over impounded by agricultural activities. In addition, the project will enhance another 2,625 acres of wetlands and 9,500 acres of associated dry prairie habitat. Restoration will be accomplished by removing 39.3 miles of ditches and dikes to return sheet flow across the land. Enhancement will include removal of unwanted or invasive vegetation from wetland and dry prairie habitats.

RESTORATION BENEFITS: The purpose of the land acquisition project is to preserve the unique wetland and dry prairie habitats that were in agriculture and cattle land use and, using a five-year federal grant, restore and enhance these lands. Approximately 5,000 acres of the project hydraulically linked with the Kissimmee River will be reconnected, thereby restoring wetland habitat to regain historical biological diversity. The remaining 40,000 acres of the project in the project area contain extensive wetland habitats and excellent examples of the dry-prairie community type, which is recognized by the Florida Natural Areas Inventory as endangered at state and global levels. Because of the conversion of similar lands to citrus and improved pasture throughout central Florida, the Kissimmee Prairie Ecosystem, in combination with the adjacent Air Force's Avon Park Bombing Range and Audubon's Kissimmee Prairie Sanctuary, will form the largest region of dry prairie in public ownership in the State. Its preservation is the most important step in the recovery of the federally endangered Florida grasshopper sparrow. The endangered whooping crane, Everglades snail kite, and the woodstork utilize the habitats of the project area. Protection of these lands will also provide habitat for the following threatened species: southern bald eagle, Audubon's caracara, Florida scrub jay, and the eastern indigo snake. In addition, the project area contains habitat that supports over 800 species of plants and animals.

Time Line and Fiscal Year Budget (in thousands of dollars) for Kissimmee Prairie Ecosystem																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration	15		1022		785		325									2,147
Land Acquisition	22,264															22,264
Project																24,411
Subtotal																$24,411

TITLE: Kissimmee Chain of Lakes Drawdown/ Restoration Project			
SUBREGION : 1	***PROJECT ID:*** KV09	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Nat Rest, Hab Enh, Water Qual	Funding contributors include FGFWFC, SFWMD, Osceola and Polk Counties, FDEP, USFWS and USACOE	
PROJECT PLAN MANAGER: Hulon (407)846-5300	***BASIS:*** 2	***TOTAL:*** $23,000,000	
LEAD ORGANIZATION(S): FGFWFC, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, USACE, USFWS			
COUNTY(S): Osceola and Polk		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:***	
START: 1999	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Upper Kissimmee Chain of Lakes Restoration Project planned for FY1999-2010 by the Florida Game and Fresh Water Fish Commission (GFC) is anticipated to be a joint cost share project by GFC, South Florida Water Management District (SFWMD) and Osceola and Polk Counties. The project is a continuation of the successful Extreme Drawdown/Habitat Enhancement projects initiated in 1971 by GFC.

The Central and South Florida (CS&F) flood control project resulted in lowered and stabilized water fluctuation schedules for the Kissimmee Chain of Lakes, eliminating the lakes' ability to purge themselves of organics and tussocks by depositing the material on the upland during extreme high water periods. Rigidly stabilized fluctuations result in deterioration of aquatic habitat in the littoral zone and negatively impact both water quality and fish and wildlife habitat. Initial restoration efforts were successful utilizing a simple drawdown, however, ongoing impacts make additional efforts necessary. The shoreline of Lakes Tohopekaliga, Cypress, Hatchineha, Kissimmee, Jackson, Marian and East Lake Tohopekaliga will be restored by mechanical removal of tussocks and organic build-up that can not be remedied with a drawdown alone. The material will be transported to the uplands for disposal where sites are available restoration efforts are required on a 7 to 10 year basis to offset the continuing degradation.

RESTORATION BENEFITS: Positive fisheries responses have been documented for forage and sportfish species following drawdowns and habitat enhancement work. Endangered species such as the Snail Kite, Bald Eagle and the Wood Stork all use restored areas extensively for foraging and nesting in adjacent areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Tohopekaliga Wetland Restoration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Tohopekaliga																$5 mil.
Cypress & Hatchineha																$3 mil.
Jackson & Marian																$1 mil.
EastTohopekaliga																$4 mil.
Kissimmee																$10 mil
Project																
Subtotal				$ 5 mil.		$3 mil.		$1 mil.		$4 mil.		$10 mil				$23 mil.

TITLE: Lake Tohopekaliga Wetland Acquisition			
SUBREGION : 1	***PROJECT ID:*** KV10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Land Acq. Purchase, Nat Rest Habitat Enhan, Water Qual.		
PROJECT PLAN MANAGER: Hulon (407) 846-5300	***BASIS:*** **2**	***TOTAL:*** $10,000,000	
LEAD ORGANIZATION(S): FGFWFC, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, USACE, USFWS			
COUNTY(S): Osceola		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $10,000,000	
START: 1999	***END:*** 2000	***APPROVED:*** 12/97	***LAST REVISION:*** 7/98

DESCRIPTION: Five parcels of land (883 acres) that are marked on the attached map should be purchased as soon as possible. Purchase of these sensitive wetland areas around Lake Tohopekaliga would improve water quality, fish and wildlife habitat, and provide for greater water storage within the lake. These designated areas are crucial to halting future wetland development. Two major water quality problems are associated with the east and west drainage ditches in the City of Kissimmee. Both ditches could be diverted through the purchase of two properties (Yates & Judges), on site retention could provide improved water quality into Lake Tohopekaliga. The remaining three parcels of land (Partin, Bennie Platt & Whaley) are significant privately owned wetlands that no longer function as they were intended, to improve water quality and providing beneficial fisheries habitat. If these lands were purchased improvements could be made that would significantly provide for better water quality and fish and wildlife habitat.

RESTORATION BENEFITS: Improved water quality, provide for more beneficial fish and wildlife habitat and increased water storage could improve the Lake Tohopekaliga drainage basin, thus provide cleaner water to the Everglades. Endangered species such as Snail Kite, Bald Eagle and Wood Storks have been seen using these areas. The endangered whooping crane uses wetlands similar to these, near Lake Kissimmee.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Tohopekaliga Wetland Acquisition																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
Subtotal			5000	5000												$10,000

TITLE: Hydrilla and Floating Plant Management in the Kissimmee Subregion			
SUBREGION : Kissimmee	***PROJECT ID:*** KV11	***FINANCIAL REQUIREMENT:*** 50% USACE $18,372,000 50% DEP $18,372,000 ***TOTAL:*** $36,744,000	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Management			
PROJECT PLAN MANAGER: Zattau (904) 232-2215	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USACE, DEP, SFWMD, FGFWFC			
SUPPORTING ORGANIZATION(S): Polk CO., Highlands Co., City of Kissimmee		***TOTAL:*** $-0-	
COUNTY(S): Orange, Polk, Highlands, Osceola, Okeechobee		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** Kissimmee Restoration **Associated with:**		***TOTAL:*** $36,744,000	
START: FY 98	***END:*** FY03	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Implementation of a coordinated program of invasive aquatic plant management throughout the Kissimmee subregion targeting the invasive exotic species hydrilla (Hydrilla verticillata), waterlettuce (Pistia stratiotes), water hyacinth (Eichhornia crassipes). An integrated pest management strategy will be utilized relying on currently proven chemical, mechanical and biological controls in addition to environmental manipulation techniques. New and/or emerging techniques will also be developed and/or refined to provide the array of management methods necessary to meet program goals. Additional program components are the following: delineation of the extent of the invasive populations (DEP), pre- and post- treatment site documentation (DEP, USACE, SFWMD); post- treatment monitoring and control of invasive species regrowth (all); replanting of native species (FGFWFC). The project will begin in FY 98 and continue through FY02. Mission critical projects have navigation, flood control, fish and wildlife habitat, and water delivery impacts while mission essential projects have fish and wildlife habitat, water quality, and regional economic impacts. Floating plants are being maintained at the lowest possible levels in the Butler chain, Upper Basin Lakes, Highlands and Polk Co., C-38 (Kissimmee Canal) and the old oxbows (Old Kissimmee River). Historical funding sources have been US Army Corps of Engineers, Removal of Aquatic Growth (RAG), and the Aquatic Plant Control (APC) Program, and the DEP, Bureau of Aquatic Plant Management. Since FY 96, the APC program was reduced and not funded in FY 97. DEP, Bureau of Aquatic Plant Management has put forth additional funding in FY 96, FY97, and FY 98 to continue maintenance control but expects to have a shortfall in funds in FY 99 if additional funds cannot be secured.

RESTORATION BENEFITS: Hydrilla, introduced into the area during the 1980s, is a submersed exotic that is threatening the basin's water resources. All five of the major lakes in the Upper Basin have experienced typical exponential growth rates of hydrilla that is expected to continue if these areas are not treated. Hydrilla is present in 34 lakes in the subregion. At current population levels, hydrilla poses a serious threat to the ability of water managers to deliver water at desired levels for the purpose of downstream restoration activities and flood control. Large hydrilla populations impact the system in five ways: 1) restricts the flow of water downstream, 2) has the potential to decrease the storage capacity of the system, 3) decreases quality of littoral zones in habitat value and species diversity, 4) negatively impacts the regional economy by decreasing property values and loss of ecotourism revenues, and 5) during high volumes releases hydrilla can be uprooted in large quantities and moved downstream, causing formidable blockages at bridges, locks and flood control structures. The proposed project would manage hydrilla in the Kissimmee subregion to minimize these detrimental effects and allow headwater revitalization and downstream restoration activities and flood control to proceed as planned. Management of hydrilla at low levels would also provide beneficial results to the overall ecology of the area by allowing the return of more diverse native communities. Floating plants are being kept at the lowest possible levels throughout the system, but in the past had posed serious problems for navigation, flood control, and fish and wildlife habitat. If left uncontrolled, these plants would rapidly multiply and also threaten to block existing bridges, locks, and flood control structures. By using current management techniques, beneficial vegetative communities have been established and caused an increase in native plant and animal diversity.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrilla and Floating Plant Management in the Kissimmee Subregion																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Mission Essent																
Mission Critical																
Project																
Mission Essential																
E. Lake Toho			250	260	270	280	290									
L. Cypress			100	90	490	90	100									
L. Hatchineha			100	100	800	100	100									
L. Toho			1500	1800	1900	1640	1800									
Kiss. R.			177	179	181	182	180									
Old Kiss Riv			230	232	234	236	240									
Lk.Kissimmee			1500	2000	1800	2000	2000									
Subtotal			3857	4661	5675	4528	4710									
Mission Critical																
Alligator Lake			50	55	75	75	75									
L. Arbuckle			22	22	172	62	70									
Butler Chain			130	130	130	130	145									
L. Gentry			54	54	79	79	85									
L. Istokpoga			2019	208	2210	208	2000									
L. Jackson			50	50	215	90	100									
L.Marian			230	80	270	294	325									
L.Marion			13	328	53	328	350									
L.. Pierce			28	343	68	368	400									
L. Rosalie			53	53	48	78	100									
L.Walkin Wat.			56	16	56	256	275									
Subtotal			2705	1339	3376	1968	3925									
TOTAL			6562	6000	9051	6496	8635									$36,744

3.3 *GREATER LAKE OKEECHOBEE*
Sub-Region 2

ECOLOGICAL SETTING

Subregion 2 includes the Lake Okeechobee, Everglades Agricultural Area (EAA), Caloosahatchee and Upper East Coast basins. Each basin is unique but affected by conditions in the other basins. All have been substantially altered by flood control, drainage and water supply projects. A series of canals, levees, dikes and structures control a large part of the water in this subregion. Except for rainfall, the largest source of water to Lake Okeechobee comes from the Kissimmee River.

LAKE OKEECHOBEE BASIN

The Lake Okeechobee basin includes Lake Okeechobee, Fisheating Creek, Taylor Creek, Nubbin Slough, the Indian Prairie and Harney Pond Canals and the area that drains to each of those water bodies in Martin, Okeechobee, Highlands, Glades, Hendry and Palm Beach Counties. Drainage from Clewiston and adjacent agricultural areas enters the lake through the Industrial Canal and the S-4 Pump Station. As part of the flood control system, eight pump stations on the south rim of the lake also periodically backpump water into the lake from a portion of the EAA. Except for Fisheating Creek, all of the lake's tributaries have been channelized with flows controlled by either pump stations or gated structures.

The lowering of its water level and the construction of an encompassing dike have modified Lake Okeechobee. These actions reduced its size and isolated it from its original extensive, dynamic system of littoral zone and floodplain. As a result of the managed water levels that existed between the early 1950s to the late 1970s, a new diverse 150 square mile marsh formed within the now well-defined 730 square mile lake.

Although the current configuration of the lake was designed primarily to provide drainage, flood control and water supply benefits, the relatively shallow water of the lake and new littoral marsh provide a major wildlife habitat for wading birds, waterfowl and other wildlife, including a number of federal and state listed species. During droughts, the lake ecosystem serves as a regional refuge for many types of birds. Lake Okeechobee is a major recreational resource that provides opportunities for hunting, boating, ecotourism and is a renowned freshwater fishing area. It also supports a commercial fishing industry. The Okeechobee Waterway, a Corps of Engineers (COE) maintained navigational route which crosses the lake, extends 152 miles from the Gulf of Mexico at Fort Myers to the Atlantic Ocean at Stuart.

A COE adopted lake regulation schedule is a compromise between the demand for high lake levels for water supply and lower levels which will provide storage capacity to protect the watershed from flooding during tropical storms. During dry periods, the shallow lake can hold sufficient water to serve as a backup water recharge source for the Biscayne Aquifer and a large part of the surficial aquifer in Palm Beach County. Together these aquifers serve the 4.5 million people and agricultural needs in Southeast Florida. Environmental water releases can be made through the main canal system to the Water Conservation Areas.

By far, the single largest demand on Lake Okeechobee is to provide water for agricultural irrigation in the EAA south of the Lake and in the St. Lucie and Caloosahatchee basins. Land to the north also receives irrigation water. Five communities withdraw drinking water directly from the lake. The City of Fort Myers depends upon the lake to ensure the quantity and quality of the supply of drinking water it withdraws from the Caloosahatchee River. In the future, maintenance of minimum flows and levels within the downstream natural system will place additional demands on the lake. Urban demands are also expected to steadily increase.

EVERGLADES AGRICULTURAL AREA BASIN

The 700,000-acre (1,100 square mile) EAA lies between Lake Okeechobee and the Water Conservation Areas (WCAs). The area was originally part of the sawgrass dominated Everglades. A broad pond apple forest existed along the south shore of the lake. Water flowed out of the lake through stream channels in the natural muck berm formed by the pond apple forest. During periods of high water, sheetflow occurred over the entire southern rim of the lake.

Near the end of the last century and the beginning of this century, efforts were begun to lower the water level in Lake Okeechobee and to drain the Everglades. These efforts attracted settlers to the area south of the lake to farm the organic soils. A muck levee was constructed on the southern side of Lake Okeechobee to provide flood protection to residents. Although the Everglades Drainage District constructed levees, locks, dams and 440 miles of canals, flooding from the hurricane of 1928 killed over 2000 people in the EAA.

In 1930, the Federal Government became involved and construction of the Herbert Hoover Dike around Lake Okeechobee began. In the following years, over drainage during droughts caused coastal salt water intrusion and muck fires in the Everglades while hurricanes continued to result in property damage. As a result of these conditions, the U. S. Army Corps of Engineers (COE) was authorized to create the present Central and South Florida Flood Control Project.

Soils in the EAA support about 550,000 acres planted in sugarcane, vegetables, rice and sod. Water levels within the EAA are managed through a system of canals, structures, and pumps that facilitate flood control and irrigation. The area includes rural communities with a total population of about 55,000 people. EAA canals and flooded fields serve as habitat for wading birds, migratory shore birds and other biota, including listed species such as the wood stork. At the southern end of the EAA there are about 68,000 acres that were impacted by drainage and are now managed for recreational activities. On most of this property, hydrologic restoration is either under way or planned.

CALOOSAHATCHEE BASIN

This basin includes the Caloosahatchee River watershed in Glades, Hendry, Lee, and Charlotte Counties; and the Caloosahatchee Estuary on which the cities of Fort Myers, and Cape Coral are located. The Caloosahatchee Estuary, Pine Island Sound, Matlacha Pass and San Carlos Bay in Lee County are included in the lower Charlotte Harbor Estuary as part of the National Estuarine Program. The remaining northern portions of the Charlotte Harbor Estuary in Charlotte County into which the Peace and Myakka Rivers discharge are under the jurisdiction of the Southwest Florida Water Management District. Five national wildlife refuges, four State aquatic preserves and two State land preserves are part of the area included in this National Estuary Program. The system provides habitat for over 30 protected species and supports highly productive fisheries.

The southwest coastal portion of this basin is an area experiencing rapid population growth. The basin has a high rate of land conversion to agriculture, primarily citrus. This is the result of the movement of citrus farming to Southwest Florida following several severe freezes in Central Florida in the mid-1980s.

The slash pine forests of southwest Florida have been identified as an endangered ecosystem. Within this basin are areas of hydric pine flatwoods, which have significant ecological and hydrological value. Plant species diversity is high, with over 900 species, including 85 protected species. At least 21 Federal and State listed animal species are supported by the flatwoods communities which are also important to ground-water recharge.

UPPER EAST COAST BASIN

The Upper East Coast Basin forms the northeastern portion of the South Florida ecosystem. It includes St. Lucie, Martin, and northern Palm Beach counties. Basin physiography is dominated by a ridge and swale, terrace and bar topography that has

created the coastal barrier islands, Indian River Lagoon, Atlantic Coastal Ridge, and western flatlands.

This variation in topography has given rise to a diversity of habitats, ranging from rich estuarine seagrass beds to xeric coastal scrub, extensive pine flatwoods, and depressional freshwater wetlands. These habitats support several listed species, including West Indian manatee, Florida scrub jay, gopher tortoise, red-cockaded woodpecker, and Florida sandhill crane. The coastal estuarine lagoon system is an important resource of aesthetic, economic, recreational, and biological value. Significant areas within this basin are included in the Indian River Lagoon National Estuary Program. The Indian River Lagoon is the most diverse estuary in the U. S., with more than 4,300 species of plants and animals, including 36 that are rare and endangered.

The Atlantic Coastal Ridge is the most densely settled part of the basin. Extensive areas are in agricultural production, primarily citrus and vegetable crops. The barrier islands alternate between park lands and developed areas, especially in Palm Beach County

Two river systems, the St. Lucie and Loxahatchee Rivers, breach the Coastal Ridge to drain the western flatlands. Portions of both rivers have been channelized, and the St. Lucie River has been directly connected via the St. Lucie Canal, to Lake Okeechobee. A major canal system has been constructed in Martin and St. Lucie Counties which has increased the size of the drainage basin for both the St. Lucie River system and the Indian River Lagoon. As a result, inflows of freshwater have been altered in quantity, quality and timing. Ecosystem disruption and environmental damage have resulted.

The North Fork of the St. Lucie River, however, is designated a State Aquatic Preserve and Outstanding Florida Water as are portions of the Loxahatchee River. A portion of the Northwest Fork of the Loxahatchee River is also Florida's only federally designated Wild and Scenic River and the largest surviving sub-tropical cypress forest river system in the United States. The Loxahatchee Slough, a headwater of the Loxahatchee River system, is a mosaic of pine flatwoods, cypress forest, and wet prairie. This is a critical area for storage of wet season rainfall and also receives pumped drainage from portions of its watershed. It serves as a drinking water reservoir for the City of West Palm Beach and its water utility service area and provides aquifer recharge for other wellfields in northeastern Palm Beach County.

LINKAGE TO THE TOTAL SYSTEM

Greater Lake Okeechobee Subregion 2 is central to the management of water in the South Florida Ecosystem. It is a major hydrological crossroads that has become increasingly important as the natural flow of water through the ecosystem has been altered. Nutrient loads from the Kissimmee River and Subregion 1 affect Lake Okeechobee. Degradation of water quality occurring within Subregion 2 impacts subregions down stream. Water that enters the subregion from rainfall and the Kissimmee River Subregion is managed primarily for economic purposes. Releases from the lake are made to the north, east, west or through multiple outlets to the south depending on water supply needs.

When available, water from the subregion can be sent south to downstream subregions. Some of these releases are environmentally beneficial and necessary. Drainage discharges can also disrupt the normal volume and timing of water moving through the natural system. Occasionally, increased volumes of water entering the WCAs has contributed to the flooding of tree islands, the drowning of deer, the flooding of alligator nests and the disruption of wading bird nesting. Nutrients carried in drainage, primarily from subregion agricultural areas have caused vegetative changes in downstream natural areas.

LAKE OKEECHOBEE BASIN

Lake Okeechobee is the third largest lake located entirely in the United States and has become the central hydrologic component of the South Florida ecosystem. Highly regulated for purposes of flood control,

irrigation, water supply, and recreation, water management decisions have adversely impacted its natural resources and effects on downstream resources have also been significant. During periods of abundant rainfall, when lake levels threaten its ability to also serve as a flood control buffer, water which under natural conditions would have overflowed to the Everglades is now shunted to the estuaries on the east and west coasts.

EVERGLADES AGRICULTURAL AREA BASIN

At certain times of the year, the EAA is primarily dependent on Lake Okeechobee for water supply and the WCAs for disposal of drainage water. Under certain conditions, water can also be withdrawn from the WCAs for EAA water supply and Lake Okeechobee can also receive EAA drainage discharges. This dependence of the EAA upon outside areas for flood control results in the untimely delivery of water and in the loss of the natural sheet flow of water entering the north end of the WCAs. In addition to quantity impacts, these discharges to both the lake and WCAs carry with it water quality impacts. Increased EAA water supply demands during drought conditions reduces the water available to downstream natural areas and magnifies drought impacts.

CALOOSAHATCHEE BASIN

The Caloosahatchee River Basin is linked to the total system through Lake Okeechobee by an unnatural connection constructed during the late 1800s. The water needs of the basin's growing population and the expanding agriculture industry are impacting Lake Okeechobee and reducing water available to meet the natural system needs of other downstream subregions. The largest volumes of regulatory releases from the Lake are made to and disrupt the Caloosahatchee Estuarine system. Under natural conditions, this water would have overflowed the lake to what is now the EAA and downstream subregions. The Charlotte Harbor estuarine system is also affected by inflows in the northern half of the basin that are not under control of the SFWMD.

UPPER EAST COAST BASIN

The Upper East Coast basin also has man-made hydrological connections to Lake Okeechobee and the Everglades Agricultural Area via the St. Lucie Canal (C-44) and the West Palm Beach Canal (C-51). Regulatory and flood control water releases from these basins directly impact the estuaries and groundwater resources of this basin while diverting the water from its natural flow path into downstream subregions. C-51 Canal discharges have had a quantity and quality impact on the Lake Worth Lagoon in the Lower East Coast Subregion.

These direct connections also create additional water supply demands on Lake Okeechobee, which reduce the water available to downstream subregions. The Upper East Coast Basin will also affect the water quality and quantity of WCA-1 (Arthur R. Marshall Loxahatchee National Wildlife Refuge) when runoff from the C-51 basin is back-pumped into STA-1E. . Redesign of the Western C-51 Basin Project by the Corps of Engineers will allow storage of larger quantities of water and reduction of the amount released to Lake Worth, while still providing flood protection to developed areas of the C-51 basin

ECOSYSTEM PROBLEMS AND RESTORATION OBJECTIVES

To restore the Greater Lake Okeechobee Subregion, the problems of the unnatural timing and quantity of the water entering, within, and leaving the subregion must be solved. Excess lake water releases which are currently discharged to the east and west coasts disrupt the ecology of the estuaries. Additional water storage is needed to restore natural hydropatterns such as more natural water deliveries to the Everglades. Any solution must also protect the lake from prolonged periods of high and low water.

Water quality is a major concern throughout the subregion. Problems caused by pollutants such as mercury, dissolved solids, sediment transport, and nutrients especially phosphorus have affected the majority of subregion water bodies. These water quality problems are also discharged to other subregions.

LAKE OKEECHOBEE BASIN

Ecosystem problems in Lake Okeechobee are primarily a result of nutrient runoff from ranching, dairy, and agricultural lands; a lake regulation schedule which places water supply and flood control concerns ahead of the ecological health of the lake; and the invasion by exotic plants. Nutrient enrichment has caused major alterations in the ecology of the Lake. Algal blooms affect the lake on a regular basis. Major increases have occurred in the populations of blue-green algae and pollution-tolerant benthic animals.

Alteration of native littoral zone plant communities is linked to several factors. Since the native plant community developed under low nutrient conditions, the present high nutrient content of lake water has altered parts of that community. Cattails have expanded greatly over the last few decades. Prolonged high lake water levels suppress annual plant reproduction and impact the willow community, both of which are important to wildlife.

There has also been a major invasion of exotic plants. Melaleuca has spread over thousands of acres of marshland; torpedo grass has covered large expanses of the native moist soil plant community; while water hyacinths have proven to be a threat to navigation. Proliferation of various exotic species demands on-going remedial actions as well as research to improve control agents and methods. Because current control methods can also cause environmental problems, an increased effort to develop biological control methods is needed.

Special attention is focused on reducing excessive nutrient loading from the agricultural areas north of the Lake. Since the 1970s, agricultural activities, including dairy and beef cattle ranching, have been recognized as sources of excessive phosphorus loading to the Lake and the probable cause of accelerated eutrophication. There have been major efforts to reduce phosphorus loads and significant progress has been made, particularly in reducing loading from dairies. However, with the average annual phosphorus load to the lake currently exceeding the target by about 100 tons a year, much work remains to be done.

An evaluation has been initiated to identify sources and cleanup options for problem dairies. . Research also is being conducted to quantify the amount of phosphorus load reduction that might be achieved by the removal of contaminated sediments from ditches and canals in the watershed. An effort to restore overdrained wetlands in the basin might also prove to be very beneficial. Additionally, under a cooperative program with the University of Florida and Archbold Biological Station, research is being conducted to identify and optimize beef cattle ranching practices that will reduce nutrient loads in stormwater runoff and drainage discharges. The long-term goals of this project are to optimize beef cattle BMPs to ensure both economically and environmentally sustainable beef cattle practices communicate these optimized BMPs to ranchers and enhance a beef cattle management decision support system.

A goal of achieving more natural flows from the Lake into the Everglades and other parts of the natural system, including a reduction of the unnatural flow of water to the east and west coast estuaries, is critical to restoration success. Success in these efforts would provide significant ecological and commercial benefits far beyond the shores of Lake Okeechobee. However, the true test of the restoration effort will be its ability to achieve this goal while also reducing current lake high water level impacts and improving the ecological health of the lake. This restoration effort must include methods and locations for the storage of excess water outside of the lake and subregion.

EVERGLADES AGRICULTURAL AREA BASIN

Soil subsidence, caused primarily by microbial oxidation of organic matter under aerobic conditions, is a major ecological issue in the EAA. Not only does it cause the loss of a valuable resource, it also degrades water quality. Although drainage has caused significant subsidence over a 50-year period (at an average rate of 1.2 inches per year),

improvements in water table management have effectively reduced this rate to about 0.56 inches per year.

The most practical method to reduce subsidence is to maintain water levels as close to the soil surface as possible. The more soil within the profile that is inundated, the less oxidation occurs. Growers have already made important changes by including rice in their sugarcane rotations, thus increasing the use of summer flood waters and growing crops at higher water tables. These techniques help control subsidence and permit more water storage in the EAA. Limited research to breed and select sugarcane cultivars adapted to higher water tables urgently needs to be expanded. Profitably growing sugarcane at higher water tables in the EAA is critical to both sustaining production and allowing the EAA to contribute positively to the ecology of other areas.

The quality of drainage water released from the EAA to the WCAs, including the Loxahatchee National Wildlife Refuge, has been a significant issue that has received more attention than other EAA related issues. Three major programs are in place to lower the phosphorus content of EAA drainage water. They are: (1.) use of on-farm Best Management Practices to treat water before it leaves the farms; (2.) the Everglades Nutrient Removal Project (ENR), a 3,800 acre prototype STA between sugarcane fields and the Refuge and (3.) design of up to 40,000 acres of Stormwater Treatment Areas (STAs).

The amount of phosphorus that can be released to the WCAs without unbalancing the system is still controversial and yet to be determined through ongoing research. However, through two of the three programs mentioned above, improvements are already being achieved as is illustrated below:

- Between May 1, 1996 and April 30, 1997, on-farm BMPs reduced the annual average EAA phosphorus load to the WCAs by 50%.
- Between June 1996 and June 1997, the ENR project reduced the concentration of inflow phosphorus approximately 80% before outflow into the Refuge.

The STAs will be large constructed wetlands that will receive stormwater runoff from the EAA and provide water quality treatment through natural processes before the water enters the WCAs. They will also help to redistribute the current unnatural point source discharges to a more natural sheet flow. It is unclear whether they alone will be able to meet the very low levels of phosphorus required to maintain a healthy Everglades. Several advanced treatment technologies are currently being investigated for use as a final treatment process.

Five small scattered areas next to the lake backpump drainage water directly into the lake. This water is high in nitrogen, adds additional phosphorus and at times, violates other water quality standards such as total dissolved solids, dissolved oxygen, specific conductivity, chlorides, un-ionized ammonia and others. Current plans will divert about 80% of this water to the STAs for treatment. During times of excessive rainfall, the pump stations S-2 and S-3 backpump water of similar quality from the major canals in the EAA into the lake. In the Clewiston area, the Industrial Canal and S-4 Pump Station also discharge to the lake.

CALOOSAHATCHEE BASIN

Originally, the Caloosahatchee River was a shallow, meandering stream with headwaters at the marshes in and around Lake Hicpochee. Drainage and navigation efforts resulted in the channelization of the stream and its connection to Lake Okeechobee. Over a number of decades, residential, commercial and agricultural development in the basin has resulted in the destruction of natural resources including the filling of wetlands, clearing of forests and the lowering of the ground water table over a large area. Development of the basin has also lead to an increase in nutrient loading to the basin's aquatic systems. Drainage has caused high volume, damaging discharges to the estuary during the wet season and unnaturally low flows during the dry season. High flow problems are compounded by periodic, large-volume regulatory releases from Lake Okeechobee. Such extremes threaten oyster bars, seagrass beds, the associated

benthic community and the area's ability to serve as an estuarine nursery.

The Charlotte Harbor estuarine ecosystem has experienced significant habitat loss and water quality degradation over the last 30-50 years due to human activity in the basin. Seagrass and saltmarsh acreage decreased 29 and 51 percent, respectively, from 1945 to 1982. Nutrients, especially nitrogen, entering the estuary have been increasing for the past 15-20 years.

Conversion of uplands and pasture lands to citrus farming is expected to continue. There is concern about potential effects on plants, wildlife, and their habitats and on surface and groundwater quality. Additional irrigation and drainage demands cause concern over the potential impacts on water-table levels.

Slash pine forest ecosystem acreage in Southwest Florida has steadily declined. Large acreage's of hydric pine flatwoods have been lost to logging, development, and agriculture activities. Habitat destruction from residential and commercial development and citrus conversion continues. Melaleuca and other invasive exotic plants are a serious ecological problem.

UPPER EAST COAST BASIN

Alterations in hydrology have been the major problem in the Upper East Coast Basin. Much of the natural area of the Upper East Coast was first converted to citrus groves and cattle range and pasture. Now urban development is rapidly expanding westward into these rural areas and increasingly fragmenting and eliminating natural communities.

Estuarine hydrology has been severely affected by construction of the drainage canal system, artificial stabilization of ocean inlets, development of the Intracoastal Waterway, and construction of causeways across the lagoons. Terrestrial hydrology has been affected by the drainage works, which shorten and sharpen hydroperiods. Abrupt flood-control pulses of fresh water released from water management canals to Lake Worth and the Indian River Lagoon threaten estuarine productivity. A planned divide structure in the L-8 Canal will send additional water into Lake Okeechobee instead of into WCA 1, the Loxahatchee Slough or the Lake Worth Lagoon. During periods of abundant rainfall, this additional water will increase high lake stage and estuarine discharge impacts.

Long-range urban expansion plans threaten the Loxahatchee Slough. A series of land purchases through the Save Our Rivers program, the Palm Beach County Environmentally Sensitive Lands Program will preserve some additional areas within the Loxahatchee Slough system from development and offers the potential of restoration of hydrologic and habitat continuity in the watershed.

RESTORATION OBJECTIVES:

The critical restoration objectives for the Greater Lake Okeechobee Subregion have been identified by the Working Group and are listed as follows:

- Restore more natural hydrologic conditions with appropriate levels, flows, timing and dynamic storage to reduce related ecological stress while managing water resources to meet multipurpose demands.
- Eliminate harmful discharges while restoring natural flows to east and west coast estuaries.
- Protect the ecological function of the Lake Okeechobee littoral zone.
- Develop and implement a management plan for the southern islands in Lake Okeechobee which will maximize natural system benefits.
- Reduce nutrient inputs to natural areas to pre-disturbance levels.
- Improve or maintain water quality necessary for healthy natural system function.
- Manage water and nutrients to sequester in-place Hg.

- Reestablish and maintain recreational and commercial fisheries.

- Eliminate or minimize habitat loss and degradation and restore degraded habitats.

- Restore overdrained and degraded wetlands.

- Eliminate or drastically reduce the presence of exotic plants in the natural areas of the subregion and control their spread.

- Develop sustainable agriculture that controls soil subsidence and takes advantage of natural weather patterns and hydrology.

- Further reduce phosphorus loads from the EAA through reduction in soil oxidation and implementation of BMPs. Construct STAs and use other necessary mechanisms to reach nutrient levels consistent with environmental needs.

RESTORATION PROJECTS

Important restoration projects in progress or proposed for the Greater Lake Okeechobee Subregion 2 are identified on the following pages:

TITLE: Herbert Hoover Dike Stabilization			
SUBREGION: 2	***PROJECT ID:*** GL01	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infra Invest	USACE: $250,000,000	
PROJECT PLAN MANAGER: K. Brooks-Hall 904-232-3155	***BASIS:*** 3	***TOTAL:*** $250,000,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:*** USACE: $3,879,000	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Okeechobee, Martin, Palm Beach, Hendry, Glades		***TOTAL:*** $3,879,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01, GL03		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $246,121,000	
START: 1995	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The purpose of the project is to protect the structural integrity of the Herbert Hoover Dike during extreme high water conditions. Construction of the Herbert Hoover Dike around Lake Okeechobee was initiated in the early 1930's and the last features were completed in the 1970's. The levee was constructed and improved through an incremental process during this period. Based on the best available existing data, it appears that the levee does not meet current safety factors for extreme flood conditions. Geotechnical data are being collected and evaluated to determine the extent of the problem and to develop recommendations for corrective actions. The results will be documented in a Major Rehabilitation Report. Construction cost may be incurred between 2000-2006. Note: Construction cost may be cost shared.

RESTORATION BENEFITS: This project will contribute to the restoration of Lake Okeechobee and more natural water flows to the estuaries and the Everglades by avoiding operational constraints that would reduce the ability to meet restoration goals. If the Herbert Hoover Dike is not stable under high water conditions, it may be necessary to modify the operation of the project to minimize the probability of experiencing high water conditions. Such operations could dictate when and how much water is released from the lake. As a result, operational flexibility would be lost and restoration opportunities would be reduced.

Time Line and Fiscal Year Budget (in thousands of dollars) for Herbert Hoover Dike Stabilization																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	353	577	350	1,275	4,400	20,000	20,000	20,000	15,000	15,000						Unsched
Subtotal	353	577	350	1,275	4,400	20,000	20,000	20,000	15,000	15,000						**$246,121**

TITLE: Fisheating Creek			
SUBREGION : 2	***PROJECT ID:*** GL02	***FINANCIAL REQUIREMENT:*** SFWMD $5,000,000	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Land Acquisition	Land Acquisition	***TOTAL:*** $5,000,000	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** **3**	***APPROPRIATED TO DATE:*** SFWMD $5,000,000	
LEAD ORGANIZATION(S): SFWMD		***TOTAL***: $5,000,000	
SUPPORTING ORGANIZATION(S): FDEP			
COUNTY(S): Glades		***REMAINING FINANCIAL REQUIREMENT:*** SFWMD -0-	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** -0-	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Fisheating Creek, the only free- flowing tributary to Lake Okeechobee, is an extensive riverine swamp flowing through Glades County and emptying into the Lake. The total project area is 43,872 acres. Currently, none of this acreage is in public ownership. The project area contains relatively undisturbed upland and wetland habitats that serve as habitat for the endangered Florida Panther and a number of threatened species, including the Florida black bear, the bald eagle, the Florida scrub jay, and the Florida sandhill crane. The federally listed wood stork and state listed white ibis are known to use the area.

RESTORATION BENEFITS: This acquisition will preserve the water quality and critical habitat of this large watershed. Additionally, the acquisition will provide both hydrologic and water quality benefits for Lake Okeechobee, located downstream. When stages in Lake Okeechobee are high, Fisheating Creek serves as an important feeding area for wading birds, which typically use the lake marshes. Restoration requirements would be minimal if any, as most of the property remains in a natural state.

Time Line and Fiscal Year Budget (in thousands of dollars) for Fisheating Creek																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Land Acquisition																
Project																
SFWMD			5000													5000
Subtotal																**$5,000**

TITLE: Lake Okeechobee Regulation Schedule Study			
SUBREGION : 2	***PROJECT ID:*** GL03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Mgt	USACE: $837,500	
PROJECT PLAN MANAGER K. Brooks-Hall 904-232-3155	***BASIS:*** 2	***TOTAL:*** $837,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:*** USACE: $763,500	
SUPPORTING ORGANIZATION(S) : SFWMD			
COUNTY (S): Okee, Martin, Palm Beach , Hendry, Glades		***TOTAL:*** $763,500	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01, GL01, GL31		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $74,000	
START: 1996	***END:*** 1998	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The operational guidelines for Lake Okeechobee are being reviewed to attempt to optimize the natural resources within the Lake, water discharges to the Everglades, and flows to the estuaries without adversely impacting flood control or municipal or industrial water supply.

A new schedule, WSE, may provide additional water for water supply and reduce the number of damaging discharges to the estuaries. This schedule also offers some improvement for the Lake's marsh zone compared to the current regulation schedule.

RESTORATION BENEFITS: The purpose of the study is to develop a new operating strategy for Lake Okeechobee to improve the environmental conditions within the Lake, provide non-damaging discharges to the estuaries, and improve the timing and volumes of flows to the estuaries. The project is authorized and funding is available.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Okeechobee Regulation Schedule Review																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	128	119														119
Subtotal																**74**

TITLE: Buck Island Agroecology Study			
SUBREGION : 2,1	***PROJECT ID:*** GL04	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Water quality/habitat protection		
PROJECT PLAN MANAGER: Steinman (561) 687-6492	***BASIS:*** 2 Ecosystem Restoration	***TOTAL:*** $12,000,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:*** since 1991	
SUPPORTING ORGANIZATION(S): IFAS, NRCS, FCA, Archbold, MacArthur Foundation, USEPA, FDEP		MacArthur/Archbold 20-year lease value	$4,000,000
		SFWMD, IFAS, FDEP, private contributions	$3,000,000
		TOTAL:	$7,000,000
COUNTY(S): Highlands		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL06, GL07 **Associated with:**		***TOTAL:***	$5,000,000
START: 1991	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Agricultural development in the Lake Okeechobee watershed has had major ecological impacts on both the lake and watershed regions. North of the lake, cattle and dairy farms have imported as much as 5400 tonnes phosphorus yr^{-1} into the watershed as feed and fertilizer. Best management practices (BMPs) have resulted in dramatic declines in phosphorus (P) runoff from agricultural sites around the lake and phosphorus loading to the lake has been reduced by nearly 40%. However, the target load of approximately 360 tonnes P per year adopted by the State of Florida has not yet been achieved, and there is a need for additional reduction of P input into Lake Okeechobee. With completion of the programs to improve water quality associated with dairy runoff, beef cattle ranching becomes the next logical source in attempts to limit nutrient input into Everglades/Okeechobee ecosystem.

Under a cooperative agreement between the SFWMD, the University of Florida's Institute of Food and Agricultural Science (IFAS), Archbold Biological Station, and the Florida Cattleman's Association, experimental research is being conducted to identify and optimize beef cattle ranching practices that will reduce nutrient loads in stormwater runoff. This project involves field-scale experimental research conducted over a range of hydrological and ranch management conditions to ensure that results can be realistically applied to agricultural operations in the basin. Three primary management practices will be optimized in this program: cattle stocking rate; pasture fertilization practices; and grazing and cattle rotation schemes. Specific components of the research include: (1) evaluation of water quality, nutrient cycling, and habitat attributes of existing pasture land management practices; (2) development of BMPs of cow-calf production systems in south Florida and assessment of their impact on water quality and wildlife habitat; and (3) dissemination of information about BMPs to regional cattle producers.

RESTORATION BENEFITS: Immediate benefits include improved water quality of runoff from pasture and range lands. Additional restoration benefits include improved wildlife habitat within improved pastures and wetlands of south Florida watersheds. Improved cattle management practices combined with enhanced water quality and wildlife functions provide a foundation for restoration of many south Florida watersheds, water bodies, and connecting streams and wetlands, including the Kissimmee River, Lake Okeechobee, St. Lucie River, Caloosahatchee River, Charlotte Harbor, C-139, Big Cypress Basin, and the Everglades.

Time Line and Fiscal Year Budget (in thousands of dollars) for Buck Island Agroecology Study																
Task	91-97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
	6500	500	500	500	500	500	500	500	500	500	400	400	200			12,000
Subtotal	6500	500	500	500	500	500	500	500	500	500	400	400	200			**$12,000**

TITLE: Lake Okeechobee Water Retention/Phosphorus Removal			
SUBREGION : 02	***PROJECT ID:*** GL06	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality	Federal	$21,000,000
		State/local/landowners	$9,000,000
PROJECT PLAN MANAGER: Rosen (561) 682-6348	***BASIS:*** 2	***TOTAL:***	$30,000,000
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): SFWMD		SFWMD	$1,825,000
SUPPORTING ORGANIZATION(S): FDEP, FDACS, NRCS, SWCD, Landowners		COE	
		TOTAL:	$1,825,000
COUNTY(S): Okeechobee, Highlands, Glades, St. Lucie		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:**		State/SFWMD	$7,175,000
Critical to:	TS1-I	COE	$21,000,000
Associated with:	TS5-M,LO4-S	***TOTAL:***	$28,175,000
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The purpose of this project is to increase regional water storage north of Lake Okeechobee, reduce phosphorus loading to the lake, and restore wetland habitat in the region. This project covers approximately 25% of the watershed located north of Lake Okeechobee. Project elements will range in size from an entire sub-basin to localized efforts to reduce surface water runoff. Wetlands account for between 18 and 25% of the land classification in this watershed (based on data from US Fish and Wildlife Service-National Wetlands Inventory); however, approximately 45% of the wetlands have been ditched to dry the land for agriculture (i.e., improved pasture). Many of these wetlands were isolated depressions that functioned as small water retention areas in the landscape. Others were more expansive and experienced drying from the regional drainage system. The current system causes the loss of water from the watershed as surface water runoff, which is rapidly transported to the tributary system that drains into Lake Okeechobee. This project would reduce the number of drained wetlands in the northern watershed of Lake Okeechobee, as well as create new ones to retain/detain the water in the watershed (potentially 20,000 acres). The slow release of water from these wetlands will restore the natural hydrology through ground water recharge and attenuation of peak flows. For the ditched wetlands, the approach will be to simply remove the connection between the wetlands and the ditch, leaving the drainage system in place. At the subbasin scale, large land parcels that were once part of the tributary system's historic flood plain will be reflooded. In addition, regional Stormwater Treatment Areas will be constructed with a reservoir component to capture and treat runnoff. In addition to water storage, these wetlands would remove nutrients and restore wildlife habitat. Additional water quality benefits would come from isolating phosphorus-loaded wetlands, increasing the buffer zones, and riparian corridors adjacent to waterways.

RESTORATION BENEFITS: The restoration of wetlands in the northern watershed of Lake Okeechobee will provide peak flow attenuation of water to the lake, resulting in a more gradual rise in lake stage during heavy rainfall periods, and a slower drop in lake stage during drought. Fewer freshwater discharges to tide from the Caloosahatchee and St. Lucie canals, dictated by the Lake Okeechobee regulation schedule, would be anticipated, as well as a reduction in nutrient loading to the lake. Regional benefits to wildlife and waterfowl are anticipated from these restored wetlands.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Okeechobee Water Retention/Phosphorus Removal

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Construction Plan																
Construction																
Project																
Construction Plan		375														375
Construction			1,475	5630	5630	5630	5630	5630								29,625
Subtotal		375	1,475	5630	5630	5630	5630	5630								$30,000

TITLE: Lake Okeechobee Tributary Sediment Dredging			
SUBREGION : 2	***PROJECT ID:*** GL07	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure/Management	***BUDGET CATEGORY:*** Water Quality	Federal $1,900,000 State/local $1,900,000	
PROJECT PLAN MANAGER: B. Rosen. SFWMD (561)687-6348	***BASIS:*** 2	***TOTAL:*** $3,800,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:*** (initial study funded by SFWMD for $168,000)	
SUPPORTING ORGANIZATION(S): FDEP, FDACS, NRCS, SWCD, Landowners		***TOTAL:*** $192,000	
COUNTY(S): Okeechobee, Highlands, Glades, St. Lucie		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL06 **Associated with:** TS05, KV01		***TOTAL:*** $3,608,000	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Sediments in tributaries to Lake Okeechobee are an important source of phosphorus that contribute to the over-target loading to the lake. A recently completed study indicated that 800 tons of phosphorus are contained in tributaries within an 8-basin area that encompasses the most intense agriculture in the northern watershed of the lake. The tributaries in this study range in size from primary to tertiary canals and field ditches. Although our knowledge on the transport of these sediments to the lake is limited at present, it is certain that high flow conditions will mobilize a portion of the sediments. Sediments were found to have the highest concentration of phosphorus in the upper 6 inches, and are located predominately in the primary and tertiary canals (80% of the 800 tons). The project proposes dredging sediments from these canals, thereby removing them as a potential source of phosphorus to Lake Okeechobee.

RESTORATION BENEFITS: The phosphorus loading to Lake Okeechobee would be reduced, enhancing the ability for the in-lake phosphorus target of 40 ug/L to be achieved more rapidly. The improvement in Lake Okeechobee water quality will enhance all water uses south of the lake, as well as the estuaries receiving water from the lake.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Okeechobee Tributary Sediment Dredging

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Detailed site Assessments																
Dredging																
Project																
		150	42												3,608	3,800
Subtotal		150													3608	**$3,800**

TITLE: West Palm Beach Wetland Reclamation Project			
SUBREGION : 2	***PROJECT ID:*** GL08	***FINANCIAL REQUIREMENT:*** Proposed	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality/Habitat Protection	Local: $12,300,000 Federal: $12,300,000 ***TOTAL:*** $24,600,000	
PROJECT PLAN MANAGER: Erik Olson (561) 659-8085	***BASIS:*** Farm Bill Priority: 23	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): City of West Palm Beach		Local: $6,682,516	
SUPPORTING ORGANIZATION(S): SFWMD		Federal: $3,091,489	
COUNTY(S): Palm Beach		***TOTAL:*** $9,774,005	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		Local: $5,617,484 Federal: $9,208,511 ***TOTAL:*** $14,825,995	
START: 1996	***END:*** 2001	***APPROVED:*** 11/97, 9/98	***LAST REVISION:*** 8/98

DESCRIPTION: This project will reuse safe, highly treated wastewater to increase the water supply in South Florida while lowering the demand on existing potable water resources including Lake Okeechobee. The plan involves directing the flow of tertiary treated wastewater through restored and created wetlands for additional cleansing and treatment processes, and at the same time creating wetland habitat. Then the water will be directed to the surficial aquifer where it will be recovered and pumped into the City of West Palm Beach's M Canal, which flows to the water treatment plant. The City of West Palm Beach, Florida, with support from Palm Beach County and the South Florida Water Management District, is implementing a wetlands-based Water Reclamation Program. This will assist the City and County in achieving sustainability while providing water for Everglades restoration.

RESTORATION BENEFITS:

1. Providing water for Everglades restoration through elimination of withdrawals from Lake Okeechobee for drinking water needs - a benefit of 60 - 100 million gallons per day.
2. Creation and restoration of approximately 2,000 acres of environmentally sensitive wetlands.
3. Increased water availability for meeting long-term urban water supply demands in the City of West Palm Beach, the Town of Palm Beach, and central Palm Beach County.
4. Aquifer recharge and replenishment.
5. Retention, conservation, and utilization of 30 million gallons per day of high quality reclaimed water.
6. Reduction of quantity of water disposed in deep injection wells.
7. Reduction of storm water discharge to tide.

NOTE: The City has already expended almost $4 million to acquire the land and to conduct the pilot program.

Time Line and Fiscal Year Budget (in millions of dollars) for West Palm Beach Wetland Reclamation Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I																
Phase II A, B & C																
Phase III A																
Phase III B																
Phase III C																
Project																
County	1000	2120	0	0	0											$3,120
City	2000	2880	1550	1450	1450											$9,330
SFWMD	0	0	300	300	300											$900
Federal	5000	1000	1750	1750	1750											$11,250
Subtotal	8000	6000	3600	3500	3500											**$24,600**

TITLE: Atlantic Ridge Ecosystem			
SUBREGION : 2	***PROJECT ID:*** GL09	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	SFWMD: $27,000,000 FDEP: $27,000,000 ***TOTAL:*** $54,000,000	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): SFWMD		SFWMD: $12,500,000 FDEP: $18,369,250 ***TOTAL:*** $30,869,250	
SUPPORTING ORGANIZATION(S): FDEP			
COUNTY(S): Martin		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** None **Critical to:** None **Associated with:** None		SFWMD: $14,500,000 FDEP: $ 8,630,750 ***TOTAL:*** $23,130,750	
START: 1996	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The project area is located in southern Martin County, between I-95 and U.S. 1. The project area includes approximately 12,700 acres, which is extremely diverse ecologically. It contains large areas of forested sloughs and high quality flatwoods, as well as one of the largest remaining islands of coastal scrub. The current land use is mostly cattle grazing on unimproved pasture with intense agriculture and residential development occurring around the edges of the project area. However, the project also contains extensive wetland and upland systems. Currently, none of this project is in public ownership.

RESTORATION BENEFITS: The purpose of this project is to conserve and protect the high quality habitats and to protect water quality of the South Fork of the St. Lucie River and the North Fork of the Loxahatchee River. The project area forms the headwaters to these rivers and the extensive wetland systems provide a source of groundwater base flow to both rivers. This project will conserve and protect significant habitat for endangered and threatened species such as the Florida scrub jay, the Florida sandhill crane, and the Florida scrub lizard. The area is extremely important for aquifer recharge and water supply to the coastal portion of Martin County.

Time Line and Fiscal Year Budget (in millions of dollars) for Atlantic Ridge Ecosystem							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	14,000	15,900	9,600	10,000	3,500	--	54,000
Project							
Subtotal							$54,000

TITLE: Indian River Lagoon Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	**SFWMD** $2,965,745	**Counties:** $2,867,293
		CARL $6,638,350	**FED:** $3,444,112
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 2	***TOTAL:*** $15,915,500	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): SFWMD		**SFWMD** $2,965,745	**Counties:** $2,867,293
SUPPORTING ORGANIZATION(S): St. Lucie and Martin Counties, FDEP and FW		**CARL** $6,638,350	**FED:** $3,444,112
COUNTY(S): St. Lucie		***TOTAL:*** $15,915,500	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:**		**SFWMD** $0	**Counties:** $0
Critical to:		**CARL** $0	**FED:** $0
Associated with GL19		***TOTAL:*** $0	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project consists of two tracts on Hutchinson Island, in St. Lucie County, totaling 535 acres. Currently, none of this acreage is in public ownership. Approximately 87% of the two tracts are wetlands, dominated by red and black mangroves, with a few freshwater wetlands.

RESTORATION BENEFITS: This acquisition is part of a larger effort by several counties in both the SFWMD and St. Johns River WMD to protect, preserve and restore the Indian River Lagoon. These lands represent the only two undeveloped parcels along the Indian River in St. Lucie County that are not in public ownership. Mosquito control impoundments are present on both tracts. Public ownership of these parcels would allow installation of operable water control structures that allow flushing of the mosquito control impoundments during most of the year. This flushing will provide an important source of mangrove detrital matter which is critical to the health of the estuary. Public ownership will also prevent aerial applications of chemical pesticides for mosquito control.

In 1997, protection was expanded to include lands in Martin County as well.

Time Line and Fiscal Year Budget (in thousands of dollars) for Indian River Lagoon							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	11,500	4,400	--	--	--	--	15,900
Project							
Subtotal							$15,900

TITLE: Juno Hills Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL11	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State and $15,011,268 Local $26,549,162 ***TOTAL:*** $41,560,430	
PROJECT PLAN MANAGER: Herb Zebuth (561)681-6665	***BASIS:*** 1, and 3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): Palm Beach County		State and $15,011,268 Local $26,549,162 ***TOTAL:*** $41,560,430	
SUPPORTING ORGANIZATION(S): FDEP			
COUNTY(S): Palm Beach		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** Continuation of FDEPs CARL Acquisition and Palm Beach County's EEL Program **Critical to:** **Associated with:**		***TOTAL:*** 0	
START: 1992	***END:*** 1997	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This 559-acre site in Palm Beach County contains one of the largest and best remaining examples of the now rare coastal scrub. The extremely rare four-petal pawpaw, known only from a few sites in the Southeast Florida coastal scrub, and at least three other rare species of scrub plants occur in the Juno Hills project. Such rare animals as the scrub jay, scrub lizard, gopher tortoise, and red widow spider also inhabit the scrub here. Endangered sea turtles nest on the Atlantic beach/dune portion of the property. A remnant portion of coastal hammock is located west of the dune system. Scrubby slash pine flatwoods, disturbed basin swamps, and estuarine tidal swamps cover parts of the project area.

RESTORATION BENEFITS: This acquisition will preserve one of the few remaining samples of the original ecosystem of the Atlantic Coastal Ridge in densely populated southeast Florida. The land will be used as a passive park/environmental preservation site.

TITLE: Loxahatchee River Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL12	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	**SFWMD** $11,927,120	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $11,927,120	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S) : Palm Beach County		**SFWMD** $11,927,120	
COUNTY(S): Palm Beach**,** Martin		***TOTAL:*** $11,927,120	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** GL19		***TOTAL:*** $0	
START: 1984	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This 1,936-acre project connects to the southern end of Jonathan Dickinson State Park, and contains lands in Palm Beach and Martin Counties. The project includes the historic floodplain of the Northwest Fork of the Loxahatchee River, a National Wild and Scenic River.

RESTORATION BENEFITS: The purpose of this project is to protect the outstanding natural and cultural values of Florida's only federally designated Wild and Scenic River. Public ownership of this property will prevent direct disruption of surface and groundwater flows to the Northwest Fork, and increase minimum flows to the Loxahatchee River which will affect downstream movement of the saltwater wedge during dry conditions.

ACQUISITION STATUS: Completed.

TITLE: Loxahatchee Slough Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL13	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Palm Beach County: $16,000,000 SFWMD: $5,000,000 ***TOTAL:*** $21,000,000	
PROJECT PLAN MANAGER: C. Rinaldi (561) 682-6537	***BASIS:*** 2	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): SFWMD, Palm Beach County		Palm Beach County: $13,000,000 SFWMD: $5,000,000 ***TOTAL:*** $18,000,000	
SUPPORTING ORGANIZATION(S) : None			
COUNTY(S): Palm Beach			
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: None **Critical to:** None **Associated with:** None		Palm Beach County: $3,000,000 SFWMD: $0 ***TOTAL:*** $3,000,000	
START: 1996	**END:** 2002	**APPROVED:** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Loxahatchee Slough Project is located in Palm Beach County and covers approximately 13,900 acres. It contains a mixture of habitat types, including pine flatwoods, cypress forest, and wet prairie. The present land use is native range. These lands are adjacent to the Loxahatchee Slough Corridor, an area that has been pledged for protection by the current landowner. Palm Beach County will lead the land management effort for this project.

RESTORATION BENEFITS: The purpose of this project is to provide additional wetland and upland buffer to the Loxahatchee Slough Corridor and to preserve critical foraging and nesting sites for wildlife in an area that is undergoing rapid urban development. This system is important for storing surface water runoff and providing groundwater base flow to Canal 18 and the Loxahatchee River. The slough, which is the initial headwaters of the Loxahatchee River, can also spill over to the south and contribute to the Everglades watershed under certain hydrologic conditions.

NOTE: Palm Beach County purchased 10,300 acres of this project in 1996.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee Slough							
Task	Prior to 1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	17,000	1,000	3,000	--	--	--	21,000
Project							
Subtotal							$21,000

TITLE: North Fork St. Lucie River Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL14	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	St. Lucie County: $2,800,000 FDEP: $6,180,000 SFWMD: $5,332,000	
PROJECT PLAN MANAGER: C. Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $14,312,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S) : St. Lucie County, FDEP		St. Lucie County: $1,700,000 FDEP: $2,480,000 SFWMD: $3,152,000	
COUNTY(S): St. Lucie		***TOTAL:*** $7,332,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** GL19		St. Lucie County: $1,100,000 FDEP: $3,700,000 SFWMD: $2,180,000 ***TOTAL:*** $6,980,000	
START: 1995	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This 2,800-acre project includes a stretch of the North Fork approximately 6 miles long, extending from the White City bridge to Canal 24. This project will extend the boundary of the existing publicly owned St. Lucie River Aquatic Preserve. More than 80 percent of the project area is comprised of wetlands within the river floodplain. In addition to the river floodplain, this project includes 175 acres of high quality uplands habitat such as high hammock, pine flatwoods, and sand pine scrub.

RESTORATION BENEFITS: The purpose of this project is to preserve the floodplain habitat and to protect the water quality of the St. Lucie River from the rapidly encroaching urban development. Floodplain wetlands help decrease current velocities in the river, thereby attenuating flood waters. This action also facilitates recharge of the surficial aquifer and filters out nutrients, pollutants and suspended solids. This stretch of the river is classified as an Outstanding Florida Water. Boating, fishing and canoeing are actively pursued on this part of the river.

Time Line and Fiscal Year Budget (in millions of dollars) for North Fork St. Lucie River							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	2.4	2.1	2.9	4.1	--	--	11.5
Project							
Subtotal							

TITLE: North Savannas Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL15	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	St. Lucie County: $1,200,000 SFWMD: $3,800,000	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $5,000,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S) : St. Lucie County		St. Lucie County: SFWMD:	
COUNTY(S): St. Lucie County		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** None **Critical to:** None **Associated with:** None		St. Lucie County: $1,200,000 SFWMD: $3,800,000 ***TOTAL:*** $5,000,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Currently, none of this acreage, which contains a 930-acre remnant of the historical savannas community type in St. Lucie County, is in public ownership. Based on an evaluation conducted for the Florida Natural Areas Inventory, this area was found to have excellent natural community diversity. Seven upland and wetland community types, including a small area of sand pine scrub, are on the property. Important water management functions of this project area include attenuating peak discharges during major storm events and water quality improvement. The site promotes recharge to the surficial aquifer, which is the primary source of potable water in St. Lucie County. The water table at this location is extremely shallow and results in the aquifer being vulnerable to surface contamination.

RESTORATION BENEFITS: Acquisition of this land will help in promoting recharge and protection of the surficial aquifer from surface contamination. Once acquired, sheetflow would be improved if several shellrock roads were removed. Further, acquisition will conserve and protect feeding and breeding habitat for a number of endangered and threatened species, including the wood stork, the Florida sandhill crane, and the osprey. This site also includes the world's only known population of an undescribed mint plant (*Dicerandra sp.*).

Time Line and Fiscal Year Budget (in thousands of dollars) for North Savannas							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	--	--	1,100	1,500	2,400	--	5,000
Project							
Subtotal							$5,000

TITLE: Pal-Mar Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL16	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	SFWMD: $7,000,000 Martin County : $1,000,000 ***TOTAL:*** $24,000,000	Palm Beach Cty: $4,500,000 FDEP: $11,500,000
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): SFWMD		SFWMD: $4,700,000 Martin County : $1,000,000 ***TOTAL:*** $14,626,000	Palm Beach Cty: $4,500,000 FDEP: $4,426,000
SUPPORTING ORGANIZATION(S) : DEP, Palm Beach & Martin Counties			
COUNTY(S): Palm Beach, Martin		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** None **Critical to:** None **Associated with:** None		SFWMD: $2,300,000 Martin County : -0- ***TOTAL:*** $9,374,000	Palm Beach Cty: $0 FDEP: $7,074,000
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Pal-Mar is located in Palm Beach and Martin Counties, east of the J.W. Corbett Wildlife Management Area and west of Jonathan Dickinson State Park. The total project encompasses 37,314 acres, including some of the highest quality pine flatwoods in southern Florida in an ecotone between pine flatwoods and the treeless Everglades. It also includes high quality prairie and savanna habitat. The first purchase of 1,922 acres was completed in 1992.

RESTORATION BENEFITS: The primary purpose of this project is to conserve and protect environmentally unique lands that contain native, relatively unaltered flora and fauna. Acquisition of this project will form an extensive wildlife corridor connecting Jonathan Dickinson State Park, Pal-Mar, J.W. Corbett Wildlife Management Area, and DuPuis Reserve. By protecting native flatwoods, prairies, and marshes, this project will protect critical habitat for at least four endangered bird species, including the Florida sandhill crane and Everglades snail kite, and for the endangered Florida panther.

Time Line and Fiscal Year Budget (in thousnds of dollars) for Pal Mar							
Task	1998 & prior	1999	2000	2001	2002	Unprog	Total
Land Acquisition	9,800	4,800	3,100	3,500	2,800		24,000
Project							
Subtotal							$24,000

TITLE: South Fork St. Lucie River Land Acquisition			
SUBREGION : 2	***PROJECT ID:*** GL17	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	**SFWMD** $2,480,000	
PROJECT PLAN MANAGER: Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $2,480,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S) : FDCA		**SFWMD** $2,480,000	
COUNTY(S): Martin		***TOTAL:*** $2,480,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $0	
START: 1995	***END:*** 1996	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project includes 184 acres on the western shore of the upper South Fork St. Lucie River. The property begins approximately 0.75 miles south of State Road 76 and extends approximately 1.25 miles southward.

RESTORATION BENEFITS: The purpose of this project is to protect the integrity of the river corridor. River water quality is best maintained when river corridor lands remain in their natural state and are restored and managed to enhance natural community quality. Prescribed fire has successfully been used as the main restoration tool to improve the condition of degraded communities on this property.

ACQUISITION STATUS: Completed.

TITLE: Indian River Lagoon National Estuary Program			
SUBREGION : 2	***PROJECT ID:*** GL18	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** **Natural Res. Mngt.**	USDA: $1,700,000 IFAS $ 300,00	
PROJECT PLAN MANAGER: Anita Neal - 561-462-1660	***BASIS:*** 3	***TOTAL:*** $2,000,000 (funded)	
LEAD ORGANIZATION(S): IFAS/ES		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S) : NRCS			
COUNTY(S): St. Lucie, Martin		***TOTAL:*** $500,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $1,500,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Addressing water quality and quantity concerns in the Indian River Lagoon Estuary through the development and implementation of water management plans. This project includes the Florida Yards and Neighborhoods program, establishment of BMP's to curtail nutrient flows into the Indian River Lagoon, assistance with urban landowners to prevent pollution and the operation of two mobile irrigation labs to assist agricultural and urban water users to reduce water consumption.

RESTORATION BENEFITS: This project reduces water consumption in the basin from agriculture and urban areas and nutrient loading into the Indian River Lagoon Estuary from urban and agricultural areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for Indian River Lagoon National Estuary Program																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
IFAS (funded)		60	60	60	60	60										300
NRCS (funded)		220	230	240	250	260										1,200
Subtotal																**$1,500**

TITLE: Indian River Lagoon Restoration Feasibility Study			
SUBREGION : 2	***PROJECT ID:*** GL19	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management	USACE $3,075,000 SFWMD $3,075,000 ***TOTAL:*** $6,150,000	
PROJECT PLAN MANAGER: Ornella, 904-232-1600	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USACE		USACE $ 1,408,000 SFWMD $ 1,327,000 ***TOTAL:*** $2,735,000	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): St Lucie, Martin		***REMAINING FINANCIAL REQUIREMENT:*** Funding included in Comp Restudy, TS1-I USACE $1,707,500 SFWMD $1,707,500 ***TOTAL:*** $3,415 ,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS01 **Associated with:** GL10, GL14, GL18			
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 11/98

DESCRIPTION: Indian River Lagoon spans some 156 miles along Florida's Central East Coast. With limited flushing capability with ocean waters, the ecology of the lower one-third of the lagoon is heavily influenced by freshwater discharges from the C&SF Project canals. Today, high-volume freshwater flows to the St. Lucie estuary through canals constructed as part of the C&SF Project cause rapid decreases in salinity in the St. Lucie estuary and Indian River Lagoon, adversely affecting the health of the habitats and organisms in these coastal estuaries. The C&SF Project canals and water control structures were designed to improve drainage for agricultural, industrial, and residential use. These drainage modifications and land use intensification in the St. Lucie estuary watershed have dramatically increased wet-season flows to the estuary and significantly reduced dry-season inflows. The Indian River Lagoon Restoration Feasibility Study is the second feasibility study to be initiated under the C&SF Project Comprehensive Review Study authority. The study will develop a regional plan to address multiple water resource opportunities to include: environmental restoration of areas adversely impacted by the C&SF Project system; flood damage reduction; and urban and agricultural water supply.

RESTORATION BENEFITS: In 1991, the Indian River Lagoon was listed as an estuary of national significance and included in the National Estuary Program. The restoration of base flow to the estuary will improve salinity conditions for habitats and organisms dependent on brackish areas for at least part of their life cycle. Reduction in the frequency of high volume stormwater discharges will reduce rapid fluctuations of salinity as well as sedimentation, thereby improving conditions for oyster communities and seagrass beds. Upland detention of stormwater will also decrease nutrient loading which has contributed to the build-up of fine-grained nutrient-rich muck in the estuary. Concepts to be evaluated during the study to meet the restoration objectives for the St. Lucie estuary and the Indian River Lagoon include the construction of water preserve areas to attenuate stormwater flow-ways which divert stormwater to other areas, localized retention facilities, and the feasibility of removing organic sediments from the St. Lucie estuary.

Time Line and Fiscal Year Budget (in thousands of dollars) for Indian River Lagoon Restoration Feasibility Study																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	776	682	1258	219	43											2,978
SFWMD	776	682	1258	219	43											2,978
Subtotal																**$5,956**

TITLE: Agricultural Contributions to Carbon Cycling			
SUBREGION : 2	***PROJECT ID:*** GL22	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	ARS $1,797,980	
PROJECT PLAN MANAGER: L.H. Allen (352) 392-6180	***BASIS:*** 3	***TOTAL:*** $1,797,980	
LEAD ORGANIZATION(S): USDA-ARS		***APPROPRIATED TO DATE:*** ARS $719,192	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): All		***TOTAL:*** $719,192	
LINKED PROJECTS: **Dependent on:** GL40 **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ARS $1,078,788	
		TOTAL: $1,078,788	
START: 1996	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Measure methane, carbon dioxide, and water fluxes of rice, sugarcane, and wetland species under various water table conditions in order to identify species and cultivars that will most likely thrive under flooding and soil waterlogging. Measure transmissibility of oxygen and methane flow through the aerenchyma of rice, sugarcane, and wetland species downwards to the rhizosphere and soil.

RESTORATION BENEFITS: Provide information on the effect of various vegetation cover and water table management on loss of organic matter as soil carbon dioxide fluxes. This will enable management practices that will sustain productivity while helping to preserve the organic soil resources of the Everglades. Provide information on species and cultivars that will thrive under flooding and waterlogging conditions while minimizing organic soil loss. Provide comparison information on evaporative water use of various land-cover, species and cultivars under equivalent environmental conditions.

Time Line and Fiscal Year Budget (in thousands of dollars) for Agricultural Contributions to Carbon Cycling

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Research																
Project																
ARS	360	360	360	360	360											1,800
Subtotal																$1,800

TITLE: L-8 Canal - Water Catchment Area - Loxahatchee Slough Infrastructure Improvements			
SUBREGION : 2	***PROJECT ID:*** GL24	***FINANCIAL REQUIREMENT:*** (Proposed)	
PROGRAM CATEGORY: Infrastructure Investment	***BUDGET CATEGORY:*** Infrastructure Investment	Federal $16,000,000 Local $16,000,000	
PROJECT PLAN MANAGER: Erik Olson (561) 659-8085	***BASIS:***	***TOTAL:*** $32,000,000	
LEAD ORGANIZATION(S): City of West Palm Beach		***APPROPRIATED TO DATE:*** Federal $0 Local $2,832,000	
SUPPORTING ORGANIZATION(S): SFWMD, ITID			
COUNTY(S): Palm Beach		***TOTAL:*** $2,832,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** LEC WSP		***REMAINING FINANCIAL REQUIREMENT:*** Federal $16,000,000 Local $13,168,000 ***TOTAL:*** $29,168,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97, 9/98	***LAST REVISION:*** 8/98

DESCRIPTION: Will capture and store excess surface water as an alternative source for meeting present and future urban, agricultural and environmental demands. The project includes infrastructure improvements that include construction of aquifer storage and recovery (ASR) wells, canal and levee improvements, pumping stations, treatment and other control facilities to take water from L-8 Drainage Basin and Canal and route it to the City of West Palm Beach's Water Catchment Area and then into the Loxahatchee Slough and Estuary

RESTORATION BENEFITS: Will directly benefit approximately I0,000 acres of wetlands in the Loxahatchee Slough; provide additional flow for restoration of the Loxahatchee River Estuary; provide additional water for I0,000 acres of wetlands in the City's Water Catchment Area: reduce dependency on Lake Okeechobee water: provide water for storage in Aquifer Storage and Recovery wells for dry season and drought environmental and urban water supply use.

Time Line and Fiscal Year Budget (in thousands of dollars) for L-8 Canal - Water Catchment Area - Loxahatchee Slough Infrastructure Improvements

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I																
Phase II																
Phase III																
Phase IV																
Project																
Federal	1416	1416	4000	4000	4000	1168										$16,000
SFWMD	526	526	3750	3750	3750	918										$13,220
WPB	890	890	250	250	250	250										$2,2780
Subtotal	2832	2832	8000	8000	8000	2336										$32,000

TITLE: Ten Mile Creek Water Preserve Area			
SUBREGION : 2	***PROJECT ID:*** GL25	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition & Infrastructure	***BUDGET CATEGORY:*** Water Resource Development	USACE	$15,404,250
		SFWMD & Local Sponsors	$15,404,250
PROJECT PLAN MANAGER: Unsell (561)687-6888	***BASIS:*** 2	***TOTAL:***	$30,808,500
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USACE, SFWMD		Ad Valorem Tax	$5,000,000
SUPPORTING ORGANIZATION(S): National Estuary Program, Regional Attenuation Facility Task Force, St. Lucie River Initiative		Legislature/SLR Initiative	1,500,000
		TOTAL:	$6,500,000
COUNTY(S): Martin and St. Lucie		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:**			8,904,250
Critical to:	UEC12-M		$15,404,250
Associated with:	UEC11-M, UEC16-S	***TOTAL:***	$24,308,500
START: 1996	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This is a land acquisition and infrastructure project. It will consist of the acquisition of 700 to 1600 acres of land in the eastern portion of the Ten Mile Creek Basin and the construction of an above-ground impoundment for stormwater detention purposes on this property. It will also include construction of a pump station and several control structures for circulation and discharge within the project. A constructed wetland or flow-through marsh has been added for additional water quality improvement purposes.

This project may be the first of several similar water preserve areas in Martin and St. Lucie counties. It will be very important to the construction and long-term operation of these other facilities that as much as possible can be learned from this first preserve area. Pre-construction habitat and vegetative systems will be documented for permit purposes and for the assessment of benefits of the facility. Water quality and quantity monitoring will be initiated prior to construction at the Ten Mile Creek tidal discharge control structure. Use of this baseline data will guide staff in optimizing the operation of this facility. Factors to be considered will be local habitat creation and restoration as well as the benefits that will occur downstream in the Lagoon and Estuary.

RESTORATION BENEFITS: Major improvements will accrue to the North Fork of the St. Lucie River Estuary, which is a part of the Indian River Lagoon, as a result of this project. The Indian River Lagoon is the most biologically diverse estuary in North America. The entire lagoon is endangered, especially the southern portion lying in SFWMD, from increased freshwater run-off from watershed drainage enhancements. Control of freshwater entering this basin will allow salinity concentrations to stabilize to levels that are favorable to seagrasses and benthic organisms such as oysters. Sediments and nutrients in the freshwater discharges to the estuary will also be reduced through this proposed detention system. Reduction in pollutants such as nutrients and excessive freshwater discharges will result in improvements in habitat for manatees and a host of saltwater fishes that use the estuary and lagoon as nurseries. Organic ooze is an ongoing problem in the estuary, especially in the North Fork. The reduction in sediment loadings that occurs with the construction of this proposed facility is anticipated to provide substantial relief from this long-term problem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ten Mile Creek Water Preserve Area																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquire Land																
Project Design																
Permitting																
Prjct Coop Agreement																
Construction																
Wildlife Census																
Plant Census																
Monitor Water																
Project																
SFWMD/Local		101	4572	4731	3000	3000										15,404
USACE		904	1000	7000	6500											15,000
Subtotal		1005	5572	11731	9500	3000										**$30,808**

TITLE: Loxahatchee Slough Ecosystem Restoration			
SUBREGION : 2	***PROJECT ID:*** GL26	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure & Management	***BUDGET CATEGORY:*** Infrastructure Investment, Natural Resource Management		
PROJECT PLAN MANAGER: Lund (SFWMD), (561) 687-6631 Brennan (PBC) (561) 233-2494	***BASIS:*** 2 Ecosystem Restoration	***TOTAL:*** $6,850,000	
LEAD ORGANIZATION(S): SFWMD, Palm Beach County DERM, USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): City of West Palm Beach		***TOTAL:*** $0	
COUNTY(S): Palm Beach		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		Estimated cost of ogee weir/single gate structure: $ 4.85 million Estimated treatment costs for1800 acres melaleuca: $ 2.00 million ***TOTAL:*** $6.85 million	
START: 1997	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This ecosystem restoration project has two components; the construction of a new water control structure in the C-18 canal to permit reflooding of Loxahatchee Slough wetlands previously drained by construction of the C-18 canal, and the elimination of approximately 1800 acres of melaleuca infestation associated with over-drained wetlands in the Loxahatchee Slough. The structure will raise water levels in the east leg of the C-18 canal to permit hydroperiod restoration for approximately 12,000 acres of the adjacent Loxahatchee Slough. This area proposed for hydroperiod restoration and exotic plant removal was purchased by Palm Beach County in 1996 as part of its Environmentally Sensitive Lands Acquisition Program. The Loxahatchee Slough is currently drained to elev. 15.0' by the C-18 canal. This proposed structure will permit management of some 12,000 acres to wet seasonal highs of about 18', while still maintaining flood protection for surrounding developed lands in the C-18 basin. In addition to environmental benefits, the project also enhances groundwater recharge for two major water supply utilities. Hydroperiod enhancement of this area was proposed in a USACE Environmental Assessment of the Loxahatchee Slough completed in 1983. The hydraulic and hydrologic models necessary for structure design are currently under construction as part of a $300,000 cooperative agreement between the SFWMD and the City of West Palm Beach. Model work will be completed in FY98. Funding for structure construction is targeted for FY00. Maleleuca eradication is planned for FY99-FY00 to allow substantial completion prior to reflooding of the Slough.

RESTORATION BENEFITS: This project will provide immediate benefits to the Loxahatchee Slough, Loxahtchee River, and Loxahatchee River estuary. Ecosystem benefits include 1.) restoration of native vegetation, including improvement of snail kite habitat in the Loxahatchee Slough, 2.) reduction in excessive water losses associated with transpiration by melaleuca, 3.)restoration of natural hydroperiod to 12,000 acres of Loxahatchee Slough; 4.) delivery of critical minimum flows to the Northwest Fork of the Loxahatchee River (Florida's only federally designated Wild and Scenic River) which cannot currently be guaranteed from existing C-18 canal storage and 5.) reduction in adverse stormwater releases to the Loxahatchee River estuary via the Southwest Fork which are associated with existing drainage practices.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee Slough Ecosystem Restoration

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Melaleuca Erad.																
Model Dev.																
Altern./Design																
Construction																
Levee Gaps																
Project																
SFWMD			1,000	1,425												2,425
PB County			500	500												1,000
USACE			1,500	1,925												3,425
Subtotal			3,000	3,850												**$6,850**

TITLE: Cypress Creek/ Trail Ridge Restoration Project			
SUBREGION : 2	***PROJECT ID:*** GL28	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure, Land Acquisition	***BUDGET CATEGORY:*** Infrastructure, Land Acquisition		
PROJECT PLAN MANAGER: Sexton (The Conservation Fund)	***BASIS:*** 2	***TOTAL:*** $11,000,000	
LEAD ORGANIZATION(S): DCA		***APPROPRIATED TO DATE:*** SL Lucie County $3,000,000	
SUPPORTING ORGANIZATION(S): DEP, St. Lucie			
COUNTY(S): St. Lucie		***TOTAL:*** $3,000,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL21 **Associated with:** GL18, GL19		***TOTAL:*** $8,000,000	
START: 1997	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 10/98

DESCRIPTION: The Cypress Creek/Trail Ridge project consists of the historic coastal dune system (sandpine scrub) and a four thousand acre Cypress Slough System. The Cypress Creek/Trail Ridge basin is part of a hydrological system that once stretched from the St. Johns River watershed through the Allapattah flats but is now separated into three different drainage basins. The Cypress Creek Restoration Project is initially an acquisition project. Once acquired, the flow through the cypress basin can be restored under SR 70 and its primary southern drainage can be restored by modifying Bluefield Road and the Bluefield canal. The site contains a large rookery, listed plants such as *Hansella filiformis* and *Pepperomia obtusifolia*, and at least four Native American archaeological sites.
History: To date, St. Lucie County has acquired 3,200 acres of Trail Ridge property for $3 million. CARL and SFWMD have approved acquisition of the remaining 7,000 acres of Cypress Creek Tracts.

RESTORATION BENEFITS: The Cypress Creek basin is a natural resource conservation and restoration project that has the potential to serve as the catalyst for a regional hydrological restoration/water preserve/water attenuation project. In the current water management regime, the Cypress Creek basin provides the headwaters for the St. Lucie River and will be a critical component of the Indian River Lagoon Restoration Project. The Cypress Creek Project will have considerable conservation, greenways and water attenuation benefits. Cypress Creek has been listed as a significant wildlife corridor in the Treasure Coast Regional Plan and DEP's Office of Greenways and Trails is beginning a greenway planning process that will include the project area.

Time Line and Fiscal Year Budget (in thousands of dollars) for Cypress Creek Restoration Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
																11,000
Subtotal		3,200	3,900	3,900												$11,000

TITLE: Allapattah Flats			
SUBREGION : 2	***PROJECT ID:*** GL29	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	SFWMD $8,000,000 GFC $8,000,000 Counties $8,000,000 CARL $8,000,000	
PROJECT PLAN MANAGER: C. Rinaldi (561) 682-6537	***BASIS:*** 2	***TOTAL:*** $32,000,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE		***TOTAL:*** $0	
COUNTY(S): Martin		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** GL19		SFWMD $8,000,000 GFC $8,000,000 Counties $8,000,000 CARL $8,000,000 ***TOTAL:*** $32,000,000	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Allapattah Flats SOR project covers 22,560 acres in western Martin County. The site is dominated by poorly drained flatwoods soils, which are saturated for much of the wet season. Historically, this area was a flatwoods matrix, interspersed with depression marshes and wet prairies. With the exception of the four northern sections that drain to Canal-23, the entire site drains slowly to the southeast to the South Fork of the St. Lucie River. Over the past 30 years, the project area has undergone a change in land use from native range grazing to improved pasture, sod farms, and row crops. Most of the understory has been cleared and planted in non-native pasture grasses. Most of the depression marshes remain; however, most of the wet prairies have been drained and the depression marshes have been significantly impacted by drainage. An area of hydric hammock dominates the extreme western boundary. There is good species diversity and many large trees remain.

RESTORATION BENEFITS: Restoration of Allapattah Flats will play a key role in the effort to reduce flows from C-23 into the St. Lucie Estuary. Regional attenuation facilities, or Water Preserve Areas, are proposed which would store stormwater runoff from the agricultural areas of western St. Lucie County. This would reduce damaging wet season discharges into the St. Lucie Estuary. After acquisition, about 8,000 acres of the project adjacent to C-23 would be converted to a reservoir to provide approximately 32,000 acre-feet of water storage. Estimates indicate that this would reduce wet season stormwater flows into the estuary by 39%. It is estimated that an additional 14% reduction in discharge to the estuary could be achieved by not draining the property. Completely eliminating stormwater discharges is not possible; however, significant reductions could probably be made by blocking existing drainage ditches.

The Florida Game and Fresh Water Fish Commission would be the lead manager for the non-reservoir areas. The District will take the lead on all hydrologic restoration efforts.

Time Line and Fiscal Year Budget (in thousands of dollars) for Allapattah Flats							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	--	--	--	--	--	32,000	32,000
Project							
Subtotal							$32,000

TITLE: Bolles and Cross Canal Improvements			
SUBREGION : 2	***PROJECT ID:*** GL30	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE: $1,100,000	
PROJECT PLAN MANAGER: P. Moczynski 904-232-3846	***BASIS:*** 3	***TOTAL:*** $1,100,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Palm Beach		***TOTAL:*** $570,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on :** **Critical to :** GL31 **Associated with:** GL39		***TOTAL:*** $530,000	
START: 1997	***END:***	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Bolles and Cross Canals are east/west canals in the EAA constructed by the Everglades Drainage District prior to authorization of the C&SF Project. The C&SF Project design incorporated modifications to the original canal designs. However, construction was deferred. In response to a request from the SFWMD to pursue a feasibility study for a multi-objective project, the Bolles and Cross Canals will be included in the C&SF Comprehensive Review Study.

RESTORATION BENEFITS: The purpose of the project would be to provide improved flood control in the EAA in a manner such that the project also provides: improved water supply conveyance; greater capability for interbasin transfers that might enhance the treatment capacity of the STAs; and enhanced implementation of best management practices. The project could contribute toward maintaining a sustainable agriculture in the EAA that could be managed consistent with Everglades restoration goals.

From an environmental restoration perspective, the project could play an important role in maximizing the water quality treatment capacities of the STAs. Improvements to the Bolles and Cross Canals could enhance interbasin transfers of excess flood waters from an STA basin that is at its capacity to another that is operating at less than capacity. As a result, the effectiveness of the STAs could be enhanced. No construction is scheduled at this time.

Time Line and Fiscal Year Budget (in thousands of dollars) for Bolles and Cross Canal Improvements																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	304	266													530	1100
Subtotal																**$1,100**

TITLE: Everglades Program			
SUBREGION : 2,3,4	***PROJECT ID:*** GL31	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Land Acquisition, Infrastructure Investment, Science, Water Quality Protection	State: $719,500,000 Federal: (STA-1E): $147,323,000 (Includes construction, operations research, regulations, etc., but excludes Finance Charges)	
PROJECT PLAN MANAGER: Goforth (561)687-6280	***BASIS:***	***TOTAL:*** $866,823,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE, FDEP			
COUNTY(S): Palm Beach, Hendry		***TOTAL:*** $214,148,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** GL35,SE03,TS23 **Critical to:** **Associated with:**		***TOTAL:*** $652,675,000	
START: 1994	***END:*** 2014	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The Everglades Program, mandated by the 1994 Everglades Forever Act, is focused on restoring a significant portion of the remaining 1.5 million-acre central Everglades ecosystem through a program of construction, research, and regulation projects. The Everglades Program includes construction of six STAs covering approximately 47,250 acres in the EAA, with an effective treatment area of just over 42,000 acres. The sizes of the STAs were determined based on the projected effective treatment area required to achieve a long-term average annual phosphorus discharge of approximately 50 parts per billion. The locations were selected on the basis of their proximity to the primary canals within the EAA and the Everglades Protection Area. The program also includes construction projects to restore natural hydropatterns to WCA-2A, WCA-3A and the Rotenberger Wildlife Management Area. The Everglades Program is comprised of 56 interrelated projects which make up 7 program elements: Everglades Construction Projects (18 projects including operation and maintenance), Hydropattern Restoration (7 projects), Research and Monitoring (13 projects), Regulation (10 projects), Exotic Species Control (2 projects), Funding (5 projects), and Annual Progress Report (1 project). While achieving interim, or Phase I, goals, many of the projects also focus on evaluating Phase II, or long-term, restoration goals. Of particular note are the research activities designed to determine the ultimate phosphorus standard and to evaluate supplemental water quality treatment technologies designed to achieve the long-term phosphorus discharge limit.

RESTORATION BENEFITS: The overall purposes of the Everglades Program are to: (1) reduce the loads of phosphorus entering the Everglades Protection Area; (2) increase the quantity of water delivered to the Everglades Protection Area by approximately 28 percent over the 1979-1988 baseline period; (3) capture, store, and clean up approximately 350,000 acre feet per year of excess stormwater currently lost to tide; (4) improve the timing and distribution of freshwater flows to the Everglades Protection Area; (5) reduce harmful discharges of freshwater to the St. Lucie and Caloosahatchee estuaries; (6) provide a buffer between the EAA and the Everglades; and (7) protect wetlands and habitat values outside the Everglades, notably in the Holey Land and Rotenberger areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for the Everglades Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
ECP Design																
ECP Land																
ECP Construction																
ECP Operation																
Research & Monitoring																
Exotic Species Control																
Regulation																
O & M																
Project																
SFWMD	54783	92358	21761	54389	19441	48240	76584	49192	18127	17853	9799	10142	10497	10864	72490	647,058
USACE (DOI)	1665	49500	18175	28051	27050	16666	5958	258								147,323
Subtotal																$866,823

TITLE: EAA Lands/Water Management Area(s) - Land from Willing Sellers for Water Storage, Detention and Water Quality Treatment			
SUBREGION : 2	***PROJECT ID:*** GL33	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Federal $136,600,000	
PROJECT PLAN MANAGER: Rinaldi (561)682-6537	***BASIS:*** 2	***TOTAL:*** $136,600,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): SFWMD **,** DOI		State: $0	
SUPPORTING ORGANIZATION(S): None		Federal: $136,600,000	
COUNTY(S): Palm Beach		***TOTAL:*** $136,600,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01		Federal $0 ***TOTAL:*** $0	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project will focus on acquisition of approximately 50,000 to 90,000 acres of land in the EAA that can be purchased at fair market value from willing sellers. Acquisition may be accomplished by outright purchase of 50,000 to 90,000 acres from willing sellers, or through a combination of purchases and land trades. After its purchase, this land could be leased to agriculture pending completion of the C&SF Project Comprehensive Review Study.

RESTORATION BENEFITS: The purpose of this project is to acquire strategically located lands in the EAA that can be used for regional water storage, detention, and water quality treatment facilities. Initially, this land could be placed in public ownership and leased back for agricultural operations. Presently, there is no technical consensus on the precise amount and location of EAA land required for ecosystem restoration. The precise amount and location of lands ultimately required for water storage, detention, and water quality treatment will be determined through the C&SF Project Comprehensive Review Study. If this study determines that not all of this land is necessary for ecosystem restoration or protection efforts, then excess land could be sold and these dollars could be used to fund other restoration projects. Leaseback of lands to agriculture would produce a revenue stream to stretch land acquisition/ecosystem restoration funds and would help to maintain agricultural economic viability in the EAA. Ecosystem restoration benefits include: regional water storage that would reduce water currently lost to tide and make it available for hydropattern restoration in the Everglades; pollution prevention through reduction of phosphorus loads; reduced loading of nutrients and other pollutants through implementation of water quality treatment facilities; reduced subsidence; and avoidance of adverse flooding of WCAs and tribal lands during wet years.

Time Line and Fiscal Year Budget (in thousands of dollars) for EAA Lands/Water Management Area(s) - Land from Willing Sellers for Water Storage, Detention and Water Quality Treatment																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Land Acq.																
Project																
Acq.		3100	133500													136.6
Subtotal																**$136,600**

TITLE: Rotenberger/Holey Land Wildlife Management Areas			
SUBREGION : 2	***PROJECT ID:*** GL34	***FINANCIAL REQUIREMENT:*** (proposed) State	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Robert Hicks (850) 488-2351	***BASIS:*** 1, and 3	***TOTAL:*** $16,746,665 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FGFWFC			
COUNTY(S): Palm Beach		***TOTAL:*** $11,728,040	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** EFA implementation **Associated with:** GL35		***TOTAL:*** $5,018,625	
START: 1984	***END:*** 1999	***APPROVED:*** 7/98	***LAST REVISION:*** 7/31/98

DESCRIPTION: This land consists of 3,717 acres of disturbed sawgrass marsh. It is adjacent to and south of the Talisman tract and acts as a buffer between the heavily disturbed agricultural area and the more natural Everglades system. The land is a designated Wildlife Management Area and managed by the Florida Game and Fresh Water Fish Commission.

RESTORATION BENEFITS: Public acquisition will be instrumental in restoring a more traditional, ecologically healthy flow and distribution of water into the Everglades ecosystem. The land is needed for the operation of STA 5.

Time Line and Fiscal Year Budget (in thousands of dollars)																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Land Acquisition																
Project																
State DEP																
Subtotal	11,728	5,025														**$16,746**

TITLE: Technical Assistance to EAA and C-139 Basin			
SUBREGION S: 2,3,5	***PROJECT ID:*** GL36	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	USDA $17,498,000	
PROJECT PLAN MANAGER: William Boyd (561) 795-5451	***BASIS:*** 2	***TOTAL:*** $17,498,000	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:*** USDA $3,000,000	
SUPPORTING ORGANIZATION(S): IFAS/ES, ARS, ERS			
COUNTY(S): Palm Beach, Hendry		***TOTAL:*** $3,000,000	
		REMAINING FINANCIAL REQUIREMENT: USDA $14,498,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $14,498,000 (6,498,000 unfunded)	
START: 1995	***END:*** 2005	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Provide technical assistance to growers that voluntarily address resource needs on private land in the EAA and C-139 Basin. The project involves one on one assistance to plan, design, install, and manage BMPs to reduce phosphorus loading in the Everglades Protection Area and to reduce soil depletion (subsidence). These conservation practices address water quality/quantity, soil quality, point and non-point source pollution, agricultural runoff, erosion prevention, crop management, wildlife habitat improvement, agricultural production, and other issues.

RESTORATION BENEFITS: The project will promote and support the conservation of natural resources on private land in a way that will enable private landowners to voluntarily participate in the restoration of the south Florida ecosystem. The project will significantly reduce offsite transport of pesticides, fertilizers, and soil particles, conserve water, reduce soil depletion, sustain agricultural production and enhance wildlife habitat.

Time Line and Fiscal Year Budget (in thousands of dollars) for Technical Assistance to EAA and C-139 Basin

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS (funded)	1000	1000	1000	1000	1000	1000	1000	1000	1000							11,000
NRCS (unfunded)	200	200	200	200	200	200	200	200	200							1,800
IFAS (unfunded)	500	500	500	500	500	500	500	500	500							4,500
ARS (unfunded)	20	20	20	20	20	20	20	20	20							180
ERS (unfunded)	2	2	2	2	2	2	2	2	2							18
Subtotal																**$17,498**

TITLE: Monitoring of Organic Soils in the Everglades			
SUBREGION: 2, 3	***PROJECT ID:*** GL37	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	NRCS $1,200,000 ARS $ 25,000 IFAS $ 11,400	
PROJECT PLAN MANAGER: Greg Hendricks 561-795-5451	***BASIS:*** Task Force Priority 1	***TOTAL:*** $1,236,400	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ARS, I FAS		ARS $25,000 IFAS $11,400	
COUNTY(S): Palm Beach, Broward, Dade, Monroe		***TOTAL:*** $36,400	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE05 **Associated with:** GL38, GL39		NRCS $1,200,000 ***TOTAL:*** $1,200,000	
START: 1997	***END:*** 2011	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project proposes to monitor the accretion or subsidence of organic soils throughout the Everglades. ARS and IFAS have allocated funding to continue monitoring soils in the Everglades Agricultural Area (EAA) that had been monitored at approximately 5-year intervals from 1913 to 1978. It is hoped that this activity will provide training to NRCS staff to expand this monitoring throughout the Everglades if this long-term project is funded.

RESTORATION BENEFITS: A major goal is to restore the natural hydrology throughout the Everglades. Under natural conditions, the organic soils of the Everglades accreted very slowly. Under managed conditions, soils of the EAA have subsided rapidly, and some soils in the Water Conservation Areas have accreted more rapidly than under natural conditions while others have subsided. By monitoring organic soils as proposed in this project, scientists will be able to determine at both macro and micro levels the effects of projects aimed to restore natural hydrological conditions

Time Line and Fiscal Year Budget (in thousands of dollars) for Monitoring of Organic Soils in the Everglades																
Task	98	99	00	01	02	03	04	05	06	07	08	09	10		Unprog	Total
Program																
Project																
NRCS		100	100	100	100	100	100	100	100	100	100	100	100			1,200
ARS	25															25
IFAS	11.4															11.4
Subtotal																**$1,236.4**

TITLE: Soil Survey Update for the Everglades Agricultural Area			
SUBREGION : 2	***PROJECT ID:*** GL38	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Natural Resources Management	NRCS $1,500,000	
PROJECT PLAN MANAGER: Greg Hendricks (561) 795-5451	***BASIS:*** 3	***TOTAL:*** $1,500,000 (unfunded)	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USGS, IFAS			
COUNTY(S): Palm Beach		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:**		NRCS $1,500,000	
Critical to: GL31, GL36, GL37, TS5			
Associated with: TS4		***TOTAL:*** $1,500,000 (unfunded)	
START: 1997	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project will produce a new comprehensive soil survey of the Everglades Agricultural Area (EAA) that consists of approximately 700,000 acres. This soil survey will consist of a spatial representation of soil map units and series across the EAA landscape. A detailed soil series description will be developed that describes the soil profile, sequence of layers from the surface to rock, and other important physical, biological and ecological features.

RESTORATION BENEFITS: The current county level soil survey (Palm Beach) which includes the EAA is almost 20 years old, published in 1978. Significant changes have occurred over this period due to organic soil subsidence, as well as water and land management objectives currently being applied in the EAA. Benefits associated with a new comprehensive soil survey include better on-farm land and water management decision-making by agricultural growers that would assist in south Florida ecosystem restoration efforts. Other benefits included from a new soil survey would be major soil characterization data gaps that currently exist in the present soil survey, as well as key information that will be required for new hydrologic and ecologic models being developed.

Time Line and Fiscal Year Budget (in thousands of dollars) for Wetland Determinations																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS unfunded			250	500	500	250										1,500
Subtotal																**$1,500**

TITLE: Sustainable Agriculture in the Everglades Agricultural Area			
SUBREGION : 2	***PROJECT ID:*** GL39	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	ARS $20,000,000	
PROJECT PLAN MANAGER: Miller (561) 924-5227	***BASIS:*** 1	***TOTAL:*** $20,000,000	
LEAD ORGANIZATION(S): ARS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): IFAS, USSC, FL Sugarcane League			
COUNTY(S): Palm Beach, Hendry		***TOTAL:*** $500,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** GL40 **Critical to:** **Associated with:** TS01, GL30		ARS $19,500,000 ***TOTAL:*** $19,500,000	
START: 1998	***END:*** 2018	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: ARS already has a world renowned sugarcane genetics program at Canal Point, FL. An annual increase of $1 million would equip this program to include new genetic, agronomic, physiologic, and microbiologic research to improve sugarcane's water tolerance and ability to reduce phosphorus runoff. This research aims to enable growers to gradually manage their water to better approximate the natural hydrology of the EAA while maintaining current profit levels.

RESTORATION BENEFITS: Benefits would occur simultaneously to EAA agriculture, regions of the natural Everglades linked hydrologically to the EAA, and to urban areas who would benefit from increased water storage in the EAA. The proposed research would allow EAA farmers to conserve their soils and thereby sustain their agriculture. Since conserving the soils would require restoring conditions similar hydrologically to natural conditions, and potentialy increase water storage, the soil conservation would concurrently serve as a guide to restoring proper hydrologic links to the EAA with its linked regions. The genetics work on phosphorus utilization by sugarcane and the restoration of natural hydrological conditions would both help improve the ability of agriculture in the EAA to filter phosphorus from incoming water and to remove phosphorus from the Everglades.

Time Line and Fiscal Year Budget (in thousands of dollars) for Sustainable Agriculture in the Everglades Agricultural Area

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
ARS		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	7,000	20,000
Subtotal																**$20,000**

TITLE: Development of Diverse Sugarcane Germplasm and its Use in Development of Improved Varieties			
SUBREGION : : 2	***PROJECT ID:*** GL40	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	ARS $20,000,000 FSCL $8,000,000 IFAS $1,250,000 ***TOTAL:*** $29,250,000	
PROJECT PLAN MANAGER: Miller (561) 924-5227	***BASIS:*** **3**	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): ARS		ARS $4,495,000 FSCL $2,700,000 IFAS $590,000 ***TOTAL:*** $7,785,000	
SUPPORTING ORGANIZATION(S): FSCL, IFAS			
COUNTY(S):		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL39 **Associated with:**		ARS $15, 505,000 FSCL $5,300,000 IFAS $660,000 ***TOTAL:*** $21,465,000	
START: 1990	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The objective of this sugarcane genetics program is to develop varieties for the Everglades Agricultural Area (EAA) which produces about 10 percent of the sugar consumed in the United States. As part of this routine genetics program, a continual flow of new genetic material is supplied to project GL39.

RESTORATION BENEFITS: Restoration benefits from this project will come primarily from this project's link to the project titled Sustainable Agriculture in the Everglades Agricultural Area. Without this project as a foundation, the linked sustainable agriculture project will not be possible. Also, without this project as a foundation, future efforts to genetically modify sugarcane for ecological benefit in south Florida would not be possible.

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of Diverse Sugarcane Germplasm and its Use in Development of Improved Varieties

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
ARS																
FSCL																
IFAS																
Project																
Program	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	6550	29,250
Subtotal																**$29,250**

TITLE: Lake Okeechobee Demonstration ASR Project			
SUBREGION : 2	***PROJECT ID:*** GL41	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE: 9,500,000 SFWMD: 9,500,000	
PROJECT PLAN MANAGER: Sally Kennedy, (561) 682-6191	***BASIS:*** 2	***TOTAL:*** $19,000,000	
LEAD ORGANIZATION(S): Suggested SFWMD, USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, EPA			
COUNTY(S): Palm Beach, Glades, St. Lucie and Martin		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: **Critical to:** TS01		USACE: SFWMD: ***TOTAL:*** 19,000,000	
START: 1998	***END:*** 2003 -2004	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Lake Okeechobee Aquifer Storage and Recovery (LO-ASR) Pilot Project - Four separate sites located around the northern half of Lake Okeechobee will be tested during this pilot project. Each site will consist of a full capacity 5 to10 Million Gallons per Day (MGD), 30-inch diameter ASR well with a monitoring well. Lake Okeechobee water will be injected into the Floridan Aquifer System for later retrieval. The Restudy has identified this technology as potentially the most effective means available to provide seasonal and long-term storage. It requires less land and results in fewer losses to evapotranspiration than surface water storage reservoirs. The Restudy is recommending the design and installation of 200, 5-MGD wells located around Lake Okeechobee. EPA has indicated a willingness to work with the project managers to provide the necessary permitting. This pilot project is proposed to be fully operational in FY2000. This will allow for five to six years of good operational data to help effectuate the full design of the Restudy component that is critical for Everglades Restoration.

RESTORATION BENEFITS: The Restudy has identified LO-ASR to be a critical component for Everglades Restoration. The implementation of this pilot project not only provides significant and immediate environmental benefits in its own right but will help provide the necessary information to enhance and optimize the future design and siting of additional wells. This additional storage will allow water managers to better control Lake Okeechobee levels thereby providing regional environmental and water supply benefits for all of South Florida. When high rainfall events occur, which cause high lake levels, water can be injected into the Aquifer for use at a later time when the lake levels are low and need water. This will provide long-term and also some immediate benefits for the St. Lucie and Caloosahatchee Estuaries, in that the large freshwater discharges to the Estuaries will be reduced by the volumes of water that can be injected into the Aquifer.

Time Line and Fiscal Year Budget (in millions of dollars) for Lake Okeechobee ASR Pilot Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Feasibility																
Permitting																
Construction																
Testing																
Project																
USACE			800	5,200	2,000	600	400	250	250							
SFWMD				6,000	2,000	600	400	250	250							
Subtotal			800	11,200	4,000	1,200	800	500	500							$19,000

TITLE: Charlotte Harbor National Estuary Program			
SUBREGION : 2 (and 5)	***PROJECT ID:*** GL45	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality and/or Habitat Protection, Information Management, Monitoring		
PROJECT PLAN MANAGER: Tiffany Lutterman 941/995-1777	***BASIS:*** 1, 3	***TOTAL:*** $3,707,000	
LEAD ORGANIZATION(S): US EPA (Southwest Florida Regional Planning Council is local administrator)		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, SWFWMD, Central Florida Regional Planning Council, FDEP, FDCA, and many county and municipal governments (see counties below).			
COUNTY(S): Lee, Charlotte, Highlands, Polk, Hardee, DeSoto, Manatee, Sarasota		***TOTAL:*** $2,208,667	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $1,498,333	
START: 10/96	***END:*** Until complete	***APPROVED:***	***LAST REVISION:*** 8/97

DESCRIPTION: The Charlotte Harbor National Estuary Program (CHNEP) is addressing three categories of issues on a regional basis. Together with existing public and private institutions, the program is developing management strategies and implementing solutions for 1) fish and wildlife habitat loss, 2) hydrologic alterations, and 3) water quality degradation. The CHNEP study area includes the watersheds of the tidal Caloosahatchee River, along with Charlotte Harbor, Pine Island Sound, and San Carlos Bay; watershed of Estero Bay (Subregion 5); and watersheds of the Peace River, Myakka River, Lemon Bay, and coastal Venice areas (under jurisdiction of the Southwest Florida Water Management District). The CHNEP supports monitoring efforts, regional data management initiatives, science and data collection, habitat restoration, and development of a "Comprehensive Conservation and Management Plan."

RESTORATION BENEFITS: The CHNEP will contribute to ecological protection and restoration in the Charlotte Harbor basin by improving fish and wildlife habitat, water quality, and hydrology through public support, improved interagency communication, and additional funding for local projects.

Time Line and Fiscal Year Budget (in thousands of dollars) for Charlotte Harbor National Estuary Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Early Action Demonstration Projects																533
Conservation & Management Plan Development																1,574
Plan Implementation																1,600
Project																
Subtotal	813	647	647	400	400	400	400									$3,707

TITLE: Cayo Costa Island			
SUBREGION : 2	***PROJECT ID:*** GL47	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State: 100 percent	
PROJECT PLAN MANAGER: John Outland (850) 488-4892	***BASIS:*** 1, and 3	***TOTAL:*** $24,445,539 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:*** State:	
SUPPORTING ORGANIZATION(S): USFWS			
COUNTY(S): Lee		***TOTAL:*** $21,977,776	
		REMAINING FINANCIAL REQUIREMENT: State:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $2,467,763	
START: 1980	***END:*** Completion of acquisition	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The project area, involving 1,932 acres, includes Cayo Costa and North Captiva, both part of a small chain of barrier islands that provide protection for Charlotte Harbor, one of Florida's most productive estuaries. The natural communities within the project are in excellent condition and have high species diversity; some may be unique to these islands. This project contains several archaeological and historical sites. Cayo Costa Island is subdivided into small lots and is threatened by rapid residential development.

RESTORATION BENEFITS: The project will protect the beaches, dunes, and hammocks of these islands. The maintenance of these islands is a natural state will provide protection for the bay, including relief from storm events, and minimize further water quality impacts from development.

TITLE: Charlotte Harbor Flatwoods			
SUBREGION : 2	***PROJECT ID:*** GL48	***FINANCIAL REQUIREMENT:*** (proposed) State: 50 percent Federal: 50 percent ***TOTAL:*** $35,037,868 (estimated)	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: John Outland (850) 488-4892	***BASIS:*** 1, and 3	***APPROPRIATED TO DATE:*** State: $10,244,440 Federal: ***TOTAL:*** $10,244,440	
LEAD ORGANIZATION(S): FDEP			
SUPPORTING ORGANIZATION(S): USFWS, FGFWFC			
COUNTY(S): Charlotte and Lee		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $24,793,828	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**			
START: 1992	***END:*** Completion of acquisition	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The project area, located northwest of Fort Myers in Charlotte and Lee Counties, includes 18,708 acres containing the largest and highest quality slash-pine flatwoods left in Southwest Florida. The area contains pockets of old growth that provide habitat for red-cockaded woodpeckers, black bears, and bald eagles, and an occasional Florida panther ranges in the area. Additionally, the tract provides habitat for rare plant communities. Several drainages flow through these flatwoods into the Charlotte Harbor Aquatic Preserve.

RESTORATION BENEFITS: Acquisition will provide buffer and management area for wildlife, and habitat for many endangered species, those particularly vulnerable to development. It also will help protect the flatwoods and connect the Charlotte Harbor State Buffer Preserve with the Cecil M. Webb Wildlife Management Area, helping to protect both of these managed areas and the waters of the Aquatic Preserves.

The project will be designated as a wildlife management area, with uses such as hiking, environmental education and hunting. The area would be managed by Florida Game and Fresh Water Fish Commission.

TITLE: Ding Darling National Wildlife Refuge Complex			
SUBREGION : 2	***PROJECT ID:*** GL49	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Lou Hinds (941) 472-1100	***BASIS:***	***TOTAL:*** $6,027,500	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SCCF, Lee County, TNC			
COUNTY(S):		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $6,027,500	
START: 1997	***END:*** Until Complete	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project involves adding 301 acres to various units that are managed by J.N. “Ding” Darling National Wildlife Refuge and also includes acquisition of parcels for Matlacha Pass, Caloosahatchee, Pine Island Sound, and Island Bay National Wildlife Refuges which are in the Charlotte Harbor region.

RESTORATION BENEFITS: The San Carlos Bay/Charlotte Harbor estuary has undergone subtle but significant ecological changes as a result of the large volumes of fresh water that have been sent to tide through the Caloosahatchee River from Lake Okeechobee. The seagrass beds, mangrove forests, and oyster beds in the estuary have declined significantly as a result of this water delivery. This project would protect critical elements of the remaining mangroves and transitional wetlands in the San Carlos Bay/Charlotte Harbor estuary.

TITLE: Seminole Tribe Best Management Practices for the Brighton Reservation			
SUBREGION : 2	***PROJECT ID:*** GL53	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Res Mgt Water Quality	NRCS $30,000 Seminole Tribe $426,000 BIA $80,000 NPS $ -0- ***TOTAL:*** $536,000	
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** Ecosystem Restoration		
LEAD ORGANIZATION(S): Seminole Tribe of Florida (STOF)		***APPROPRIATED TO DATE:*** NRCS $30,000 **Seminole Tribe** $48,000 BIA $40,000 ***TOTAL:*** $118,000	
SUPPORTING ORGANIZATION(S): NRCS, ARS, IFAS/ES			
COUNTY(S): Glades			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS08, SW03, SW18, SW19, GL53, GL54,		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $418,000	
START: 1/1998	***END:*** 2004	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Seminole Tribe will contract with NRCS to implement a comprehensive system of best management practices (BMP's) for the Brighton Reservation. Enhanced water management will be accomplished through application of field-level BMP's which might include: conservation irrigation systems; nutrient loading reduction; application procedure training; cross-fencing for grazing management; livestock watering facilities; grazing management plans; closed-end irrigation systems; and a tail-water recovery system, where appropriate.

RESTORATION BENEFITS: Implementation of the BMP's would provide immediate water quality benefits for the watershed which includes Lake Okeechobee. They would also compliment the comprehensive surface water management system planned for the Brighton Reservation.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe
Best Management Practices for the Brighton Reservation

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Permitting																
Construction																
Project																
NRCS		30	0													30
Seminole Tribe		48	40	20	65	155	31	27	40							426
BIA		40	40													80
NPS		0														0
Subtotal		118	80	20	65	155	31	27	40							**$536**

TITLE: Seminole Tribe Comprehensive Surface Water Management System for the Brighton Reservation			
SUBREGION : 2	***PROJECT ID:*** GL54	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment		
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** 1	***TOTAL:*** $15,868,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): Seminole Tribe of Florida (STOF)		NPS $200,000	
SUPPORTING ORGANIZATION(S): NRCS, COE, SFWMD, EPA			
COUNTY(S): Glades		***TOTAL:*** $200,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW17, SW18, SW19, GL06		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $15,668,000	
START: 1/1998	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: A comprehensive surface water management system is to be designed and implemented for the Brighton Reservation which will include irrigation storage, flood control, surface water conveyance and water quality treatment. This Reservation is dependent upon surface water as its primary source of fresh water. The water is lifted from C&SF Canals and Lake Okeechobee into five sub-basins. These waters, upon distribution to agricultural land uses, are discharged to borrow canals leading directly to Lake Okeechobee.

RESTORATION BENEFITS: This plan would provide positive water management benefits to the Indian Prairie Basin which discharges into Lake Okeechobee. Water quality will be improved by reducing nutrient loadings through detaining discharges from Tribal lands in each sub-basin. Flood control will be enhanced through the implementation of additional sites in each sub-basin. Storage and conveyance of surface waters will be increased and enhanced in each and between sub-basins. Rehydration of sweet cabbage palm flatwood slough systems in each sub-basin will also be accomplished.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe Comprehensive Surface Water Management System for the Brighton Reservation

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Permitting																
Construction																
Operation & Maintenance																
Project																
NPS		200														200
Seminole Tribe			20	1940	8687	1358	1358	1705	100	100	100	100	100	100		15,668
Subtotal																**$15,868**

TITLE: Palm Beach County Water Utilities Reclamation Project			
SUBREGION : 2	***PROJECT ID:*** GL55	***FINANCIAL REQUIREMENT:*** Land - $3.0 million Engineering/Permitting/Construction - $12.5 million ***TOTAL:*** $15,500,000	
PROGRAM CATEGORY: Land & Infrastructure	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: Tim Sharp (954) 426-6112	***BASIS:***	***APPROPRIATED TO DATE:*** (Since 1992) Palm Beach County Water Utilities Dept. Approved Capital Improvements Budget ***TOTAL:*** $11,000,000	
LEAD ORGANIZATION(S): Palm Beach County			
SUPPORTING ORGANIZATION(S): SFWMD, FDEP, PBCERM			
COUNTY(S): Palm Beach		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $4,500,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Local wetlands restoration, ground water recharge, water reclamation and linkage to Greenways **Associated with:** PBCWUD's Existing 50-acre Wakodahatchee Wetland			
START: 10/99	***END:*** 12/03	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: Palm Beach County Water Utilities Department (PBCUWD) is proceeding with an aggressive water reclamation program which included golf course and residential irrigation and constructed wetlands. Over 40 acres of wetlands (named the Wakodahatchee Wetland) were constructed to treat and reclaim as much as 3 million gallons per day (mgd) of water from the County's Southern Region Water Reclamation Facility (SRWRF) located in southwestern Palm Beach County. The ultimate goal is to utilize the wetlands for additional treatment of the secondarily treated wastewater and to recharge the local ground water and canal systems. In addition, the wetland provides an aesthetic benefit and improves the quality of life to the local community.

Directly between the Wakodahatchee and the SRWRF is an approximately 290 acre parcel of land used primarily for pepper farming. PBCWUD has recently signed a contract with the owner to purchase 175 acres for purposes of constructing additional wetlands. These wetlands will be constructed similar to the Wakodahatchee including shallow marshes, deep zones, uplands, and habitat islands, all planted with native vegetation. Also similar to the Wakodahatchee, a boardwalk and nature trail will be constructed to provide limited public access for the purpose of educating the local community on the importance of reclaiming water and providing a habitat for wildlife including several species of wading birds. This new wetland will be linked with the Wakodahatchee to allow public access to both facilities, and increase the greenspace within the fast developing area of the County.

RESTORATION BENEFITS: Restoration benefits include:

- Reclamation of 10 mgd of water which would normally be disposed of in deep injection wells
- Recharging the local ground water which directly benefits the County's surficial aquifer wellfields
- Recharging the area canal network, thereby reducing reliance on the regional water supply system
- Creating additional habitat for local wildlife which include threatened and endangered species
- Increasing the amount of "greenspace" in the area, which helps to reduce the impact of over-drainage caused by encroaching development. This benefit aligns with the benefits associated with the proposed Water Preserve Areas located less than two miles west of this site.
- Providing a linkage with the "Greenways" concept in southeast Florida.

Collectively, these restoration benefits meet the applicability criteria for critical restoration projects.

Time Line and Fiscal Year Budget (in thousands of dollars) for Palm Beach County Water Utilities Reclamation Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
LandPurchase			890	906	806											2,602
Design/Permit			500	500	1000	500										2,500
Construction					4000	6400										10,400
Project																$15,502
Subtotal																**$15,502**

TITLE: Floridan Aquifer Restoration			
SUBREGION : 2	***PROJECT ID:*** GL56	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality	USACE $500,000 SFWMD $500,000	
PROJECT PLAN MANAGER: Donna Smith (561) 461-4546	***BASIS:*** 2	USDA NRCS $200,000 ***TOTAL***: $1,200,000	
LEAD ORGANIZATION(S): USDA- NRCS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD		USDA NRCS $50,000	
COUNTY(S): St. Lucie		SFWMD $50,000 ***TOTAL:*** $100,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $1,100,000	
START: 1998	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: To restore the Florida aquifer in St. Lucie County by plugging Floridan aquifer wells, gathering data for regional ground water models, and by installing on-site water control structures on agricultural land. Each well will be logged before it is plugged. In addition, other wells on the property will be metered as part of the on-going SWIM study being carried out by the SFWMD and St. Lucie Soil & Water Conservation District.

RESTORATION BENEFITS: It is permanently plugging unused Floridan aquifer wells there will be less chance of contamination from other aquifers where damaged casing exists. In addition, it will eliminate the risk for future use or free-flow. Regional modeling efforts will allow for more informed permitting decisions.

Time Line and Fiscal Year Budget (in thousands of dollars) for Floridan Aquifer Restoration

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
ID participants																
Write individual plans of action																
Collect data for GW models																
Perform Cons. Measures																
Project																
Subtotal																**$1,200**

TITLE: Urban Mobile Irrigation Lab			
SUBREGION : 2	***PROJECT ID:*** GL57	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water quality	USACE $1,200,000 IRLNEP/SFWMD $500,000 USDA NRCS $800,000	
PROJECT PLAN MANAGER: Donna Smith (561) 461-4546	***BASIS:*** 2	***TOTAL:*** $2,500,000	
LEAD ORGANIZATION(S): USDA-NRCS		***APPROPRIATED TO DATE:*** (since 1992)	
SUPPORTING ORGANIZATION(S): IRLNEP/SFWMD		USDA NRCS $80,000	
COUNTY(S): Okeechobee, St. Lucie, Martin		SFWMD $30,000 ***TOTAL:*** $130,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** UEC-13M **Associated with:** UEC-12M		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $2,370,000	
START: 1997	***END:*** 2011	***APPROVED:***	***LAST REVISION:*** 10/97

DESCRIPTION: To add an urban MIL component to the two existing MIL's in the IRL basin in order to reduce water used and subsequent runoff in urban areas. Public information as well as system efficiency checks will be emphasized. Public buildings, golf courses, condominiums and private home systems will be included. Public Neighborhoods program promoting urban BPM's. Other public information activities will include mailouts and a rain-shutoff device program.

RESTORATION BENEFITS: This project will reduce fresh water attenuation to the IRL. Since the agricultural MIL's were setup in 1992, approximately 450 evaluations have been performed on 15,000 acres of agricultural land with an estimated potential water savings of 940 million gallons.

Time Line and Fiscal Year Budget (in thousands of dollars) for Urban Mobile Irrigation Lab

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Staff and equip 2 urban MIL's																
Perform urban Evaluations & Public info.																
Project																
USACE				120	120	120										
USDA		80	80	80	80	80										
Martin Co		25	25	25	25	25										
SFWMD		25	25	25	25	25										
Subtotal																$2,500

TITLE: Caloosahatchee River			
SUBREGION : 2	***PROJECT ID:*** GL58	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: M/I/S	***BUDGET CATEGORY:*** Area Management	**SFWMD** $106,039,000 **USACE** $100,100,000	
PROJECT PLAN MANAGER: Dawdy (941) 338-2929	***BASIS:*** 1,2,3	***TOTAL:*** $206,139,000.00	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION (S): CRCA, USACE. IFAS, CHNEP			
COUNTY(S): Lee, Hendry, Glades, Charlotte		***TOTAL:*** $4,589,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL50, TS01 **Associated with:** GL48		***TOTAL:*** $201,550,000	
START: 1997	***END:*** 2005	***APPROVED:***	***LAST REVISION:*** 7/98

DESCRIPTION: The C-43 canal project was originally intended to provide a minimum 8-foot navigable waterway between Lake Okeechobee to the Gulf of Mexico, remove runoff from the project area during a storm equal to 30% of the standard project flood, reduce the depth and duration of floods of greater magnitude than the 30% standard project flood, permit discharge of 9.300 cubic feet per second from Lake Okeechobee during periods when canal capacity was not required for tributary area drainage, and to provide salinity control between Ortona and Olga by maintaining the normal pool stage above Olga at optimum water levels. These objectives were accomplished at some expense to the natural functioning of the watershed.

RESTORATION BENEFITS: The Caloosahatchee Water Management Plan was initiated in 1997 to restore, preserve and protect the ecosystem of the estuary and watershed, while providing for the present and future water supply needs of urban and agricultural users. Components of the project include; (1) assessment of existing data in the watershed, (2) identification of additional data needs, (3) development of a watershed management plan to meet natural system goals, (4) dissemination of implementation strategies to ensure adequate water supplies for all users and the natural system, (5) enhancement of recreational opportunities, and (5) restoration of natural hydro-patterns. The Caloosahatchee Water Management Plan will benefit the Caloosahatchee Estuary restoration, Charlotte Harbor National Estuarine Program, and will complement the Corps of Engineers Comprehensive Restudy goals for water supply and water quality.

Time Line and Fiscal Year Budget (in thousands of dollars) for Caloosahatchee River																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total

Nutrient Monitoring																
Water Supply Assessment																
Water Demand Assessment																
Water Storage Modeling																
Water Supply & Demand Modeling																
Environmental Assessment																
Plan Implementation																
Project																
	500	1,345	3,244	950	5,000	25,000	30,000	25,000	15,000							106,039
	0	0	0	100	5,000	25,000	30,000	25,000	15,000							100,100
Subtotal																$206,139

TITLE: Stock Structure and Abundance of Bottlenose Dolphins along Florida's West Coast			
SUBREGION : 2	***PROJECT ID:*** GL59	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Steve Swartz 305/361-4487	***BASIS:*** 3	***TOTAL:*** $376,700	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): NMFS			
SUPPORTING ORGANIZATION(S): Chicago Zoological Society, Mote Marine Laboratory, Earthwatch			
COUNTY(S): Lee (and Charlotte, Sarasota, Manatee, Hillsborough)		***TOTAL:*** $152,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $224,700	
START: 1990	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** *10*/98

DESCRIPTION: The bottlenose dolphin (*Tursiops truncatus*) is protected under the Marine Mammal Protection Act (MMPA). The NMFS is responsible for establishing quotas for incidental takes of bottlenose dolphins (Tursiops truncatus) and for monitoring their populations. In 1987, NMFS began funding several local research efforts in the southeast U.S. to detect large-scale changes in abundance and establish archival databases for trend detection. The Charlotte Harbor/Pine Island Sound area has been of particular interest because of its past use for commercial dolphin collection. It is also near the long-term study sites of Sarasota Bay and Tampa Bay. Extension of the survey to include this area completed a nearly 200-km section of contiguous coastline for which movement patterns of dolphins could be determined. Since 1990, various surveys have been conducted both inside and offshore of Charlotte Harbor and Pine Island Sound, primarily using the methodology of photographic identification. Objectives were to establish a current population size and vital rate parameter database for long-term population trend detection, investigate long-term residency and movement of dolphins, and establish a current dorsal fin photograph catalog of identifiable dolphins in the area. During 1997-98, a monthly photo-ID survey is being conducted offshore of the well-studied inshore stocks to optimize the ability to discern interactions between stocks. In 1998, photo-ID surveys were made in Charlotte Harbor/Pine Island Sound to investigate seasonal changes in abundance relative to stock structure, evaluate interactions between inshore and Gulf dolphins, and update abundance estimates. As part of a larger study during 1998-2000, similar surveys will attempt to relate ranging patterns to stock structure of dolphins in offshore waters between Tampa Bay and Charlotte Harbor. A planned network of study sites to target bottlenose dolphin populations could include locations further south on Florida's Gulf Coast.

RESTORATION BENEFITS: The status of bottlenose dolphins along the Gulf Coast are of concern because of several large mortality events since 1990, habitat degradation due to coastal development, and pervasive pollution. Inshore stocks are currently identified on the basis of bay and estuary boundaries and coastal stocks on the basis of geography and water depth. Interactions between inshore and coastal stocks remain largely undefined. Risk assessment must account for stock interactions, and to fully understand the implications of management decisions or catastrophic events the biological basis of stock designations must be evaluated. The origins of individuals determine their exposure to disease and risk of transmission; movement of individuals between stocks can have potentially serious impacts. Stock designations could provide information on dolphins' history of exposure to contaminants and potentially lead to mitigation of pollution sources.

Time Line and Fiscal Year Budget (in thousands of dollars) for
Stock Structure and Abundance of Bottlenose Dolphins along Florida's West Coast

Task	90-97	98	99	00	01	02	03	4	05	06	07	08	09	Unprog	Total
Coastal Survey															
Harbor/Sound Survey															
Expanded Coastal Survey															
Project															
Coastal Survey	8	24	20.0	20.0	20.0										92
Harbor/Sound Survey	120		49.9	12.2											182.1
Expanded Coastal Survey			10.4	64.6	27.6										102.6
Subtotal		80.3	96.8	47.6											$376.7

TITLE: Fish Abnormalities as Environmental Quality Indicators in the St. Lucie - Lower Indian River			
SUBREGION : 2	***PROJECT ID:*** GL60	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Joan Browder 305/361-4270	***BASIS:*** 1, 2	***TOTAL:***	$134,200
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): NMFS			
SUPPORTING ORGANIZATION(S): FDEP			
COUNTY(S): Martin		***TOTAL:***	$29,200
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** GL19		***TOTAL:***	$ 105,000
START: 1996	***END:*** 5 yr	***APPROVED:***	***LAST REVISION:*** 8/5/98

DESCRIPTION: This study was prompted by observations of abnormalities in fish of the St. Lucie - Lower Indian River estuary. Occurrence of morphological deformities (both skeletal and scale), tumors, and lesions suggests that the fish communities in this system are considerably stressed. A growing body of scientific information indicates that the prevalence of these types of abnormalities is an indication of the degree of stress. Any or all of several potential anthropogenic stressors present in the St. Lucie-Lower Indian River estuary might be the cause of poor fish health. These include sporadic and extraordinarily high freshwater discharges, excessive nutrients, and accumulation of contaminants such as organic pesticides and heavy metals in bottom sediments. This field survey is the first to quantitatively determine the scope and magnitude of the problem. Objectives of the next phase of the project are to characterize the seasonal and annual variability in prevalences of various types of abnormalities among species and examine this in relation to various measures of habitat quality. This study will provide a baseline from which to evaluate the effectiveness of the South Florida Ecosystem Restoration initiative in improving ecological conditions in the St. Lucie-Indian River estuary. This study complements a study recently initiated by FDEP to intensively sample for fish abnormalities at one time of the year.

RESTORATION BENEFITS: Quantifiable measures of ecological integrity are sought by the South Florida Ecosystem Restoration Program in order to identify areas needing restoration action and evaluate results of restoration efforts. Fish health appears to be a reliable indicator of the health of coastal waters. Readily recognizable signs of condition of aquatic organisms can provide the basis for one quantifiable index of a system's ecological integrity for use in South Florida's coastal waters. A quantitative estimate of the prevalence of fish deformities will enable decisionmakers and water management planners to understand this problem and expedite efforts to stop degradation of a significant aquatic habitat. Development of a long-term monitoring program will allow determination of success of restoration efforts.

Time Line and Fiscal Year Budget (in thousands of dollars) for
Fish Abnormalities as Environmental Quality Indicators in the St. Lucie - Lower Indian River

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	Unprog	Total
Quantitative survey															
Relation to habitat															
Project															
NMFS	9.2	20	35	35	35										134.2
Subtotal	9.2	20	35	35	35										$134.2

TITLE: Seagrass Studies in Indian River Lagoon		
SUBREGION : 2 (and 4)	***PROJECT ID:*** GL62	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research, Natural Resources Management	
PROJECT PLAN MANAGER: Jud Kenworthy 919/728-8750	***BASIS:*** 3	***TOTAL:*** $664,000
LEAD ORGANIZATION(S): NMFS, FWS		***APPROPRIATED TO DATE:*** NMFS $138,000; FWS $156,000; SFWMD $ 50,000; Cooperators $ 49,000
SUPPORTING ORGANIZATION(S): SFWMD, FDEP/FMRI, SJRWMD, FIT, HBOI, Smithsonian Marine Station		
COUNTY(S): Martin, St. Lucie, Palm Beach (and Indian River)		***TOTAL:*** $484,000
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** GL19		***REMAINING FINANCIAL REQUIREMENT:*** NMFS $140,000; Cooperators $ 40,000 ***TOTAL:*** $180,000
START: 1987	***END:*** 2001	***APPROVED:*** ***LAST REVISION:*** 8/98

DESCRIPTION: In the Indian River Lagoon, a goal of preservation or restoration of seagrass habitability to depths of 2 m has been established. To accomplish this goal, information is needed on topics such as minimum light requirements for seagrasses, light attenuation, and water quality effects on transparency and seagrass distribution. The Beaufort, N.C., laboratory of the NMFS has been investigating seagrasses of the southern IRL since the late 1980s. Published studies include the light requirements of *Halodule wrightii* and *Syringodium filiforme* and application of an optical water quality model to determine seagrass depth limits. Extensive field work in the IRL, including Hobe and Jupiter Sounds and the Fort Pierce Inlet, led NMFS to propose that *Halophila johnsonii* (Johnson's seagrass) be added as a threatened species to the U.S. List of Endangered and Threatened Plants. This is the rarest seagrass species in Florida and has one of the most limited geographical distributions of any seagrass species in the world, limited to the east coast of Florida from central Biscayne Bay north to Sebastian Inlet. Critical habitat has been proposed for five areas that encompass the largest known contiguous populations of Johnson's seagrass: Sebastian, Fort Pierce, St. Lucie, Jupiter, and Lake Worth inlets. Proposals include research to develop and evaluate light requirements and successful transplanting methodologies for Johnson's seagrass and to determine its genetic and reproductive characteristics.

RESTORATION BENEFITS: Seagrass has been identified as the most critical habitat in the IRL, but seagrass beds in the lagoon have declined dramatically since the 1940s. Based on its rarity and limited distribution, Johnson's seagrass is being evaluated for Federal listing as a threatened species. Results of proposed work on light targets and transplanting techniques would be incorporated into long-range protection and recovery plans for this species. Light targets could be implemented for this species to protect existing populations, and transplantation could be used for restoration in impacted areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seagrass Studies in Indian River Lagoon

Task	87-97	98	99	00	01	02	03	04	05	06	07	08	09	Unprog	Total
Light intensity monitoring															
Transplants															
Genetics															
Mesocosms															
Recovery Team															
Project															
NMFS	48	116	85	55											304
FWS	120	36													156
Cooperators	120	44	40												204
Subtotal	288	196	125	55											$664

TITLE: Lake Worth Lagoon Ecosystem Management Area		
SUBREGION : 2	***PROJECT ID:*** GL65	***FINANCIAL REQUIREMENT:***

PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: **Ginny Powell (561) 681-6681** **Harvey Rudolph (561) 233-2447**	***BASIS:***	***TOTAL:*** $53,000,000	
LEAD ORGANIZATION(S): FDEP Palm Beach Co.		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Local, State and federal agencies			
COUNTY(S): Palm Beach		***TOTAL:*** $1,040,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS01 **Critical to:** **Associated with:**		***TOTAL:*** unknown	
START: 1998	***END:***	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: To address environmental issues in the Lake Worth Lagoon through the development and implementation of a management plan. The management plan includes a broad range of projects and activities covering four program areas: Water and Sediment Quality, Habitat Restoration and Enhancement, Regulatory Review and Pollution Prevention, and Public Use and Outreach.

RESTORATION BENEFITS: Pursuant to the Lake Worth Lagoon Mission Statement, the implementation of the management plan will result in measurable and significant improvements to the Lagoon's water and sediment quality and provide habitat for native plants, fish and wildlife.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Worth Lagoon Ecosystem Management Area																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Subtotal																$53,000

TITLE: Ecosystem Management Initiative in the Loxahatchee River Watershed			
SUBREGION : 2	***PROJECT ID:*** GL66	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: McKee	***BASIS:***	***TOTAL:*** Not determined	
LEAD ORGANIZATION(S): DEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, GFC, USGS, Palm Beach ERM, Treasure Coast Regional Planing Council			
COUNTY(S): Palm Beach, Martin		***TOTAL:***	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** TS04, TS05, TS11, TS13, TS14, TS61, TS63, TS83, GL09, GL11, GL12, GL13, GL16, GL24, GI26 **Critical to:** **Associated with:** GI18, GL62		***TOTAL:***	
START: July 1996	***END:*** Ongoing	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: DEP's ecosystem management initiative in the Loxahatchee River watershed aims to protect the functions of entire ecological systems through enhanced coordination of public land acquisition, regulatory, and planning programs. A comprehensive management plan addressing the Loxahatchee River watershed, such as surface water improvement plan, has never been written. Many of the existing plans are only partially implemented, due to lack of resources, interagency cooperation, and grassroots support.

RESTORATION BENEFITS: A planing committee consisting of staff from local, state and federal agencies and private environmental professionals is drafting an action plan that integrates land and water management strategies to protect and restore the Loxahatchee River watershed. The action plan identifies resources and problems within the watershed and proposes projects that address environmental problems that are not being addressed by existing projects. Proposed projects are projects that are not funded, or only partially funded, or have other impediments blocking implementation. The planning committee will encourage local residents, grassroots organizations, property owners, land managers, local, state and federal agencies, to take action and implement these projects. The second draft of the action plan will be presented to the public at the end of October 1998.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ecosystem Management Initiative in the Loxahatchee River Watershed																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
Subtotal																

TITLE: Lake Okeechobee Dredging Feasibility Analysis			
SUBREGION : 02	***PROJECT ID:*** GL67	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Habitat Protection/Water Quality	SFWMD $250,000 State $750,000	
PROJECT PLAN MANAGER: K. Havens SFWMD (561)682-6534	***BASIS:*** 2	***TOTAL:*** $1,000,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, FGFWFC, FWS, USACE		***TOTAL:*** $0	
COUNTY(S): Okeechobee, Highlands, Glades, St. Lucie (in-lake portion)		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		State $750,000 SFWMD $250,000 ***TOTAL:*** $1,000,000	
START: 2000	***END:*** 2001	***APPROVED:*** TBD	***LAST REVISION:*** 10/98

DESCRIPTION: The objective of this project is to determine the feasibility of removing the mud sediments (approximately 40,000 square km) from the Lake Okeechobee, from the standpoint of engineering, economics, and ecological impacts. The study will consider both the physical removal of material, its need for treatment, and disposal / usage options for the dredged materials.

RESTORATION BENEFITS: If mud sediment removal is found to be a feasible restoration option, and a large-scale program is implemented to carry out the effort, internal phosphorus loading could be dramatically reduced. In that case, the lake would be expected to respond rapidly to reductions in external loading, with lower in-lake phosphorus concentrations, and less turbid water.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Okeechobee Tributary Sediment Dredging																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field Experiments Assessments																
Project																
				1000											1000	1000
Subtotal																**$1000**

TITLE: Lake Okeechobee Torpedo Grass Research			
SUBREGION : 02	***PROJECT ID:*** GL68	***FINANCIAL REQUIREMENT:*** SFWMD $25,000 State $125,000 ***TOTAL:*** $150,000	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Habitat Protection		
PROJECT PLAN MANAGER: C. Hanlon SFWMD (561)682-6748	***BASIS:*** 2	***APPROPRIATED TO DATE:*** (initial study funded by SFWMD for $120,000) ***TOTAL:*** $120,000	
LEAD ORGANIZATION(S): SFWMD			
SUPPORTING ORGANIZATION(S): FDEP-SWIM Program			
COUNTY(S): Okeechobee, Highlands, Glades, St. Lucie (in-lake portion)		***REMAINING FINANCIAL REQUIREMENT:*** State $125,000 SFWMD $25,000 ***TOTAL:*** $150,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**			
START: 2000	***END:*** 2001	***APPROVED:*** TBD	***LAST REVISION:*** 10/98

DESCRIPTION: The objective of this project is to conduct field-scale experimental research to (high vs. low water level, presence or absence of fires) and herbicide application (type and rate) for eradicating torpedo grass from the littoral zone of Lake Okeechobee, and allowing recolonization by native plants.

RESTORATION BENEFITS: Once an effective control program is determined, it could be implemented, and prevent further spread of the invasive exotic plant into valuable fish and wildlife habitat.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Okeechobee Tributary Sediment Dredging

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field Experiments Assessments																
Project																
				150											150	150
Subtotal																**$150**

3.4 *CENTRAL EVERGLADES*
Sub-Region 3

ECOLOGICAL SETTING

The Central Everglades Sub-region consists of the Water Conservation Areas (WCA's), A.R.M. Loxahatchee National Wildlife Refuge, Everglades National Park (including Florida Bay to the park boundary), western portions of the C-102 and C-103 basins, the C-113 basin, the Southern Glades, and Model Lands.

The WCA's encompass 1,350 square miles and represent an area equivalent to about one-third of the historic Everglades landscape. This area has been protected from development but greatly modified by channelization and diking. The WCA's are five interconnected, diked impoundments situated downslope (south) of Lake Okeechobee and immediately upslope (north) of Everglades National Park (ENP). WCA No. 1 is entirely within Loxahatchee National Wildlife Refuge (LNWR). The WCA's are wedged between the developed Atlantic Coastal Ridge (Lower East Coast, LEC), the Everglades Agricultural Area (EAA) and Big Cypress National Preserve.

The WCA's provide many functions. In addition to providing water to most of the remaining Everglades habitat, they also provide water control functions including water storage, water supply, and flood control. The levee system to the east prevents flood waters from inundating the principally urban LEC, while the canals provide water supply for the agricultural lands and ENP. The WCA's enhance water supply to the LEC by recharging the Biscayne Aquifer, the primary drinking water source for the urban area, and by retarding saltwater intrusion.

All of these functions are to be accomplished in a manner beneficial to the abundant wildlife resources dependent on the system. The WCA's contain the last remnants of the tall-sawgrass landscape, as well as the bulk of deep marshes, wet prairies, and tree island hammocks still remaining outside ENP. The WCA's are critically important to a diverse array of wildlife resources, particularly wading birds (including the endangered wood stork), the American alligator, and the endangered snail kite. Grass shrimp, crayfish, and select fish species are well adapted to the periodic wet/dry regimens that characterize the Everglades.

LNWR preserves the largest and most pristine remaining section of the northern Everglades. It is designated as critical habitat for snail kites and as an Outstanding Florida Waters. Thousands of tree islands, sloughs, wet prairies, and sawgrass plains characterize LNWR. It contains some of the deepest peat layers left in the Everglades. LNWR is surrounded by urbanization to the east and agriculture to the west.

The non-marine southern Everglades portion of the sub-region is coincident with the freshwater and terrestrial portions of Everglades National Park (ENP) and the adjacent authorized East Everglades acquisition lands. Established in 1947, this is the first national park created to protect a threatened ecological system. It is a wetland of international importance and has been named an International Biosphere Reserve and a World Heritage Site.

The mainland portion of ENP, predominately a mosaic of flat, seasonally flooded marshes and prairies with interspersed forested islands, is dependent on alternating wet and dry seasons. It has a high biotic diversity with a unique mixture of temperate and tropical species. This includes a large number of endangered animal species and of endemic plant species with highly specific habitat requirements.

The sub-region also includes the agricultural area east of C-111 in southern Dade County that drains into C-111 from the C-102 canal west of S-194, the C-113 canal, the C-103 canal west of S-196, and the C-111E canal. This area is utilized for production of a wide variety of vegetables and tropical fruits.

The sub-region includes the portion of Florida Bay within the ENP boundaries. Florida Bay is an 850-square-mile mosaic of shallow-water banks and relatively deeper basins connected by deep narrow channels. It is dotted with hundreds of small islands or "keys" rimmed with mangroves. Until recently clear waters and lush seagrass meadows characterized the Bay.

Florida Bay is the principal inshore nursery for the offshore Tortugas pink shrimp fishery. It provides critical nursery habitat for other important recreational and commercial fishery species, such as spiny lobster, red drum, and spotted seatrout. The Bay also supports numerous protected species, including bottle nosed dolphin, sea turtles, manatees, and American crocodile. About 85 percent of Florida Bay lies within Everglades National Park; while the remainder lies within the FKNMS.

The Southern Glades and Model Lands consist of a broad southern coast marsh prairie, with a relatively narrow fringing belt along the coastline of mangrove swamps. Under natural conditions, the southern coast marsh prairie occurred in a relatively limited area in Florida, inland from the coast in an area from east of Homestead to an area between Long Pine Key and the broadening belt of mangrove swamps north of Cuthbert and West Lakes. These prairies were separated from Shark Slough and its flanking southern Everglades marsh prairies by the Miami Rockland pine ridge.

LINKAGE TO THE TOTAL SYSTEM

The WCA's are integral to the restoration effort. They include the largest remaining area of undeveloped Everglades. LNRW is currently managed in a manner that emphasizes preservation of the natural habitat in order to promote wetland species health and biodiversity. The WCA's also serve as storage areas for excess water from Lake Okeechobee and the EAA, thus providing flood control for the LEC urban area. Water stored in the WCA's augments the LEC water supply by recharging the Biscayne Aquifer and retarding saltwater intrusion. Management of the WCA's also controls water flow into ENP.

Water from the mainland portion of ENP flows south to provide fresh water to the Park's mangrove fringe and Florida Bay. ENP, in turn, is directly dependent on Lake Okeechobee and the Water Conservation Areas for fresh water and is subject to contaminants transported from these areas. Because it is situated so close to a major metropolitan area, ENP faces serious threats. The water that supports Everglades resources is also in demand by urban residents and the agriculture industry. These demands for water and flood control are the source of many of the present problems in ENP.

Agricultural areas within the C-111 basin drain primarily either into Taylor Slough via the L-31W canal and pump station S-332 or to the panhandle of ENP via the lower C-111. Since these areas were historically within the Taylor Slough basin, the runoff volume is important to the area's slough hydrology. Under some conditions, flows also are discharged eastward to Biscayne Bay. These waters aid in maintaining a freshwater head which prevents salt water intrusion.

The water of Florida Bay is a mixture of freshwater runoff from the Everglades and water from the Gulf Coast that is transported around Cape Sable from the West Florida Shelf. Periodically, the reef tract is inundated by water from Florida Bay that escapes seaward through these same channels.

Inland areas of South Florida are the source of fresh water to the coastal areas. Florida Bay and South Biscayne Bay are the receiving waters for discharges from several water management canals. These serve as direct links to upstream areas and are a source of nutrient and contaminant contributions from urban and agricultural areas. Also, Dade County ground water is the primary source of drinking water for the Florida Keys; thus, wellfield contamination problems have a direct impact.

The Southern Glades and Model Lands areas receive a dominant portion of their inflows from direct rainfall. The Southern Glades area provides sheetflow across the lower C-111 and into the ENP panhandle area. The Model Lands area provides sheetflow to the lower Biscayne Bay.

ECOSYSTEM PROBLEMS AND RESTORATION OBJECTIVES

Both water quality and quantity in the WCA's have been severely impacted as a result of their location between urban and agricultural development, and the water management operations of the C&SF Project. In particular, LNWR receives the highest average annual phosphorus loadings of all other WCA's as well as ENP. LNWR also receives higher amounts of some pesticides, the effects of which are unknown.

Since a major portion of the Kissimmee/Okeechobee and Atlantic Coastal Ridge drainage is diverted to sea for regulatory flood control, historic hydrologic flow through the WCA's is severely reduced. The areas have been virtually isolated from the Kissimmee and Okeechobee watersheds, and the sheetflow that was a critical element in the formation and ecological structure and function of the Everglades landscape has been eliminated.

There have been major hydroperiod impacts resulting from impoundment of these areas. Channelization coupled with impoundment has increased depth and hydroperiods at the southern end of the systems, while dewatering and shortening hydroperiods in the northern end. One result is extensive invasion by exotic plants, such as melaleuca, as well as numerous exotic fish. Another is the shortening of hydroperiods and reduction in water coverage vital to successful wading bird reproduction. This is particularly critical since these units provide major rookery and foraging habitat for wading birds in normal and dry years. Because of the multiple Congressionally authorized functions that WCA No. 1 must satisfy, it is not possible to adopt a regulation schedule that is completely consistent with the purpose for which LNWR was established.

With drainage and development of the

EAA, the WCA's serve as retention/ detention systems for water storage and for input of agricultural drainage. However, LNWR was established to mitigate the loss of Everglades lands to agriculture but has suffered, due to its location, as a support for agriculture. Chronic introduction of drainage waters with elevated concentrations of nutrients, especially phosphorus, has resulted in massive conversions of sawgrass and wet prairie communities to stands of cattails and cattail/sawgrass mixes.

In Everglades National Park, changes in the natural hydrologic cycle include water levels, surface-water inundation, and water flow. Completion of the Tamiami Trail in 1928, the first east-west road across the basin, altered and interrupted water patterns and blocked all natural sheetflow. Present flow patterns in ENP are limited and controlled by management of the WCA's to the north, extensive agricultural and urban pumping, and drainage canals to urban areas to the north and east. Unnatural hydroperiods and hydropatterns throughout the Everglades are now typical, resulting in sharp reductions of seasonal water levels and large discharges for flood control purposes. These have been both ecologically significant and deleterious. Groundwater from the Biscayne Aquifer flows into Biscayne Bay modifying salinity and possibly carrying pollutants into the Bay waters.

The Everglades are presently subject to intense disruptions of historic geochemical processes due to human activities along its margins and, to some extent, from atmospheric transport. With the advent of intense land-use change, notably artificial drainage, cultivation within the Everglades Agricultural Area (EAA) and development of the Atlantic Coastal Ridge, phosphorus and other substances are delivered to the Everglades in quantities significantly above historic levels. One consequence of such enrichment is extensive development of cattail stands in phosphorus-enriched areas formerly dominated by sawgrass.

Changes in water quality, quantity, and distribution have had ramifications throughout the Everglades. The total number of wading birds nesting in the Big Cypress and Everglades basins has declined by more than 95 percent from peak estimates of nesting birds in the 1930s.

Understanding the relationships between a decline in wading birds and changes in hydropatterns that have resulted from water management practices will require increased study of (1) the dynamics of prey populations and (2) specific foraging strategies and patterns associated with successful nesting of wading birds. Some of the changes in aquatic communities that form the food base for wading birds are subtle and difficult to detect in the early stages until they are manifested in obvious collapses of native communities and natural processes. A good example is the recent finding of mercury at dangerous levels in fish and their predators.

Also, non-native fish have colonized natural and disturbed habitats during the past three decades. The rate at which fish have been introduced has increased since the mid-1970's. Several introduced species of herpetofauna also occur in ENP, and colonization will likely continue.

Water management strategies have caused reduced reproductive effort, increased frequencies of nest flooding, and increased rates of juvenile mortality for the American alligator, one of the

most ecologically significant of the larger vertebrates in the Everglades.

The continuing and possibly accelerating loss of species diversity of both flora and fauna from upland communities is of great concern. Invasion of the natural vegetation communities by exotic pest plants like the melaleuca and Brazilian pepper, is one of the most serious problems in ENP. Likewise, the extent of the melaleuca and Old World climbing fern in LNWR is a serious threat to the integrity of its wetland ecosystem. It is possible these and other invasive species may modify the water table and hasten extinction of native species.

Water levels required for flood protection in adjacent agricultural areas result in excessive seepage of water from the Everglades. This results in not only a loss of water from the natural system, but also significantly reduced water levels in the historic headwaters of Taylor Slough. Additionally, the seepage water into C&SF Project canals impacts the ability of the flood control system to prevent agricultural flood damages during wet conditions. Agriculture in this basin has experienced severe damages as a result of large storm events.

In Florida Bay a series of changes has become evident since 1987 that indicates acute ecosystem stress. These include:

- Diminished water clarity;
- Extensive die-off of seagrass habitat in western Florida Bay (no such loss has previously been observed in the Bay, nor reported in the literature);
- Decline of mangroves on Bay islands;
- Increased phytoplankton blooms;
- Reduced populations in such species as pink shrimp, sponges, spiny lobster, and game-fish; and;
- Increases in salinity (the Bay now exhibits high salinity, even hyper-salinity, throughout the year because of decreased freshwater inflow).

Vast areas of hardwood hammocks have already been lost to development. Remaining stands are highly fragmented, but are critical to dispersal and movement of the white-crowned pigeon and migratory birds, as well as for protection of many rare plants and animals.

Efforts are focused on redirecting freshwater and sheetflow into northern Florida Bay; however, there is concern that measures to direct more flow to the Everglades may bring new problems to Florida Bay. These may include an increased nutrient contribution, which could cause more algal blooms, and increased contaminant input to the ecosystem, especially pesticides.

In the Southern Glades and Model Lands area, drainage, agricultural practices, invasion by exotic plants, and excessive fires have degraded the ecosystem. Major changes include: the encroachment of mangrove vegetation into areas that formerly were marsh prairies, the conversion of expansive areas of marsh prairies into thickets of willow and other shrubs, and the introduction of exotics such as Casuarina, Melaleuca, Schinus, and others.

RESTORATION OBJECTIVES:

The restoration objectives of critical importance for the Central Everglades sub-region are listed below:

- Reestablish historic pre-drainage

hydrologic gradients, dynamic storage, and sheetflow.

- Reestablish rainfall-driven hydrology.
- Restore connectivity between WCA's.
- Restore pre-drainage water quality.
- Restore pre-drainage landscape and ecological integrity.
- Control exotic plants and animals.
- Restore pre-drainage fire frequency and spatial boundary.

The Restoration objectives for the non-marine portion of Everglades National Park are listed below:

- Restore or maintain natural quantity, distribution, and timing of hydrologic flows and levels.
- Restore or maintain water quality.
- Restore or maintain natural vegetation and soil conditions.
- Increase long-term natural productivity of fish and invertebrate communities.
- Increase populations of top predators.
- Reverse or arrest biodiversity declines in all landscapes, particularly uplands.
- Satisfy water management needs on tribal lands consistent with other restoration objectives.

The restoration objectives for the south Dade agricultural area in the C-111 basin are listed below:

- Maintain sustainable agriculture in south Dade County that is compatible with hydrologic restoration of the Everglades.
- Reduce water management conflicts between the needs of agriculture and the needs of the natural system.
- Prevent use of agricultural herbicides or pesticides that are harmful to the ecosystem.
- Increase the use of Best Management Practices that prevent adverse impacts to the natural system.

The restoration objectives for Florida Bay are listed below:

- Restore water budgets, circulation dynamics, and salinity.
- Restore water quality and nutrient cycling.
- Restore seagrass, mangrove, coral reef and other habitats.
- Preserve upland biological communities.
- Protect and restore endangered species populations.

The restoration objectives for the Southern Glades and Model Lands areas area listed below:

- Restore or maintain natural quantity, distribution, and timing of hydrologic flows and levels.
- Restore or maintain water quality.
- Restore or maintain natural vegetation and soil conditions.
- Increase long-term natural productivity of fish and invertebrate communities.
- Increase populations of keystone predators.
- Reverse or arrest biodiversity declines in all landscapes, particularly uplands.

- Control fires to a frequency that is compatible with the health of the ecosystem.
- Provide flows to Florida Bay and southern Biscayne Bay that enhance conditions in the estuarine environment.
- Control the invasion of exotic plant species.

RESTORATION PROJECTS

Important restoration projects in progress or proposed for the Sub-region are identified on the following pages:

TITLE: WCA-2A Regulation Schedule Review			
SUBREGION : 3	***PROJECT ID:*** CE01	***FINANCIAL REQUIREMENT:*** USACE: $500,000	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Management		
PROJECT PLAN MANAGER: K. Brooks-Hall 904-232-3155	***BASIS:*** 2	***TOTAL:*** $500,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:*** USACE: $0	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Palm Beach, Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT: USACE: $500,000	
LINKED PROJECTS: **Dependent on :** **Critical to:** **Associated with:**		***TOTAL:*** $500,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: A revised regulation schedule was implemented for Water Conservation Area No. 1 (WCA-1) (Loxahatchee National Wildlife Refuge) in 1995. The schedule was modified to improve water conditions for wading bird and snail kite habitat. Implementation of the revised regulation schedule has already shown benefits. When the WCA-1 regulation schedule modifications were approved, it was agreed that the WCA-2A regulation should also be reviewed to evaluate opportunities for similar benefits. The review will be initiated in FY98.

RESTORATION BENEFITS: The purpose of the project is to evaluate the feasibility of modifying operational modifications for WCA-2A to benefit its fish and wildlife resources, without adversely impacting the area's ability to satisfy its flood control and water supply purposes. The study can be implemented with existing operational and maintenance authority. It can be funded through ongoing O&M appropriations for the Corps of Engineers. It will be initiated in FY99.

Time Line and Fiscal Year Budget (in thousands of dollars) for WCA-2A Regulation Schedule Review																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE			200	100	200											500
Subtotal			200	100	200											**$500**

TITLE: Water Conservation Areas: Inholdings, Mineral Rights, and Other Interests			
SUBREGION : 3	***PROJECT ID:*** CE02	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** 1	SFWMD $18,028,792	
PROJECT PLAN MANAGER: Rinaldi (561)682-6537	***BASIS:*** 2,3	***TOTAL:*** $18,028,792	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:*** SFWMD $9,228,792	
SUPPORTING ORGANIZATION(S): None			
COUNTY(S): Palm Beach, Broward		***TOTAL:*** $9,228,792	
		REMAINING FINANCIAL REQUIREMENT: SFWMD $8,800,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $8,800,000	
START: 1948	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The WCA's include approximately 256,000 acres in Broward, Dade, and Palm Beach counties. The acquisition program is attempting to purchase all outstanding mineral rights on approximately 250,000 acres and fee title rights on less than 70,000 acres. Land Management is carried out by the FGFWFC and the U.S. Fish and Wildlife Service, under contract to the SFWMD.

RESTORATION BENEFITS: The general purpose of these lands is to store floodwater from developed areas adjacent to the WCA's for later use during the dry season. Releases of water from the WCA's during the dry seasonal and, particularly during drought conditions are considered vital to the maintenance of adequate water levels in the coastal canals, wellfields, and Everglades National Park and for the prevention of saltwater intrusion.

Time Line and Fiscal Year Budget (in thousands of dollars) for Water Conservation Areas: Inholdings, Mineral Rights, and Other Interests

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Land Acq	200	200	200	200	200										7,800	8,800
Subtotal																**$8,800**

TITLE: Soil Survey for Everglades National Park, Big Cypress, & Water Conservation Areas			
SUBREGION : 3	***PROJECT ID:*** CE05	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Natural Resources Management	NRCS $4,280,000	
PROJECT PLAN MANAGER: Greg Hendricks (561) 795-5451	***BASIS:*** 3	***TOTAL:*** $4,280,000 (unfunded)	
LEAD ORGANIZATION(S): NRCS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NPS, USGS, IFAS			
COUNTY(S): Palm Beach, Broward, Dade, & Monroe		**Total** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:**		NRCS $4,280,000	
Critical to:	TS01, TS40, TS41, TS55, TS56		
Associated with:	TS19, TS22, TS45	***TOTAL:*** $4,280,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project will produce a comprehensive soil survey of Everglades National Park (ENP) and the Water Conservation Areas (WCA's) throughout south Florida, consisting of approximately 2,000,000 acres. This soil survey will consist of a spatial representation of soil map units and series across the national park and WCA landscape. A detailed soil series description will be developed that describes each of the soil profiles, sequence of layers from the surface to rock, and other important physical, biological and ecological features.

RESTORATION BENEFITS: Presently there is no soil survey available to land managers and planners at the ENP or WCA's at a level of detail that compares with that which will be produced by this product. Information provided by this detailed soil survey will deliver to land managers an effective tool that will assist them in the restoration and/or preservation of key landscape features necessary for the sustainability of their land and water management objectives. Ecological communities are highly correlated to soil series for which they are associated. Key soil characterization data will be used by land and water managers to guide the restoration and/or management of desired plant communities. Other benefits include development of key information that will be required for new hydrologic and ecologic models being developed.

Time Line and Fiscal Year Budget (in thousands of dollars) for Soil Survey for Everglades National Park, Big Cypress, & Water Conservation Areas

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS			550	1060	1060	1060	550									4,280
Subtotal			550	1060	1060	1060	550									$4,280

TITLE: Canal C-111 Project		
SUBREGION : 3	***PROJECT ID:*** CE06	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE: $87,564,000 SFWMD: $73,729,000 NPS (Land): $0
PROJECT PLAN MANAGER: Glenn Landers, 904-232-2125	***BASIS:*** 1	***TOTAL:*** $161,293,000
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***
SUPPORTING ORGANIZATION(S): SFWMD, ENP, DEP, FWS		USACE: $22,290,000 SFWMD: $71,790,000 See Note
COUNTY(S): Dade		NPS(Land): $0 See Note ***TOTAL:*** $94,080,000
LINKED PROJECTS: **Dependent on:** CE10, CE12, **Critical to:** CE13 **Associated with:** CE08, CE11, CE12 CE14		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** To Be Determined: See Notes Below
START: 1994	***END:*** 2005	***APPROVED:*** 11/97 ***LAST REVISION:*** 7/98

NOTE 1: Financial requirements shown above are based on the original project scope and current Project Cooperation Agreement (PCA). The original project lands cost estimate of $50,690,000 did not include state conservation lands (Southern Glades) needed to implement the C-111 project. WRDA 1996, Section 316, changed cost sharing for C-111 project implementation to 50% Federal and 50% Local including credit for Southern Glades lands. The U.S. Army Corps of Engineers (USACE) is currently preparing a General Reevaluation Report (GRR) Supplement to detail the estimated revised project lands costs. After approval of the REDM, the PCA will be amended to implement 50/50 cost sharing per WRDA 1996 and project financial requirements shown above will be updated.

NOTE 2: WRDA 1996, Section 316, also states "The Secretary of Interior shall pay 25% of the cost of acquiring such portions of the Frog Pond and Rocky Glades areas as are needed for the project." The Corps GRR Supplement will detail the cost of acquiring these lands. Current total cost estimate for the Frog Pond and Rocky Glades is approximately $110,650,000.

DESCRIPTION: The goal of the C-111 Project modifications is restoration of the Taylor Slough and eastern panhandle of Everglades National Park, while maintaining flood protection within the C-111 basin east of L-31 N and C-111. The project plan consists of both structural and nonstructural modifications to the existing project works within the C-111 basin. Structural components of the plan include: construction or modification of nine canals, construction of an L-31 Tieback levee and S-332D tieback levee, removal of existing spoil material along the south side of lower C-111, construction of five pump stations, and replacement of an existing bridge over Taylor Slough in ENP. The project will require the acquisition of lands in the Frog Pond; the Rocky Glades Agricultural Area (L-31N lands); and additional lands in the Southern Glades. The SFWMD has completed acquisition of the Frog Pond and acquisition of the remaining lands is underway. These modifications will widen the areal extent of water distribution capability, thereby restoring more natural hydrology in 128 square miles of the Taylor Slough and its headwaters in the Rocky Glades.

RESTORATION BENEFITS: The goal of this project is to restore more natural timing, distribution, and quantity of freshwater flows to Taylor Slough and the wetlands in the panhandle of ENP. Restoring the natural hydroperiods will help to restore and maintain natural vegetation communities in these regions of ENP. The detention/retention area will also contribute to improving the water quality of waters delivered to ENP.

Time Line and Fiscal Year Budget (in thousands of dollars) for Canal C-111 Project

Task	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design															
Land Acquisition															
Construction															
Completion															
Project															$161,293

Annual Federal and non-Federal cost Allocation will be based on the negotiated Project Cooperation Agreement.

TITLE: East Cape and Homestead Canal Plugs Repair

SUBREGION : 3	***PROJECT ID:*** CE07	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure		
PROJECT PLAN MANAGER: Dick Ring **(305) 242-7710**	***BASIS:***	***TOTAL:*** $235,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ENP			
COUNTY(S): Dade, Monroe		$235,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** CE06,CE10		***TOTAL:*** $0	
START: 1997	***END:*** 1997	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The East Cape and Homestead Canals were constructed to assist in the drainage of the Everglades prior to the authorization of Everglades National Park in 1936. After the park was established in 1947, the canals were plugged to prevent over-drainage of the upstream freshwater systems and saltwater intrusion during the high tides in the dry season. Hurricane Andrew resulted in both plugs being over-topped. Extensive damage occurred causing the plugs to leak badly and potentially fail. The Corps of Engineers has provided design assistance and funding to Everglades National Park to repair/replace the plugs. The park completed the scheduled work in FY97.

RESTORATION BENEFITS: The project will prevent the loss of freshwater from coastal lakes in the southern Everglades and prevent saltwater intrusion. This will help restore and protect natural hydrologic conditions. The project is authorized, funded, and completed.

STATUS: completed

Time Line and Fiscal Year Budget (in thousands of dollars) for East Cape and Homestead Canal Plugs Repair																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	235															235
Subtotal	235															**$235**

TITLE: Everglades National Park Water and Wastewater			
SUBREGION : 3	***PROJECT ID:*** CE08	***FINANCIAL REQUIREMENT:*** NPS Construction Budget	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment		
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	***BASIS:*** 3	***TOTAL:*** $38,491,000	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Dade		***TOTAL:*** $3,748,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $34,743,000	
START: 1997	***END:*** TBD	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: To rehabilitate or replace the water and wastewater systems at 17 areas within Everglades National Park.

RESTORATION BENEFITS: A large percentage of the existing water and wastewater systems within Everglades National Park were constructed over 25 years ago when the public health and environmental standards were not as fully evolved as they are today. While originally constructed to code, many of these systems fall short of meeting present day standards. This rehabilitation effort would modify or replace all of the existing systems with the new systems that offer the full level of public health and environmental protection that present day standards require. The final result will be potable water systems properly designed to provide safe, clean water and wastewater that are properly designed and provide sufficient treatment to fully protect the fragile water resources within Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades National Park Water and Wastewater																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
System Repair																
Project																
NPS	354	3,394	1,600												33,143	38,491
Subtotal																**$38,491**

TITLE: Hole-in-the-Donut			
SUBREGION : 3	***PROJECT ID:*** CE09	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Habitat Protection/Area Mgmt.	**Dade Co.** $75,000,000	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	***BASIS:*** 1	***TOTAL:*** $75,000,000	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): DERM			
COUNTY(S): Dade		$ 6,284,584	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $68,715,416	
START: 1994	***END:*** 2017	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project will restore approximately 5,000 - 6,000 acres of wetlands within Everglades National Park by removing exotic vegetation (Brazilian pepper) and removing disturbed substrate to limestone bedrock.

RESTORATION BENEFITS: Invasive exotic pest vegetation is one of the greatest long-term threats to the Everglades ecosystem. As a result of this project, 5,000 - 6,000 acres of exotic vegetation will be restored to natural wetlands within ENP as mitigation for development projects in other areas of Dade County. A vast seed source with the potential to invade and disturb other areas of the Everglades will be eradicated.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hole-in-the-Donut																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Reclamation																
Project																
Dade County	2387	2910	3056	3209	3369										60,069	75,000
Subtotal																**$75,000**

TITLE: Modified Water Deliveries to Everglades National Park			
SUBREGION : 7	***PROJECT ID:*** CE10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	NPS $133,443,000	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	***BASIS:*** 1	***TOTAL:*** $133,443,000	
LEAD ORGANIZATION(S): ENP/USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, DEP, FWS			
COUNTY(S): Dade, Broward		***TOTAL:*** $51,576,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** CE12, CE13 **Critical to:** CE06 **Associated with:** CE07, CE10, CE11 CE14		***TOTAL:*** $81,867,000	
START: 1990	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 11/98

DESCRIPTION: The project is being implemented in conjunction with acquisition of 109,578 acres in the East Everglades as part of the ENP Expansion. This project will involve: (1) construction of gaps or control structures in the L-67 levee to allow flow from WCA-3A to WCA-3B; (2) construction of water control structures to deliver a sheet flow of water to the NE Shark River slough; and (3) degradation of the L-67 extension levee south of Tamiami Trail and, (4) construction of a flood mitigation/seepage control feature to prevent adverse impacts to the 8.5 square mile residential area. Together, these efforts will restore historical hydroperiods in the southern portion of WCA-3A and WCA-3B, as well as the northern section of Shark River Slough, a total area of about 800 square miles.

RESTORATION BENEFITS: This project will restore historical hydroperiods and flows to WCA-3A, WCA-3B, and Shark River Slough, which will help to restore and maintain natural biological communities in ENP.

NOTE: It is critical that land acquisition be accelerated so all land is acquired prior to completion of the project works in 2006.

Time Line and Fiscal Year Budget (in thousands of dollars) for Modified Water Deliveries to Everglades Nat. Park[1,2]

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Land for Con.																
Construction																
Project																
USACE	2800	11900	14000	38300	4600	5500	28300	3100	1706						361	
Subtotal	2800	11900	14000	38300	4600	5500	28300	3100	1706							**$133,443**

[1] Figures are subject to periodic revision as a result of USACE inflation forecast.
[2] Figures are subject to revision as a result of possible elevation of US41 (Tamiami Trail)

TITLE: Additional Lands - 8.5 Square Mile Area			
SUBREGION : 3	***PROJECT ID:*** CE11	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State 75 percent Federal 25 percent	
PROJECT PLAN MANAGER: John Outland (850) 488-4892	***BASIS:*** 1, and 3	***TOTAL:*** $76,000,000 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE, SFWMD, Dade County, U.S. Dept of Interior			
COUNTY(S): Dade		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE10 **Associated with:**		***TOTAL:*** $76,000,000	
START: 1998	***END:*** Completion of acquisition (based on willing seller initiative)	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project consists of a willing seller land acquisition program for up to 5,013 acres consistent with the recommendations of the Governor's Committee on the 8 1/2 Square Mile Area. The acquisition area is in addition to the 1,065 acres included in the buffer/flow-way (see project titled East Coast Buffer Water Preserve Areas). The area was once historical pinnacle rock Everglades and under natural conditions was subject to seasonal flooding due to its topographic setting. Existing development in the area consists of agricultural and rural residential uses and a plethora of illegal land uses and activities (residential density violations, illegal structures and dumping).

RESTORATION BENEFITS: The acquisition of the remaining lands outside of the buffer/flow-way is needed to support water supply and protect water quality in the buffer/flow-way and adjacent Everglades National Park. Purchase will eliminate the potential for increased urban development that would decrease the effectiveness of the flood protection and water quality attenuation provided by the proposed buffer/flow-way.

TITLE: East Everglades Addition to Everglades National Park			
SUBREGION : 3	***PROJECT ID:*** CE12	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State: (20%) Federal: (80%)	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	***BASIS:*** 1	***TOTAL:*** 104,199,796	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): State of Florida		Federal $84,199,796	
COUNTY(S): Dade		***TOTAL:*** $84,199,796	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE06, CE10 **Associated with:** CE06, CE10		Federal: $20,000,000 ***TOTAL:*** $20,000,000	
START: 1990	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 11/98

DESCRIPTION: In 1989, Congress authorized the addition to Everglades National Park approximately 109,578 acres of an area known as Northeast Shark Slough and the East Everglades. The act also directed the Army Corps of Engineers to modify water management structures to allow the sheetflow of water and extend the hydroperiod to more closely resemble the historic Everglades. The USACE construction project is known as the Modified Water Deliveries to Everglades National Park.

RESTORATION BENEFITS: The East Everglades Addition is necessary to limit further losses suffered by the park due to habitat destruction outside former boundaries and to restore natural water-flow patterns that are critical to the ecological integrity and long-term viability of park resources. The acquisition of the East Everglades Addition lands and completion of the Modified Water Deliveries to Everglades National Park project are the most significant efforts underway to restore water deliveries to Shark Slough, the principal watershed in Everglades National Park. These hydrologic improvements are crucial to restoring ecosystem productivity in the southern Everglades and maintaining adequate freshwater inflow to the downstream estuaries along the Gulf of Mexico and Florida Bay.

The state has donated 42,959 acres and retains 2,181 acres in public ownership, another 13,109 acres have been acquired by the Federal Government, while another 5,005 acres are in condemnation leaving a total of 44,746 to be acquired.

NOTE: Restoration of natural flows cannot begin until land acquisition is complete. Land acquisition needs to be expedited to keep pace with the Corps construction efforts, which are projected for completion in 2006. To facilitate condemnation, appropriations are needed 2 years prior to taking possession.

*The State of Florida appropriated $17,900,000 to purchase the lands it subsequently donated to Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for East Everglades Addition to Everglades National Park																
Task	96&prior	97	98	99	00	01	02	03	04	05	06	07	08	09	Unprog	Total
Land Acquisition (Federal only)	[redacted]															
Project																
Land Acquisition	29,199	9000	26000	20000	20,000											
Subtotal	29,199	9000	26000	20000	20,000											**$104,199**

TITLE: Experimental Program of Modified Water Deliveries to ENP			
SUBREGION : 7	***PROJECT ID:*** CE13	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Infrastructure	Federal - 100 percent CE06, CE10	
PROJECT PLAN MANAGER: Glenn Landers 904-232-2125	***BASIS:*** 1	***TOTAL:*** Included in C-111 & MWD Projects	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ENP, SFWMD			
COUNTY(S): Dade, Broward, Monroe		***TOTAL:***	
LINKED PROJECTS: **Dependent on:** CE04 **Critical to:** CE10, CE06 **Associated with:** TS01		***REMAINING FINANCIAL REQUIREMENT:*** Included in funding for C-111 (CE06) & MWD (CE10) ***TOTAL:***	
START: 1985	***END:*** 2006	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The Experimental Program of Modified Water Deliveries to ENP was authorized in the Supplemental Appropriations Act of 1984. It is an iterative testing process to develop improved operational strategies of water deliveries to ENP using the existing features of the water management system. The program will continue through completion of the Modified Water Deliveries to ENP and C-111 Projects. Because the existing system is not adequate to fully restore the hydrology of ENP without causing adverse flood impacts to adjacent private property, the tests have been designed carefully to avoid such impacts. The seventh iteration is now underway.

RESTORATION BENEFITS: The purpose of the program is to provide a mechanism to test alternative water management strategies and evaluate their impacts. Hydrologic and ecologic data are being collected to help determine the relation of water management actions on the flora and fauna. The goal is to restore more natural hydrologic conditions in ENP during the design and construction period of the Modified Water Deliveries to ENP and C-111 Projects. When these projects are constructed, the existing operational constraints will be eliminated. The Experimental Program will recommend an operating strategy for the completed projects. The project is authorized and funding is available through the Modified Water Deliveries to ENP and C-111 Projects.

Time Line and Fiscal Year Budget (in thousands of dollars) for Experimental Program of Modified Water Deliveries to ENP

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Subtotal																**$0**

TITLE: Nutrient Threshold / Dosing			
SUBREGION : 3	***PROJECT ID:*** CE15	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	SFWMD $ 9,000,000 Federal $ 4,000,000 ***TOTAL:*** $13,000,000	
PROJECT PLAN MANAGER: Tom Fontaine (561)687-6551	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): SFWMD,DOI, DEP		SFWMD $ 7,000,000 DOI $ 3,000,000 TOTAL: $10,000,000	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Palm Beach, Broward, Dade		***REMAINING FINANCIAL REQUIREMENT***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		SFWMD $ 2,000,000 DOI $ 1,000,000 ***TOTAL:*** $ 3,000,000	
START: 1994	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: By December 31, 1998 and no later than December 31, 2001 the Department of Environmental Protection and the South Florida Water Management District shall employ all means practicable to complete any additional research necessary to numerically interpret the Class III narrative nutrient criterion for phosphorus, necessary to meet water quality standards in the Everglades Protection Area.

RESTORATION BENEFITS: Expected benefits of setting a numeric phosphorus criterion for the Everglades includes prevention of imbalance of flora and fauna, and long term recovery of phosphorus impacted ecosystems.

Time Line and Fiscal Year Budget (in thousands of dollars) for Nutrient Threshold / Dosing																
Task	97& Prior	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
SFWMD, DOI DEP																
Subtotal	3600	2,100	2,000	2,000	1,000											**$13,000**

TITLE: South Dade Wetlands			
SUBREGION : 3	***PROJECT ID:*** CE17	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Land Acquisition**	***BUDGET CATEGORY:*** **Land Acquisition**	SFWMD $20,000,000 Dade Co. $20,000,000 ***TOTAL:*** $40,000,000	
PROJECT PLAN MANAGER: SFWMD: Rinaldi (561)682-6537 Dade Co: Young (305)375-3614	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): SFWMD, Dade County		SFWMD $ 6,250,000 Dade Co. $20,000,000 $26,250,000	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		SFWMD $13,750,000 Dade Co. $ 0 *TOTAL:* $13,750,000	
START: 1994	***END:*** 2007	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The South Dade Wetlands land acquisition project includes approximately 50,000 acres located primarily in Dade County, with a very small portion on the edge of Monroe County. This project includes approximately 42,000 acres along the eastern side of the Southern Glades Project, as well as a 7,500-acre parcel along the northeastern portion of the SFWMD's Southern Glades Project. These lands form a contiguous habitat corridor with Everglades National Park, the Southern Glades Wildlife Management Area, Biscayne Bay National Park, Crocodile Lake National Wildlife Refuge, Florida Keys National Marine Sanctuary, and John Pennekamp State Park. The project area includes a variety of habitats, both freshwater and estuarine, that are home for many threatened and endangered species, including: Florida panthers, American crocodiles, wood storks, the coast leather fern and the silver palm.

RESTORATION BENEFITS: Acquisition of these land swill preserve critical freshwater wetland and marine wildlife habitat in the project area, including one of the longest strips of undeveloped red mangrove habitat on the east coast of Florida. Public ownership will ensure continued encouragement of sheet flow of high quality freshwater across these wetlands to the estuarine areas of Card Sound, Barnes Sound, and Manatee Bay. The South Dade Wetlands project area is a primary source of overland freshwater flow to Biscayne Bay National Park and the southern portions of Biscayne Bay Aquatic Preserve. This area also functions as an aquifer recharge area, thereby serving to prevent saltwater intrusion. The estuarine wetlands in this project area are critical habitat for the American crocodile.

NOTE: The 7,500-acre parcel is sometimes referred to as the "C-111 North Project" by Dade County and is included as part of the Southern Glades Project in the SFWMD's Save Our Rivers Five-Year Plan. Because of a cooperative cost-sharing agreement between Dade County and the SFWMD that establishes a 50/50 cost-share on the original 42,000 acres of the Model Lands plus this 7,500-acre parcel, they are included together here as the South Dade Wetlands Project.

Time Line and Fiscal Year Budget (in thousands of dollars) for SOUTH DADE WETLANDS																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Land Acq																
Project																
Land Acquisition	3,200	2,500	2,850	2,750	2,750	2,750	2,750	2,750								22,300
Subtotal																**$22,300**

TITLE: Six Water Level and Meteorological Monitoring Stations			
SUBREGION : 3	***PROJECT ID:*** CE18	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Monitoring	***TOTAL:*** $ 1,349,500	
PROJECT PLAN MANAGER: Randy Harrell (850) 488-2427	***BASIS:*** 1	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): FDEP		***TOTAL:*** **$0**	
SUPPORTING ORGANIZATION(S): NOAA, NPS, SFWMD, USGS		***REMAINING FINANCIAL REQUIREMENT:***	
COUNTY(S): Collier, Dade, Monroe			
LINKED PROJECTS: **Dependent on:** **Critical to:** TS41,8-16M **Associated with:** TS23, 8-10-M		***TOTAL:*** $ 1,349,500	
START: November, 1999	***END:*** September, 2004	***APPROVED:*** 5/97	***LAST REVISION***: 8/98

DESCRIPTION: Six water level and meteorological monitoring stations to be located in Florida Bay and Biscayne Bay to measure physical conditions at coastal locations. These stations will collect data on water levels, backup water levels (storm surges), wind speed and direction, rainfall, barometric pressure, air and water temperature, relative humidity, solar radiation, and salinity. Units hardwired to a telephone line will include a speech synthesizer so that data (real time) can be obtained by phone.

RESTORATION BENEFITS: Real-time hydrologic and meteorological data will be readily available for trends analysis and modeling for indicators and variables important for measuring restoration success.

Time Line and Fiscal Year Budget (in thousands of dollars) for Six Water Level and Meteorological Monitoring Stations

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Installations																
Operation																
Operation																
Operation																
Operation																
Project																
State		291	91	94.25	97.5	101	0									674.75
Federal		291	91	94.25	97.5	101	0									674.75
Subtotal		582	182	188.5	195	202	0									**$1,349.5**

TITLE: C-111 Basin Hydrologic Investigations and Model Development			
SUBREGION : 3	***PROJECT ID:*** CE19	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Natural Resources Management	$2,040,600	
PROJECT PLAN MANAGER: Graham/Genereux 305-348-3119	***BASIS:*** 2	***TOTAL:*** $2,040,600	
LEAD ORGANIZATION(S): University of Florida, Florida International University		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USDA, SFWMD, USACE		***TOTAL:*** $0	
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** C&SF Restudy **Critical to:** C-111 Project **Associated with:** Mod Water Del		***TOTAL:*** *$2,040,600*	
START: 1998	***END:*** 2001	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: Proposed structural and operational changes to the Central and Southern Florida (C&SF) water management system have been evaluated to assess gross changes in regional hydrology, however, the temporal and spatial scale of the current modeling efforts, and the density of the current monitoring system, are inadequate to predict and assess localized flooding in the agricultural area that may result from these changes. The first task of the proposed project consists of evaluation and analysis of the available regional hydrology and water quality data, particularly in the agricultural areas east of C-111. The second task involves developing a model capable of simulating the hydrology in the agricultural area, at a spatial and temporal scale that will allow prediction of localized impacts from proposed structural and operational changes to the water management system. In addition we will carry out field data collection and experiments necessary to formulate, develop, and calibrate the model. Upon verification and calibration, the model will be useful for evaluating the potential impacts of different water management scenarios on the hydrology of the agricultural area. Throughout the project, researchers will interact with the US Army Corps of Engineers (COE), the US Department of the Interior (DOI), the US Department of Agriculture (USDA), and the South Florida Water Management District (SFWMD), to help improve the planning, design, and operation of water management facilities in south Dade County for the benefit of the natural system and agricultural and urban communities.

RESTORATION BENEFITS: This project will produce an enhanced understanding of the local hydrology of South Dade County which is essential for the decision making process regarding the structural and operational characteristics of the C-111 system. The model developed will be useful for assessing different water management scenarios, including affects related to both ecosystem restoration and agriculture/ economics of the area. Scientifically, the proposed work will include the development of a verified, calibrated, state-of-the-art model dynamically linking the surface and subsurface water flow components in a region where both are central to the local hydrology.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrologic Investigations and Model Development

Task	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program															
Data Analysis	125	125	125	125											500
Model Devel	350	350	350	350											1400
Liaison	35	35	35	35											140
Subtotal	510	510	510	510											$2,040

TITLE: Restoration of pineland and hardwood hammocks on previously rock plowed land in C-111 Basin in Dade County			
SUBREGION : 3	***PROJECT ID:*** CE21	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Management	$600,00 + IFAS MATCH (in kind)	
PROJECT PLAN MANAGER: Don Pybas/R.J. Knight	***BASIS:*** Ecosystem Restoration	***TOTAL:*** $1,200,000	
LEAD ORGANIZATION(S): University of Florida/IFAS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FDACS, FDEP, USDA, USDI			
COUNTY(S): Dade		***TOTAL*** none	
		REMAINING FINANCIAL REQUIREMENT: $600,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS07		*TOTAL:* $600,000 = IFAS MATCH (in kind)	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Restore South Florida slash pine and hardwood hammock species on a 200-foot wide strip on each side of the two miles of SR 9336 from C-111 canal to the L-31W canal, i.e. a total of ca. 50 acres. Two one-acre hammocks each 200' X 216' will be established in low lying areas on each side of the road. Initially each hammock will contain the following native species: A. Trees: dahoon holly, Florida trema, golden fig, gumbo limbo, Krug's holly, live oak, paradise tree, sweet bay and West Indian mahogany, and B. Shrubs: bitter bush, marlberry and Tetrezygia. After the overstory ha become established, several native stoppers, wild coffee and other shade-loving species will be added to form an understory. Monitoring data will be collected to show the progressive reduction in vulnerability to encroachment of exotics as the trees gain stature.

RESTORATION BENEFITS: This project will demonstrate the techniques required to re-establish native conifer and hardwood forests on land that has been rock plowed. This arrangement of pineland and hardwoods will create a most attractive approach to Everglades National Park. Within a few years these native trees and shrubs will attract a succession of native butterflies and other arthropods, and various, and various native grasses, herbs, mushrooms, amphibians, reptiles, birds, and mammals. These biological associations will provide a hospitable environment for various endangered species.

Time Line and Fiscal Year Budget (in thousands of dollars) for Restoration of pineland and hardwood hammocks on previously rock plowed land in C-111 Basin in Dade County																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
IFAS	150	150	100	100	100											600
Subtotal																$600

TITLE: Extension Public Information Support Ecosystem Restoration in C-111 Basin in Dade County			
SUBREGION : 3	***PROJECT ID:*** CE23	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: PIE	***BUDGET CATEGORY:*** PIE		
PROJECT PLAN MANAGER: Don Pytras / J.H. Crane	***BASIS:*** 2, Ecosystem Restoration	***TOTAL:*** $ 754,425 + IFAS Match (in kind)	
LEAD ORGANIZATION(S): Univ. of Fla., IFAS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FDACS, FDEP, USDA, USACE, USEPA, USDI			
COUNTY(S): Dade		***TOTAL:*** $ 0	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $ 754,425 + IFAS Match (in kind)	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Develop and conduct extension/public information and education programs on water issues including flooding, water table, levels, drought, water use and water quality for the benefit of vegetable, tropical fruit, and ornamental growers and for urban residents. Facilitate effective communication between and among growers, homeowners, the SFWMD, USACE, USDI, FDACS, FDEP, USEPA, USDA and others concerned with water management and water issues. Provide input to University of Florida Hydrology Task Force, the USDA hydrological engineer stationed with the USACE in Jacksonville and the one at the Subtropical Horticulture Research Station in Miami. Make recommendations to agricultural community concerning practices that need to be changed. Assure rapid adoption of BMP's developed by UF/IFAS Crops Research Working Group.

RESTORATION BENEFITS: Assure that agricultural community, SFWMD, USACE, USDI, USDA, etc., address water issues in a highly professional and timely manner. Assure the rapid and extensive adoption of BMP's by production agriculture in Dade County to provide improved water quality and water conservation. Assist growers in coping with the full spectrum of water-related issues. Assure that agriculture (I) is a viable and durable agent in ecosystem restoration, (ii) is an environmentally friendly neighbor to fragile natural ecosystems and (iii) serves as an effective buffer against pollutants from urban areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for Extension Public Information Support Ecosystem Restoration in C-111 Basin in Dade County																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Extension education in C-111 Basin																
Project																
	214	121	123	146	151											755
Subtotal																**$755**

TITLE: Grossman Hammock Restoration			
SUBREGION : **3**	***PROJECT ID:*** CE 24	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Management	***BUDGET CATEGORY:*** Land Management	Dade Co. $100,000	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7800	***BASIS:*** Dade Co. Wetlands Trust Fund	***TOTAL:*** $100,000	
LEAD ORGANIZATION(S): ENP		***APPROPRIATED TO DATE:*** Dade Co. $100,000	
SUPPORTING ORGANIZATION(S): Dade Co.			
COUNTY(S): Dade Co.		**TOTAL:** $100,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $ 0	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project involves the re-vegetation of 3.5 acres of hardwood hammock habitat decimated by the invasion of exotic plant species and Hurricane Andrew. The restoration will be accomplished through the planting of approximately 1,400 native trees and shrubs. The area will be monitored to document the success of the restoration effort and maintained to assure that exotic plant species do not become established.

RESTORATION BENEFITS: Grossman Hammock site is one of the most important biological and archeological resources of the East Everglades region. The restoration will restore the character of the original hammock and adjacent wetland.

Time Line and Fiscal Year Budget (in thousands of dollars) for Grossman Hammock Restoration																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
Dade Co.		90	0	10												100
Subtotal		90	0	10												**$100**

TITLE: West Dade Water Reuse Reconnaissance Report			
SUBREGION : 3	***PROJECT ID:*** CE25	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Infrastructure**	***BUDGET CATEGORY:*** **Infrastructure**	**Corps** $100,000	
PROJECT PLAN MANAGER: Glenn B. Landers 904-232-2125	***BASIS:*** 1	***TOTAL:*** $100,000	
LEAD ORGANIZATION(S): USACOE; MDWSAD		***APPROPRIATED TO DATE:*** **Corps** $100,000	
SUPPORTING ORGANIZATION(S): DERM; SFWMD; EPA; FDEP;			
COUNTY(S): Dade County		**TOTAL** $100,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** CE06, CE10		**Corps** $0 ***TOTAL:*** $0	
START: March 1997	***END:*** September 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 798

DESCRIPTION: The study area is located in southern Dade County, with the tentative site location of the facility west of Tamiami Airport in the general area of canal C-1 and the L-31N borrow canal. The Miami-Dade Water and Sewer Authority Department (MDWSAD) is proposing this new regional treatment facility. The new facility would have a treatment capacity of 100 mgd (155cfs) which can be used to improve the water quality and increase the supply of surface water in the Everglades, which could enhance the habitat for fish and wildlife. The proposed plan does not consider discharge directly into Everglades National Park. It would consider raising stages in canal C-1 or create a treatment area to reduce the outflow of groundwater from Everglades National Park. The Corps is coordinating with MDWSAD and other interested agencies - FDEP, DERM, SFWMD, ENP, and EPA, to consider various alternatives for the reuse water that will favorably affect the fish and wildlife habitat. A Reconnaissance Report has been prepared and approved, determined there might be a feasible solution, determine if there is a Federal interest in participating in further studies. A Project Study Plan is now being developed to describe the scope, cost, and schedule for the feasibility study. The cost of the feasibility study would be shared equally with the Metropolitan Dade County Water and Sewer Authority. The studies will be initiated in FY 99 after the PSP has been approved and a Feasibility Cost Sharing Agreement signed.

Time Line and Fiscal Year Budget (in thousands of dollars) for West Dade Water Reuse Reconnaissance Report																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Recon Study																
Project																
Recon Study	100															100
Subtotal																**$100**

TITLE: Exotic Plant Control and Restoration of Degraded Plant Communities in the Southern Glades Wildlife and Environmental Area and Environs			
SUBREGION : 2	***PROJECT ID:*** CE26	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY*** Restoration	Dade County $399,000 GFWFC $25,000	
PROJECT PLAN MANAGER: Anderson (954) 746-1789	***BASIS:*** 1	***TOTAL:*** $424,000	
LEAD ORGANIZATION(S): GFWFC		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Dade County, DERM		Dade County $450,000 GFWFC $ 25,000	
COUNTY(S): Dade		***TOTAL:*** $475,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** CE06		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $-0-	
START: 1998	***END:*** 1998	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: Exotic plant stands dominated by Brazilian pepper and Australian pine on approximately 63.5 ha of the Aerojet portion of the Southern Glades Wildlife and Environmental Area (SGWEA) will be removed through both mechanical means and by herbicidal treatment. Following exotic plant removal, native trees and shrubs will be planted in order to enhance the environmental value and natural function of these disturbed sites.

RESTORATION BENEFITS: Invasive exotic pest vegetation is one of the greatest long-term threats to the Everglades Ecosystem. The conversion from exotic species monocultures with little wildlife value into functional plant communities will accrue large benefits to a multitude of native wildlife including two critically endangered species, the Cape Sable Seaside Sparrow and the Florida Panther, as well as state-listed species such as the White-crowned pigeon and Florida Tree Snail. A vast exotic seed source will be eliminated to better ensure the integrity of other upland habitats within the SGWEA and adjacent Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for Exotic Plant Control and Restoration of Degraded Plant Communities in the Southern Glades Wildlife and Environmental Area and Environs

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
GFWFC		25														
Dade Co.		450														
Subtotal		475														$475

TITLE: Tree Island Restoration in the Everglades Wildlife Management Area			
SUBREGION : 3	***PROJECT ID:*** CE27	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** HabitatProtection/Restoration	Dade Co. $50,000 GFWFC $150,000 ***TOTAL:*** $200,000	
PROJECT PLAN MANAGER: **Anderson (954) 746-1789**	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): GFWFC		Dade Co. $0 GFWFC $50,000 ***TOTAL:*** $50,000	
SUPPORTING ORGANIZATION(S): Dade County DERM			
COUNTY(S): Dade, Broward		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** CE04		Dade Co. $50,000 GFWFC $100,000 ***TOTAL:*** $150,000	
START: 1997	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The project is designed to restore native plant communities and associated ecological function of flood and fire damaged tree islands in the Everglades Wildlife Management Area (EWMA). Over drainage of the northern portion of the EWMA during the 1970's resulted in severe muck burns and the loss of woody vegetation on tree islands, followed by the invasion of Braziilian pepper. Similarly, unprecedented high water depths and inundation durations in the EWMA during 1994-95 resulted in extensive mortality of trees and shrubs on tree islands, particularly in the southwestern portion of the management area. Brazilian pepper is invading tree islands in the northern portion of the EWMA and will be herbicidally treated followed by the planting of native trees and shrubs. The open central portions of tree islands that were created by the drowning of canopy trees in the southern portion of the EWMA will also be planted with woody species characteristic of islands in this physiographic area.

RESTORATION BENEFITS: Tree islands are a unique and important component of the Everglades landscape mosaic. Although tree islands comprise only 2 to 3 percent of the total landscape area in the EWMA, their existence and health is critical to the survival of a host of plant and animal species that require upland habitat for a portion or all of their life histories. Included are a number of species listed by the state and/or federal government as either endangered or threatened. Invasive exotic vegetation is one of the greatest long-term threats to the Everglades ecosystem. The treatment of Brazilian pepper and subsequent planting of native trees and shrubs on tree islands scattered over an area greater than 538,000 acres in extent will help greatly in the curtailment of exotic seed dispersal into new areas. The plantings in the southwestern portion of the EWMA will expedite the successional process of re-establishment of native woody plants that may have been disrupted by the prolonged period of inundation, and help prevent exotic invasive species such as Brazilian pepper from becoming established.

Time Line and Fiscal Year Budget (in thousands of dollars) for Tree Island Restoration in the Everglades Wildlife Management Area

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
GFWFC	25	25		25	25	25	25									150
Dade Co.			50													50
Subtotal	25	25	50	25	25	25	25									$200

TITLE: Everglades Landscape and Everglades Water Quality Model Development and Application			
SUBREGION : 3	***PROJECT ID:*** CE29	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	SFWMD $3,500,000 Federal	
PROJECT PLAN MANAGER: Tom Fontaine (561)687-6551	***BASIS:***	***TOTAL:*** $3,500,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):		SFWMD $ 2,400,000 DOI $ ……0	
COUNTY(S): Palm Beach, Broward, Dade		TOTAL: $2,400,000	
		REMAINING FINANCIAL REQUIREMENT	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		SFWMD $ 1,100,000 DOI $ ***TOTAL:*** $ 1,100,000	
START: 1994	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: By December 31, 1998 and no later than December 31, 2001 the Department of Environmental Protection and the South Florida Water Management District shall complete a research and monitoring program to evaluate the ecological and hydrological needs of the Everglades Protection Area, including minimum flows and levels.

RESTORATION BENEFITS: Expected benefits of developing Everglades Landscape and Water Quality Models include: determination of phosphorus loads to the Everglades Protection Area, based upon Nutrient Threshold / Dosing research, that will not cause or contribute to an imbalance of flora or fauna: prediction of nutrient fate and transport, and effects on landscape vegetation, for various hydrologic options (constructed and operational) suggested by the Restudy team or other; support for ATLSS Models.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades Landscape and Everglades Water Quality Model Development and Application

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
SFWMD, DOI DEP																
Subtotal	1,500*	500	300	300	300	300	300									**$3,500**

*includes prior year expenditures

TITLE: Everglades Tree Island Research and Monitoring Initiative: Phase I			
SUBREGION : 3	***PROJECT ID:*** CE30	***FINANCIAL REQUIREMENT:*** SFWMD $130,351 FGFWFC $ 39,400 ***TOTAL:*** $169,751	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Information		
PROJECT PLAN MANAGER: Fred Sklar 561-686-8800	***BASIS:*** 1, 2	***APPROPRIATED TO DATE:*** SFWMD $64,200 FGFWFC $19,700 TOTAL: $83,900	
LEAD ORGANIZATION(S): SFWMD, FGFWFC			
SUPPORTING ORGANIZATION(S): FWS, NPS, USGS			
COUNTY(S): Palm Beach, Broward, Dade, Collier, Monroe ***LINKED PROJECTS:*** **Dependent on:** **Critical to:** TS01 **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** SFWMD $66,151 FGFWFC $19,700 ***TOTAL:*** $85,851	
START: October 1997	END: July 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: State and federal agencies are conducting research and monitoring on tree islands to evaluate minimum flows and levels, Restudy alternatives, hydropattern restoration, and effective water management. This project would seek to coordinate efforts, structure the relevant questions, standardize data collection, reduce costs, and maximize information for water resource management. This project sheet addresses the first year, which will be devoted to designing a multi-phase research and monitoring plan that will form the basis for a multi agency, adaptive management program for the freshwater and native upland systems of the Everglades in a way that crosses management-authority boundaries. Phase II, refinement and implementation, will be submitted at a later date.

RESTORATION BENEFITS: The benefit would be the development of comparable databases and analyses so that management decisions are based on ecosystem-wide information, as opposed to the historical approach of looking at data on an area-by-area basis. The goal of this interagency project is to quantify the relationships between water management, tree island ecology, and wildlife health and diversity.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades Tree Island Research and Monitoring Initiative: Phase I

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Inter. Meeting																
Dev. And Ref of Com. Tech																
Dev. Of Com database																
Out. Rev of Coop app.																
Project																
SFWMD		64.2	66.2													130.4
FGFWFC	19.7	19.7														39.4
Subtotal	19.7	83.9	66.2													**$169.8**

TITLE: Inventory of Tree Islands in WCAs 2 and 3			
SUBREGION : 3	***PROJECT ID:*** CE 31	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Information	FGFWFC $400,000 FWS $112,800	
PROJECT PLAN MANAGER: Lorraine Heisler 561-778-5094	***BASIS:*** 1, 2	***TOTAL:*** $512,800	
LEAD ORGANIZATION(S): FGFWFC		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FWS		FGFWFC $126,800 FWS $44,600	
COUNTY(S): Palm Beach, Broward, Dade		***TOTAL:*** $171,400	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS01, CE10,CE04 **Associated with:**		FGFWFC $273,200 FWS $68,200 ***TOTAL:*** $341,400	
START: 8/1997	***END:*** 6/2002	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The aim of this project is to collect information on a characteristic Everglades landscape component that has been largely been ignored in the WCAs yet which is a significant component of the regional ecology. In addition, the sensitivity of the vegetation on these tree islands to inundation and to drought makes them a powerful indicator of the effects of water management practices. The project is composed of two phases. The first, to be completed by June 1998, focuses on inventorying 40 tree islands selected to represent the range of hydrologic conditions that have been recorded over the past 30 years within WCAs 2 and 3. It combines on-the-ground investigations of vegetation composition and structure with a GIS-based landscape-level analysis. The second phase would develop the baseline for long-term monitoring (see below). Related projects by other agencies include topographic mapping of current conditions, bird community studies, dendrochronological studies, re-vegetation projects, palynological investigations, and research into physical processes by which tree islands are formed.

RESTORATION BENEFITS: The information obtained during the year of Phase 1 will be used to evaluate alternative hydrological scenarios considered by the Restudy. The information gathered by both phases would form the basis of a long-term, multi-agency co-ordinated monitoring program (prospective project) aimed at providing input for the adaptive management of water levels within the remnant Everglades system.

Time Line and Fiscal Year Budget (in thousands of dollars) for Inventory of Tree Islands in WCAs 2 and 3

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I																
Data analysis																
Phase II																
Data analysis																
Project																
FGFWFC	63.4	63.4	108.6	108.6	56											400
FWS	12	32.6	68.2													112.8
Subtotal	75.4	96	176.8	108.6	56											$512.8

TITLE: Phosphorus Monitoring at Loxahatchee NWR			
SUBREGION : 5	***PROJECT ID:*** CE34	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Monitoring	USFWS $13,000/year	
PROJECT PLAN MANAGER: Mark Musaus (561)732-3684	***BASIS:***	***TOTAL:*** $13,000/year	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Florida International University		USFWS $78,000 since 1992	
COUNTY(S): Palm Beach		***TOTAL:*** $78,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** CE15		***TOTAL:*** $13,000/year	
START: 1992	***END:*** Unknown	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Since 1992, Loxahatchee National Wildlife Refuge has been collecting data on total phosphorus levels in the marsh water and atmospheric deposition. The monitoring is required by the Everglades Water Quality Lawsuit. Marsh water concentrations are used to determine compliance with the interim and long-term limits. The atmospheric deposition is used to determine how much phosphorus is contributed to the Everglades system through atmospheric fallout.

RESTORATION BENEFITS: The monitoring contributes to an understanding of the phosphorus cycles in the northern Everglades compared with the southern Everglades. The results will be used as part of a large data pool from multi-agency research and monitoring efforts to determine the phosphorus threshold for the Everglades. Post BMP and STA completion monitoring for marsh water quality will have to continue to determine the success of the restoration efforts.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee NWR Phosphorus Monitoring

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Water Quality Monitoring																
Atmospheric Deposition																
Project	13	13														26
Subtotal	13	13														**$26**

TITLE: Exotic Plant Control on Loxahatchee National Wildlife Refuge			
SUBREGION : 5	***PROJECT ID:*** CE 35	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	USFWS $130,000/year SFWMD $ 75,000/year	
PROJECT PLAN MANAGER: Mark Musaus (561)732-3684	***BASIS:***	***TOTAL:*** $205,000/year	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD		USFWS $442,500 SFWMD $375,000	
COUNTY(S): Palm Beach		***TOTAL:*** $817,500	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $205,000/year	
START: 1992	***END:*** ?	***APPROVED:***	***LAST REVISION:*** 7/98

DESCRIPTION: Melaleuca is an exotic tree that affects over 60,000 acres in A.R.M. Loxahatchee National Wildlife Refuge. An intensive eradication program began in 1992, and since then almost 2 million trees have been killed. The trees are still a serious threat to the northern Everglades. Biological controls will take many years to manifest their effects. Until then, it is imperative to control the spread and reduce the existence of the trees in the Everglades. The refuge maintains its own exotic plant control crew that operates year-round.

RESTORATION BENEFITS: Restoration cannot be achieved without the control of exotic plants such as Melaleuca. Because of the biomass involved with the size and quantity of Melaleuca trees, they represent a serious threat to the function of the Everglades ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee NWR Exotic Plant Control																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
USFWS																
SFWMD																
Project																
USFWS	130	130	130													390
SFWMD	75	75	75													225
Subtotal	205	205	205													**$615**

TITLE: Miccosukee Tribe Water Management Area			
SUBREGION : 5	***PROJECT ID:*** CE36	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure		
PROJECT PLAN MANAGER: Duncan (305) 223-8380	***BASIS:*** 1 & 2	***TOTAL:*** $42,113,000	
LEAD ORGANIZATION(S): Miccosukee Tribe		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE, BIA			
COUNTY(S): Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** WCA5-M		***TOTAL:*** $42,113,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The Miccosukee Water Management Area (MWMA) is a project to construct a managed wetland on the Miccosukee Tribe's Alligator Alley Reservation. The purpose of the project is to provide water storage capacity and water quality enhancement for waters which discharge into the Everglades Protection Area.

The project will convert approximately 900 acres of tribally owned cattle pastures into a wetland retention/detention area, which will be designed to filter out harmful nutrients contained in stormwater runoff before the water enters the Everglades Protection Area. (Tribal Water Quality Standards adopted December 19, 1997, dictate a numerical standard of 10 parts per billion for total phosphorous inside the Everglades protection area) Costs include planning, design, engineering, and construction of a managed wetland as well as operation and maintenance for the project.

RESTORATION BENEFITS: The MWMA will significantly contribute to the ability of the Federal government to meet it's trust responsibility to the Tribe, while providing protection for the resources of the Everglades Protection Area. In addition to clean water, tribal cultural and economic benefits will also be obtained.

Time Line and Fiscal Year Budget (in thousands of dollars) for Miccosukee Tribe Water Management Area

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Planning & Design																
Construction																
Operation/Man																
Project																
Operational	1264	1264	4211	4211	4211	4211	537	537	537	537	537	537				19,372
Capital																22,741
Subtotal																**$42,113**

TITLE: Miccosukee Tribe Water Management			
SUBREGION : 3	***PROJECT ID:*** CE37	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management	$4,200,000 initial investment, plus expenses of $2,100,000	
PROJECT PLAN MANAGER: Duncan (305) 223-8380	***BASIS:*** 3	***TOTAL:*** $25,200,000	
LEAD ORGANIZATION(S): Miccosukee Tribe		***APPROPRIATED TO DATE:*** BIA $199,000	
SUPPORTING ORGANIZATION(S): USACE, BIA			
COUNTY(S): Broward		***TOTAL:***	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $25,001,000	
START: 1997	***END:*** Ongoing	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project involves a holistic approach to surface-water resources management within the Reservation. It includes field surveying of canals and levees, engineering design, ditch excavation, installation of water control structures, aquatic weed control, and collecting and analyzing water quality samples within the Reservation and the marsh interior of WCA-3A.

RESTORATION BENEFITS: The project will povide improved management of flows and quantity distribution as well as enhanced water quality benefits, both on and off the Reservation.

Time Line and Fiscal Year Budget (in thousands of dollars) for Miccosukee Tribe Water Management

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Regulation																
Ecosystem Management																
Integration & Coordination of plan																
SW Mgmt																
WQ Monitoring																
Enviro Engineering																
Aq Weed Control																
Mapping																
Geo Info System																
GPS																
Right Protection																
Project																
Miccosuke Tribe		2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		$25,200
Subtotal																$25,200

TITLE: Subregional characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay and the southern Florida ecosystem			
SUBREGION : 3 & 5	***PROJECT ID:*** CE38	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Scott (904)488-9380	***BASIS:*** 1 and 3	***TOTAL:*** $300,000	
LEAD ORGANIZATION(S): FDEP(FGS)		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USGS, SFWMD			
COUNTY(S): Collier, Dade , Monroe		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** TS01, SW21, **Associated with:** TS41		***TOTAL:*** $300,000	
START: 1999	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION :*** 7/98

DESCRIPTION: This project is a subset investigation of the larger areal distribution of the siliciclastic (sand, silt and clay) formation that may provide ground water to Florida Bay. This investigation concentrates on the potentially permeable sediments in the proximity of Florida Bay to determine the subregional ground-water flow path and the potential of ground-water contributions to the bay. The approach of the project is to drill approximately seven (7) cores in western Dade, southern Collier and Monroe counties onshore and two (2) cores in Florida Bay through the sand zone to depths of approximately 600 feet on average. If this study reveals that the ground waters from this zone are affecting Florida Bay, a follow-up investigation (BCB26-S) will characterize the regional subsurface sand formation and ground-water system through drilling additional cores and conducting further analyses. The approach proposed herein is a less costly means of determining the potential influence of nutrients from ground water in the sand unit on Florida Bay and the southern Florida ecosystem.

RESTORATION BENEFITS: The data obtained by this investigation is required to more fully understand the Florida Bay and southern Florida ecosystems. The ground-water contribution and its effect on the bay have not been fully considered and are not understood. Proper restoration of the ecosystem requires comprehending the influences affecting the entire ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Subregional characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay and the southern Florida ecosystem

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Core drilling and analyses																
Project																
State			100	40	10											$150
Federal			100	40	10											$150
Subtotal			200	80	20											**$300**

TITLE: Florida Bay Fisheries - Habitat Assessment Program			
SUBREGION : 7	***PROJECT ID:*** CE40	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Monitoring/ Research	USGS/BRD $527,200	
PROJECT PLAN MANAGER: **Mike Robblee (305) 348-1269**	***BASIS:***	***TOTAL:*** $480,000	
LEAD ORGANIZATION(S): FLDEP/FMRI		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		***TOTAL:*** $218,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecol. Monitoring in FL Bay **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $480,000	
START: 1997	***END:*** 2000	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: This is an ongoing program to assess status and trends in benthic fish habitat (seagrass) in Florida Bay. The program includes three elements: 1) abundance and distribution; 2) structure and dynamics; and 3) populations dynamics. These study elements provide information for spatial asssessment and resolution of both intra- and inter- annual variability in the macrophyte (seagrasses and macroalgae) communities and will provide spatially explicit change data to monitor response to water management alterationsor other restoration activities. The protocols used in this program are also being used in the Florida Keys National Marine Sanctuary thus providing the opportunity for a regional database. Principal Investigator: Dr. Michael Durako, FDEP/FMRI.

RESTORATION BENEFITS: This project contributes significantly to the critical needs identified in the Florida Bay Science Plan to monitor and understand the dynamics of seagrasses and changes in seagrasses in Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Bay Fisheries - Habitat Assessment Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Monitor status																
Project																
	87	131	131	131												480
Subtotal	87	131	131	131												$480

TITLE: Relationships Between Inshore Populations of the Pink Shrimp, Penaeus duorarum, and Offshore Tortugas and Sanibel Fisheries			
SUBREGION : 7	***PROJECT ID:*** CE41	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Mike Robblee (305) 348-1269**	***BASIS:***	***TOTAL:*** $150,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NOAA/NMFS, NPS			
COUNTY(S): Monroe		***TOTAL:*** $75,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Consumer modeling, success criteria **Associated with:** NOAA pink shrimp project		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $75,000	
START: 1997	***END:*** 1999	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: This is an ongoing project employing stable isotopes as tracers for the purpose of : 1) determining the relative importance of various inshore estuarine source areas to the offshore Tortugas and Sanibel shrimp fisheries; and 2) to determine the source areas supporting the fall and spring recruitment peaks in the Tortugas fishery. Principal Investigators: Drs. Brian Fry, Florida International University, Mike Robblee, USGS/BRD, and Joan Browder, NOAA/NMFS.

RESTORATION BENEFITS: These data are important in order to understand the relationship of Florida Bay to the Tortugas Fishery and the possible implications of restoration actions to this fishery.

Time Line and Fiscal Year Budget (in thousands of dollars) for Relationships Between Inshore Populations of the Pink Shrimp, Penaeus duorarum, and Offshore Tortugas and Sanibel Fisheries

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
Subtotal	75	75														$150

TITLE: Florida Bay Program Support			
SUBREGION : 7	***PROJECT ID:*** CE42	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Mike Robblee (305) 348-1269**	***BASIS:***	***TOTAL:*** $270,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		***TOTAL:*** $108,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** Fl. Bay Research Program Mgmt **Associated with:**		***TOTAL:*** $270,000	
START: 1997	***END:*** 2001	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: An interagency Florida Bay Research Program has existed dating from 1994 when the initial science plan for Florida Bay was completed (armentano et. Al., 1994). This plan and subsequent updates established the Florida Bay Interagency Program Management Committee, the Florida Bay Scientific Oversight Panel, and Critical Area Research Teams for the purposes of program coordination, review, and implementation. ENP and USGS/BRD support formal activities of the PMC including: an annual science conference; special topic workshops; and support research team activities focusing on critical questions/ research areas within the Program. Additionally, ENP and USGS/BRD support Florida Bay projects logistically where feasible. These activities include but are not limited to: laboratory use in Key Largo and at the South Florida Natural Resources Center; boat support; and housing of visiting researchers at Key Largo.

RESTORATION BENEFITS: The activities funded in this project are essential for supporting the Florida Bay Research Program which is directed at restoring Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Bay Program Support																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
	54	54	54	54	54											
Subtotal																$270

TITLE: Temporal and Spatial Variation in the Seagrass Associated Fish and Invertebrates in Johnson Key Basin, western Florida Bay			
SUBREGION : 7	***PROJECT ID:*** CE43	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Mike Robblee (305) 348-1269**	***BASIS:***	***TOTAL:*** $375,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NOAA/NMFS, NPS			
COUNTY(S): Monroe		***TOTAL:*** $150,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** NOAA pink shrimp project **Associated with:** NOAA pink shrimp project		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $300,000	
START: 1997	***END:*** 2001	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: This is an ongoing project due for completion in FY 1997. This is a joint project with the National Marine Fisheries Service to evaluate fish and invertebrate response to changes in habitat associated with seagrass die-off and algal blooms, to contribute seasonal population abundance to shrimp modeling efforts under development, and to relate long-term fish and invertebrate abundance to changing salinity conditions within Florida Bay.

RESTORATION BENEFITS: Completion of this project will provide insight into the responses of seagrass associated animals to habitat change and salinity conditions in western Florida Bay following seagrass die-off. This is a critical need as identified in the Florida Bay Science Plan. The information collected in this project is critical input to the ongoing NOAA pink shrimp project and will contribute importantly to the pink shrimp as a success criteria for restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for Temporal and Spatial Variation in the Seagrass Associated Fish and Invertebrates in Johnson Key Basin, western Florida Bay

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Monitor abundance on 6 wk inteval																
Project																
	75	75	75	75	75											
Subtotal																$375

TITLE: High Resolution Bathymetry of Florida Bay			
SUBREGION : 7	***PROJECT ID:*** CE44	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Mike Robblee (305) 348-1269**	***BASIS:***	***TOTAL:*** $549,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USGS/BRD			
COUNTY(S): Monroe		***TOTAL:*** $366,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Fl. Bay Research Program Mgmt. **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $183,000	
START: 1997	***END:*** 1999	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: An interagency Florida Bay Research Program has existed dating from 1994 when the initial science plan for Florida Bay was completed (Armentano et al., 1994). This plan and subsequent updates established the need for updated bathymetry of Florida Bay. Existing bathymetric data from the bay dated from the mid to late 1800's. This research need was determined to be critical to physical and biological modeling programs ongoing or planning for the Florida Bay Research Program.

RESTORATION BENEFITS: Updated bathymetric data will be useful as input to both circulation and mass balance models as well as seagrass and shrimp models currently being developed within the Florida Bay Research Programs. When used predictively these models will be used to evaluate water management alternatives for Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for High Resolution Bathymetry of Florida Bay																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field work Map prod																
Project																
	183	183	183													
Subtotal																$549

TITLE: Wading Bird Empirical Studies			
SUBREGION : 5	***PROJECT ID:*** CE45	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Donald L. DeAngelis	***BASIS:*** 2,3	***TOTAL:*** $205,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Collier, Dade, Monroe		***TOTAL:*** $95,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS **Associated with:** ATLSS Program		***TOTAL:*** $110, 000	
START: FY1997	***END:*** FY2000	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: Water depth and characteristics of the wading bird prey community will be manipulated to determine their effects on wading bird foraging and site selection. Experiments will be conducted in situ with free-ranging birds from the Everglades.

RESTORATION BENEFITS: The parameters resulting from this study will be critical for the development of the ATLSS wading bird model. This model will be used in assessing the effects of water deliveries on wading bird populations.

Time Line and Fiscal Year Budget (in thousands of dollars) for Wading Bird Empirical Studies																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field Ecology																
Project																
Subtotal	40	55	55	55												$205

TITLE: Fish recruitment, Growth and Habitat Use in Florida: An Integrated Team Approach			
SUBREGION : 08	***PROJECT ID:*** CE46	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	***BASIS:***	***TOTAL:*** $825,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS/BRD, NOAA/BRD, FLDEP/FMRI			
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		***TOTAL:*** $275,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Modeling in Florida Bay **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $600,000	
START: FY1997	***END:*** FY1998	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: This project poses the hypothesis that recruitment, growth, survivorship, and energy utilization of selected fish and invertebrates varies with habitat type, salinity, and planktonic community characteristics within Florida Bay. Coupled process-oriented field surveys along salinity, and habitat gradients, field and laboratory experiments, and modeling will be used to address this hypothesis in relation to seasonal and interannual salinity variation and habitat (seagrass, alagae, seagrass die-off) and water management. This project is a jointly funded project between USGS/BRD, NPS, and NOAA/NMFS. Principal Investigators: Drs. Don Hoss, Carolyn Currin, William Hettler, David Peters, Allyn Powell, Gordon Thayer, Lawrence Rozas, NOAA/NMFS, Mike Robblee, USGS/BRD, Richard Matheson, David Camp, Jim Colvocoresses, FDEP/FMRI, Robert Werner, State University of New York, Joan Holt and Scott Holt, University fo Texas.

RESTORATION BENEFITS: This project addresses the critical research need as identified within the Florida Bay Science Plan What of understanding relationships between environmental change, habitat change and recruitment, growth and survival of animals in Florida Bay. Additionally this project will provide significant empirical data in support of consumer modeling.

Time Line and Fiscal Year Budget (in thousands of dollars) for Fish recruitment, Growth and Habitat Use in Florida: An Integrated Team Approach																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Characterize fish, invertbrate populations	X	X	x													
Project																
	275	275	275													825
Subtotal																$825

TITLE: Population genetic structure and the dispersal of freshwater fishes and prawns			
SUBREGION : 3	***PROJECT ID:*** CE47	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Bill Loftus (305) 242-7800	***BASIS:***	***TOTAL:*** $204,100	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS/BRD, Florida Inter. University			
SUPPORTING ORGANIZATION(S): NPS			
COUNTY(S): Collier, Dade, Monroe		***TOTAL:*** $59,100	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS **Associated with:** ATLSS fish model and wading bird models		***TOTAL:*** $145,000	
START: 1996	***END:*** 2000	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: In modelling the dynamics of aquatic animal populations in southern Florida wetlands, it has become apparent that the dispersal distances, rates of movements, and timing of movement are important but poorly understood. The small size of most of the wetland animals precludes the use of standard marking techniques for studying movement, and the large, open system of these wetlands makes recapturing marked animals improbable. Likewise the short lifespans of these animals makes recapture difficult. Use of genetic markers in determining the presence of structure in populations offers an indirect way of assessing the degree of movement and mixing in these populations. The analyses proposed use already-proven methods of assessment that employ allozymes and DNA. A range of species will be tested, including the common fish and macroinvertebrate species. In addition to this indirect method, field studies of marking larger-bodied species in marshes and ponds will be carried out to assess the degree and distance of movements. Under appropriate conditions, mark-recapture of small-bodied fishes will also be attempted.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Population genetic structure and the dispersal of freshwater fishes and prawns

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pilot study																5
Allozyme Work																88
Analysis																75
Field Study Large -bodied																15
Small bodied																16
Final Report																5.1
Project																
Subtotal	30	30	30	30	5											$204.1

TITLE: Freshwater mesocosm studies			
SUBREGION :	***PROJECT ID:*** CE48	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** **Research**	**Start-up costs, support for a series of graduate students,supply/operations support**	
PROJECT PLAN MANAGER: **William F. Loftus**	***BASIS:***	***TOTAL:*** $249,200	
LEAD ORGANIZATION(S): USGS - BRD, FIU		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): **NPS**			
COUNTY(S): All		***TOTAL:*** $41,900	
		REMAINING FINANCIAL REQUIREMENT: Additional funds to apply from 1998 onward	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS **Associated with:**		***TOTAL:*** $207,300	
START: 1996	***END:*** 2002	***APPROVED:***	***LAST REVISION:*** 1998

DESCRIPTION: One of the primary unknowns for modelling the dynamics of fish communities in the Everglades is the identification of factors that limit population growth and community dynamics. The mesocosm that has been built in ENP will complement field studies by providing opportunities for experimental studies under more controlled conditions than possible in field conditions, but at a larger scale and with more field-like conditions than in laboratory aquaria. Three general research tasks are planned to be addressed in the mesocosm: 1). Fish population growth at various densities with same resource base; 2). Fish population growth at various nutrient levels; 3). Predation effects by fish on fish. The planned studies include inter-guild functional response experiments with large predatory and small prey species, the effect of small fishes on larvae of larger species, exotic-native fish interactions, and predator-prey interactions among fish and macroinvertebrate species. Intra-guild effects will also be tested, using small marsh species as subjects.

RESTORATION BENEFITS: Provide data for ATLSS models to evaluate alternatives for ecological effects of the C&SF Restudy, C-111 Project, and MODFLOW.

Time Line and Fiscal Year Budget (in thousands of dollars) for Freshwater mesocosm studies

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Facility																32.3
Pilot study																15
Pred-prey Interguild																15
Pred-prey Intraguild																15
Pred-prey nesting effecst																17
Nutrient effects varying dens.																25
Nutrient effects Varying nutrnt.																110
Final Reports																20
Project																
Subtotal	41.9	40.3	42	45	40	40										$249.3

TITLE: Role of Aquatic Refuges in the ecology of wetland fishes

SUBREGION : **07, 06, 05**	***PROJECT ID:*** CE49	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** **Research**	**Graduate student support** **Supply/operations support** ***TOTAL:*** $150,000
PROJECT PLAN MANAGER: **William F. Loftus**	***BASIS:*** **2, 3**	***APPROPRIATED TO DATE:***
LEAD ORGANIZATION(S): USGS - BRD		New project
SUPPORTING ORGANIZATION(S): Florida Intl University		
COUNTY(S): **Dade, Collier, Monroe**		***TOTAL:*** $-0-
		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: **Dependent on:** Hydrology **Critical to:** ATLSS **Associated with:**		New Project ***TOTAL:*** $-0-
START: 1998	***END:*** 2001	***APPROVED:*** ***LAST REVISION:***

DESCRIPTION: Aquatic animals use several kinds of deeper-water habitats across the south Florida landscape, including alligator holes, headwater creeks, and canals. The temporal dynamics of that usage, in relation to hydrological conditions, have just begun to be described. This project would address questions important to ATLSS, such as whether different types of deep-water habitats function as sources or sinks for fishes, the movements of animals between surface-water habitats and ground-water refuges, and the effects of restoration activities on refuge availability. The project is intended to complement other ongoing investigations of fishes in canal habitats (Williams and Nico, pers. comm.), and an assessment of large-fish population sizes in marshes relevant to Test 7 (Trexler, pers. comm.).

RESTORATION BENEFITS: Provide data for ATLSS models to evaluate alternatives for ecological effects of the C&SF Restudy, C-111 Project, and MODFLOW.

Time Line and Fiscal Year Budget (in thousands of dollars) for Role of Aquatic Refuges in the ecology of wetland fishes

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pilot Study															25	25
Field Work															150	150
Lab Work															20	20
Final Report															5	5
Project																
Subtotal		30	55	55	55	5										$200

TITLE: Life history and ecology of the Everglades crayfish			
SUBREGION : **07, 06**	***PROJECT ID:*** CE50	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** **Research**	**Expand on current study Support graduate student Operations/supply funds**	
PROJECT PLAN MANAGER: **William F. Loftus, BRD**	***BASIS:*** **2**	**TOTAL:** $250,000	
LEAD ORGANIZATION(S): USGS-BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FL International Univ.		**85 K until June 1998**	
COUNTY(S): **Dade, Collier, Monroe**		***TOTAL:*** $85,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **ATLSS White Ibis and crayfish models** **Associated with:**		***TOTAL:*** $165,000	
START: 1996	***END:*** 2000	***APPROVED:***	***LAST REVISION:*** 1998

DESCRIPTION: A study is underway to examine the abundance, size frequency, and reproductive phenology of the Everglades crayfish under different wetland conditions at several south Florida sites. Those data are critical to building the crayfish-simulation model in ATLSS. However the limited scope of this Master's degree-level study will not provide important information on the role of crayfish in Everglades food webs and its biotic interactions therein, nor was it intended to provide life-history parameter data, such as age and size at first reproduction, growth rates, etc., needed to parameterize the model. This Ph.D.-level study would gather critical life-history data from wild-caught field specimens from a variety of Everglades basins, and from specimens raised in the Everglades mesocosm array. The mesocosms will be used for short-term experiments on the role of crayfish in the wetlands and its selection of habitats under different hydrological conditions. Stable-isotope analysis will be used to determine the trophic position of crayfish in different environments. Allozyme and DNA analysis will address questions about dispersal and movement, and about population structure.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Life history and ecology of the Everglades crayfish

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field ecology															40	90
Mesocosm															20	30
Food web															25	30
Experiments															45	50
Genetic work															10	30
Report writing															25	20
Project																250
Subtotal																$250

TITLE: An Individual-Based Spatially-Explicit Model of the Cape Sable Seaside Sparrow Population in the Florida Everglades			
SUBREGION : Total System	***PROJECT ID:*** CE51	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **D. DeAngelis**	***BASIS:*** **2, 3**	***TOTAL:*** $117,000	
LEAD ORGANIZATION(S): USGS/BRD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): University of Tennessee			
COUNTY(S): Dade, Collier, Monroe, Broward, Palm Beach		***TOTAL:*** $117,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS, Restudy, Ecological Restoration **Associated with:**		***TOTAL:*** $0	
START:	***END:*** 1998	***APPROVED:***	***LAST REVISION:*** 1997

DESCRIPTION: : Declines have occurred in the sparrow population across its entire range, probably due to higher water levels in the past several years. Because the current range of the sparrow is limited to a few hundred square kilometers and because it is subject to flooding and fires, the population is highly vulnerable. Changes to the hydrology of the southern Everglades, planned as part of a Everglades restoration project, could increase the water levels in parts of the sparrow's range and inavertently increase the risk to the reproductive success of the sparrow in certain areas. It is critical to predict how serious these risks are. An individual-based, spatially-explicit model has been developed for the Cape Sable sparrow in its subarea northwest of Shark Slough. This is now being applied to the Restudy. It is essential to extend this model across the whole range of the sparrow.

RESTORATION BENEFITS: This work is essential to Everglades restoration. It will complete the development of the individual-based, spatially explicit model of the Cape Sable seaside sparrow and apply this model to hydrologic scenarios relevant to the Restudy.

Time Line and Fiscal Year Budget (in thousands of dollars) for An Individual-Based Spatially-Explicit Model of the Cape Sable Seaside Sparrow Population in the Florida Everglades

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ind. Based model of the CapeSable sparrow																
Project																
NPS/CESI	52,644															
USGS/BRD	5,029															
Subtotal	57,673															

TITLE: Critical Model Development for the Restudy			
SUBREGION : 3	***PROJECT ID:*** CE52	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: DeAngelis	***BASIS:*** 2,3	***TOTAL:*** $206,000	
LEAD ORGANIZATION(S): USGS/BRD, NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): University of Tennessee			
COUNTY(S): Dade, Collier, Monroe, Broward, Palm Beach		***TOTAL:*** $103,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS, Restudy **Associated with:** ELM		***TOTAL:*** $103,000	
START: Continuing	***END:*** FY1998	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: This work will consist of two tasks related to the application of the ATLSS modeling approach to the Restudy. (1) The restudy alternative scenario evaluations will be completed, with this support paying for supplies to complete the evaluations. (2) The white-tailed deer/Florida Panther model will be expanded to the core habitat area of the Florida Panther, which lies outside the area currently covered by the South Florida Water Management Model. To do this, the hydrologic model will be extended.

RESTORATION BENEFITS: All three tasks in this proposal will improve the application of ATLSS to the Restudy. The first task, to complete the scenario comparisons performed, is absolutely necessary for the success of the Restudy. The second task, to extend geographically the Florida Panther model, is essential to produce a model of the whole Florida panther population in southern Florida.

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of Selected Model Components for ATLSS.

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Critical Model Development for the Restudy	x	x														
Project																
NPS/CESI	65.3															
USGS/BRD	7.8															
Subtotal	103	103														#206

TITLE: Public Lands Information Center			
SUBREGION : Total System	***PROJECT ID:*** CE53	***FINANCIAL REQUIREMENT:*** Federal funds will be matched with over $8 million from the private sector, plus presently undetermined amount from State/City for access adjustments	
PROGRAM CATEGORY: Public Information & Education	***BUDGET CATEGORY:*** Public Outreach		
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	***BASIS:***	***TOTAL:*** $1,800,000 - Exhibits, staffing and operation over 10 years	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USFWS, NOAA, State of Florida		***TOTAL:*** $0	
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to :** **Associated with:**		***TOTAL:*** $1,800,000	
START: 2000	***END:*** 2009	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Public Lands Information Center, to be located at the junction of U.S. Highway 1 and the Florida Turnpike in Florida City, would be a collaboration with the private sector to utilize space at a planned IMAX complex for exhibits, materials and staffing to convey ecosystem restoration projects and public lands visitor information to visitors to South Florida. Management and operation would be a collaborative effort by Federal and State. The lands have been fully acquired and site development planning is set to begin. Note: The Working Group discussed and adopted an endorsing resolution 4/2/97.

RESTORATION BENEFITS: This project will sustain and increase public awareness, concern and support for restoration. Public support will be the decisive factor in securing sustained political and financial support.

Time Line and Fiscal Year Budget (in thousands of dollars) for Public Lands Information Center

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Exhibit Prep																
Project																
NPS				630	130	130	130	130	130	130	130	130	130			1,800
Subtotal																**$1,800**

TITLE: Development of trophic models for amphibians and reptiles in southern Florida			
SUBREGION : 3	***PROJECT ID:*** CE54	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** **Research**	***TOTAL:*** $100,000	
PROJECT PLAN MANAGER: DeAngelis (305) 284-1690	***BASIS:*** 2,3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS-BRD			
SUPPORTING ORGANIZATION(S): Everglades Research Group, Inc.			
COUNTY(S): Dade, Collier		***TOTAL:*** $50,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** ATLSS intermediate trophic level models **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $0	
START: January 1997	***END:*** December 1998	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: This work will be a continuation of the synthesis of empirical work on the amphibian and small reptile communities of the Everglades/Big Cypress region. During the first year, a conceptual model of these communities was provided and estimates were made of the standing stocks of biomass and the energy fluxes of the main functional groups of this community for both long- and short-hydroperiod wetlands: aquatic and terrestrial turtles, aquatic and terrestrial snakes, sirens and amphiuma, and frogs. During the next year, the following information will be provided and work performed: 1) Diet analyses, based on a more thorough literature review and gut analysis of hundreds of animals, 2) reproductive analyses, based on dissections and literature review, 3) growth and size-, age-class analyses, 4) collaboration to complete development of amphibian and reptile model.

RESTORATION BENEFITS: This work will provide the data for the reptile and amphibian model to determine prey availability for higher trophic levels.

STATUS: COMPLETED

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of trophic models for amphibians and reptiles in southern Florida

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Data synth.																
Project																
Subtotal	50	50														$100

TITLE: Computer simulation modeling of intermediate trophic levels for across trophic level system simulations of the Everglades/Big Cypress region			
SUBREGION : 3	***PROJECT ID:*** CE55	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***	USGS/ BRD $9,093	
Science	Research	NPS/CESI $78,814	
PROJECT PLAN MANAGER:	***BASIS:***	***TOTAL:*** $87,907	
DeAngelis, BRD (305) 284-1690	2, 3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS-BRD, NPS			
SUPPORTING ORGANIZATION(S): University of Miami			
COUNTY(S): Dade, Collier, Monroe, Broward, Palm Beach		**Total:** $179,000	
LINKED PROJECTS: **Dependent on:**		***REMAINING FINANCIAL REQUIREMENT:***	
Critical to: ATLSS, Restudy			
Associated with:		***TOTAL:*** $87,907	
START: July 1997	***END:*** 1999	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: The objective of this work will be to complete the modeling of the biomass dynamics of two important intermediate trophic level groups in the Everglades/Big Cypress region. These are the fish and herp (amphibians plus reptiles) functional groups. These are important food sources for the alligators and wading birds. In addition, this work will extend and expand the snail kite model. Empirical studies will be completed on possible impacts of small mammals on the Cape Sable seaside sparrow.

RESTORATION BENEFITS: This work is essential to Everglades restoration. The fish and reptile/amphibian functional groups are major parts of the energy budget of the Everglades/Big Cypress region. The biomass of this assemblage constitutes a large fraction of the food intake of the American alligator and wading birds. The models being developed will be used in evaluations of hydrologic scenarios for Everglades restoration. The snail kite is an important endangered species. Continued improvements of this model will help in development of management approaches. The Empirical work on Cape Sable sparrow predators is necessary to develop measures to protect the sparrows from this major source of mortality.

Time Line and Fiscal Year Budget (in thousands of dollars) for Computer simulation modeling of intermediate trophic levels for across trophic level system simulations of the Everglades/Big Cypress region

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ecological Modeling																
Project																
NPS/ CESI	79	80	80													
USGS/BRD	9	9	9													
Subtotal	88	89	89													

TITLE: Development of selected model components of an across-trophic-level systems simulation (ATLSS) for the wetland ecosystems of South Florida			
SUBREGION : : TS	***PROJECT ID:*** CE56	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	USGS/BRD $27,366 NPS/CESI $379,564 ***TOTAL:*** $ 406,930	
PROJECT PLAN MANAGER: DeAngelis, BRD (305) 284-1690	***BASIS:*** **2,3**	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS-BRD			
SUPPORTING ORGANIZATION(S):		**Total:** $983,000	
COUNTY(S): All		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Restoration, Atlass **Associated with:**		***TOTAL:*** $1,728,000	
START: **January 1997**	***END:*** 2000	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: This work will continue research in several key areas of the development of the ATLSS modeling approach. 1) This will continue the hydrologic scenario evaluations for the Restudy. 2) It will include application of all available ATLSS models to the final chosen Scenario for the Environmental Impact Assessment. 3) It will continue work to produce an efficient set of landscape classes, associated metadata, object-oriented database, and graphical user interface. 4) It will continue improvement of vegetation regrowth parameterization for new vegetation of the UFL-GAP vegetation map. 5) It will continue the refinement of models and performance evaluation of the models.

RESTORATION BENEFITS: This work is essential to Everglades restoration. It will continue the evaluation of hydrologic scenarios to compare the effects of the various alternatives with base conditions in their effects on a set of key biotic components. The models now being used will be improved, new ones added, and improvements in the integration made so that these models will be easier to use.

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of selected model components of an across-trophic-level systems simulation (ATLSS) for the wetland ecosystems of South Florida

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Dev of Selected model																
Project																Total
NPS/ CESI	379	541	541	541	541											
USGS/BRD	27	35	35	35	35											
Subtotal	407	576	576	576	576											

TITLE: Network analysis of trophic dynamics in South Florida Ecosystems			
SUBREGION : : TS	***PROJECT ID:*** CE57	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Science	Research	***TOTAL:*** $200,000	
PROJECT PLAN MANAGER: DeAngelis, BRD (305) 284-1690	***BASIS:*** 2,3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS-BRD			
SUPPORTING ORGANIZATION(S): Univ. of Maryland, Chesapeake Biological Laboratory		***TOTAL***: $200,000	
COUNTY(S): Dade, Collier, Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to**: ATLSS **Associated with:** ATLSS Program		***TOTAL:*** $0	
START: June 1997	***END:*** FY 1999	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: The proposed work is aimed at quantifying the networks of trophic interactions that occur among the major taxonomic groups of the various Everglades habitats. The strategy is to use available information on levels of biomass and exchanges of carbon to piece together complete budgets for each ecosystem. This will result in a complex network of interactions that requires systematic analysis. The structural characteristics imbedded within these complicated pictures are revealed through application of a suite of algorithms collectively referred to as "network analysis". The habitats included will be the gramminoid, mangrove estuarine, and Florida Bay ecosystems.

RESTORATION BENEFITS: This work will produce an overview of the total energy flow web of the Everglades region and will allow an estimation of the effects on all components of the system caused by impacts of hydrology on particular components.

Time Line and Fiscal Year Budget (in thousands of dollars) for Network analysis of trophic dynamics in South Florida Ecosystems																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ecological Modeling																
Project																
NPS/CESI USGS/BRD	100	100														
Subtotal																$200

TITLE: Experimental Studies of Population Growth and Predator-Prey Interactions of Fishes in the Everglades National Park			
SUBREGION : 3	***PROJECT ID:*** CE58	***FINANCIAL REQUIREMENT:*** USGS/BRD $16,100 NPS/CESI $59,000	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: William F. Loftus USGS/BRD	***BASIS:*** **2,3**	***TOTAL:*** $75,100	
LEAD ORGANIZATION(S): USGA/BRD, NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FIU		***Total:***	
COUNTY(S): Dade, Collier		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Restoration,ATLASS **Associated with:**		***TOTAL:*** $300,400	
START: Continuing	***END:*** FY2001	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: One of the primary unknowns for modeling the dynamics of fish communities in the Everglades is the identification of factors that limit population growth and community dynamics. The mesocosm that has been built in ENP will complement field studies by providing opportunities for experimental studies under more controlled conditions than possible in field conditions, but at a larger scale with more field-like conditions than in laboratory aquaria. Three general research talks are planned to be addressed in the mesocosm: 1. Fish population growth at various densities with same resource base; 2. Fish population growth at various nutrient levels; 3. Predation effects by fish on fish. The planned studies include inter-guild functional response experiments with large predatory and small prey species, the effect of small fishes on larvae of larger species, exotic/native fish interactions, and predator/prey interactions among fish and macroinvertebrate species. Intra-guild effects will also be tested using small marsh species as subjects.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries

Time Line and Fiscal Year Budget (in thousands of dollars) for Experimental Studies of Population Growth and Predator-Prey Interactions of Fishes in the Everglades National Park

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Everglades Aquatic Consumers																
Project																
NPS/CESI	59.0															
USGS/BRD	16.1															
Subtotal	75.1	75.1	75.1	75.1	75.1											

TITLE: Population Structure and Spatial Delineation of Aquatic Consumer Communities in the Everglades National Park			
SUBREGION : 3	***PROJECT ID:*** CE59	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	USGS/BRD $100,000 NPS/CESI $104,100	
PROJECT PLAN MANAGER: William F. Loftus (305) 242-7800	***BASIS:*** **2,3**	***TOTAL:*** $204,100	
LEAD ORGANIZATION(S): USGS/BRD, NPS		***APPROPRIATED TO DATE***	
SUPPORTING ORGANIZATION(S): FIU			
COUNTY(S): Dade		*TOTAL* : $99,100,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Restoration **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $105,000	
START: Continuing	***END:*** FY 2001	***APPROVED:*** 3/96	***LAST REVISION:*** 8/98

DESCRIPTION: In modeling the dynamics of aquatic animal populations in southern Florida wetlands, it has become apparent that the dispersal distances, rates of movements, and timing of movement are important but poorly understood. The small size of most of the wetland animals precludes the use of standard marking techniques for studying movement, and the large, open system of these wetlands makes recapturing marked animals improbable. Likewise the short life spans of these animals makes recapture difficult. Use of genetic markers in determining the presence of structure in populations offers an indirect way of assessing the degree of movement and mixing in these populations. The analyses proposed use already-proven methods of assessment that employ allozymes and DNA. A range of species will be tested, including the common fish and macroinvertebrate species. In addition to this indirect method, field studies of marking larger-bodied species in marshes and ponds will be carried out to assess the degree and distance of movements. Under appropriate conditions, mark-recapture of small-bodied fishes will also be attempted.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades Aquatic Consumers																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Research																
Project																
NPS/CESI	40.4	25	25	25	5											120.4
USGS/BRD	8.7	25	25	25	0											83.7
Subtotal	49.1	50	50	50	5											**204.1**

TITLE: : Vegetation Dynamics of Land-Margin Ecosystems: Mangroves of South Florida			
SUBREGION : 03	***PROJECT ID:*** CE60	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	***TOTAL:*** $1,364,700	
PROJECT PLAN MANAGER: Thomas J. Smith, Ph.D. USGS/BRD	***BASIS:*** **2,3**	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS/BRD, NPS			
SUPPORTING ORGANIZATION(S): USGS/BRD, NPS		*TOTAL:* $528,700	
COUNTY(S): Dade, Collier		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Restoration, ATLASS **Associated with:**		***TOTAL:*** $834,000	
START:	***END:***	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: Land-margin ecosystems (mangrove forests, brackish marshes & coastal lakes) comprise some 40% of Everglades National Park. They support the important detrital foodwebs of the coastal zone. These systems are at the "receiving end" for water management decisions made upstream which will impact the spatial distribution, timing and quantity of freshwater inflow. Additional factors which are important include the disturbance caused by Hurricane Andrew and potential affects of sea-level rise. This project will develop the data necessary to evaluate the response of Land-margin Ecosystems to upstream water management. Included will be information on primary productivity, nutrient dynamics, response to disturbance and historical changes over time. The data are also critical to the ATLSS and ELM modeling programs.

RESTORATION BENEFITS: This project will develop an understanding of a region identified as critical by the Task Force and which was listed repeatedly in the Science Subgroup's "Information Needs" volume. Without this project the land-margin ecosystems will not be included within the spatial domain of the ATLSS and ELM modeling projects nor will their response to upstream water management be understood.

Time Line and Fiscal Year Budget (in thousands of dollars) for Mangroves of South Florida																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Mangrove Hydrology/ Ecology																
Project																
NPS/CESI	211.3	227	227	227	227											
USGS/BRD	39.4	51	51	51	51											
Subtotal	250.7	278	278	278	278											**$1,364.7**

TITLE: Hydrologic Variation and Ecological Processes in the Mangrove Forest of South Florida		
SUBREGION : 3,5	***PROJECT ID:*** CE61	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** **Research**	***TOTAL:*** $441,900
PROJECT PLAN MANAGER: Smith USGS/BRD	***BASIS:*** **2,3**	***APPROPRIATED TO DATE:***
LEAD ORGANIZATION(S): USGS/BRD, NPS		
SUPPORTING ORGANIZATION(S):		*TOTAL:* $271,400
COUNTY(S): Dade, Collier		
LINKED PROJECTS: **Dependent on:** **Critical to:** Ecological Restoration, ATLASS **Associated with:** Vegetation Dynamics in Land Margin Ecosystems		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL***: $170,500
START: Continuing	***END:*** FY1999	***APPROVED:*** ***LAST REVISION:*** 8/98

DESCRIPTION: Hydrological variation appears to drive many important ecological processes in mangrove forests, such as primary productivity. Mangroves support important detrital foodwebs of the coastal zone. These systems are at the "receiving end" for water management decisions made upstream which will impact the spatial distribution, timing and quantity of freshwater inflows and also groundwater dynamics. Additional factors which are important include the disturbance caused by Hurricane Andrew and potential affects of sea-level rise. This project will develop the data necessary to evaluate the response of mangrove forests to upstream water management. Included will be information on ground and surface water elevation and salinity and how these vary in response to changing stage at upstream sites. The data are also critical to the ATLSS and ELM modeling programs.

RESTORATION BENEFITS: This project will develop an understanding of a region identified as critical by the Taskforce and which was listed repeatedly in the Science Subgroup's "Information Needs" volume. Without this project mangrove forests will not be included within the spatial domain of the ATLSS and ELM modeling projects nor will their response to upstream water management be understood.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrologic Variation and Ecological Processes in the Mangroves

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Mangrove Hydrology/ Ecology																
Project																
NPS/CESI	75.9	102.6	102.6													
USGS/BRD	25	67.9	67.9													
Subtotal	100.9	170.5	170.5													**$441.9**

3.5 *SOUTHEAST COAST*
Sub-Region 4

ECOLOGICAL SETTING

The Southeast Coast (SEC) subregion extends about 100 miles from West Palm Beach to Florida City, encompassing the eastern portions of Dade, Broward, and Palm Beach counties, and adjacent coastal waters. The SEC is primarily an urban megalopolis, but it also contains substantial agricultural acreage in central Palm Beach and southern Dade counties. The SEC is transected by a multitude of canals which provide flood protection to support urban development and agriculture. Flood protection is provided by maintaining groundwater levels significantly lower what occurred historically and by diverting storm water through the canal system and discharging it to the estuaries. The Southeast Coast Subregion is bordered on the west by Everglades National Park and the Water Conservation Areas and on the east by Biscayne Bay, Biscayne National Park, Lake Worth Lagoon, and the Atlantic Ocean. The outstanding topographic feature of the SEC is the Atlantic Coastal Ridge, a narrow sand and limestone ridge, 2-10 miles wide, that forms a barrier between the Atlantic Ocean and the Everglades Basin.

The coastal ridge is home to the majority of the region=s 4.5 million human inhabitants, roughly one third of the state=s population. The ridge was historically covered with pines and palmetto, interspersed with hardwood hammocks. Even with intensive urban development, representatives of most natural plant communities characteristic of South Florida still exist, although these are now reduced, fragmented, and stressed. These include barrier island beach and dune, coastal salt and freshwater marsh, maritime hammock, cypress forest, coastal strand, rockland hammock, pine rocklands, and scrub. Some of these communities, as well as many individual plant species within them, are endemic only to South Florida. Dade County probably has more endemic plant taxa (55-65) than any other Florida county. Most of these occur in pine rocklands, which harbor the third largest concentration of endemic native plants in the continental United States.

The SEC is dependent primarily on the shallow Biscayne Aquifer for potable water. This may be the most permeable water-table aquifer in the world. Aquifer recharge is mainly by direct infiltration from rainfall, supplemented by surface from the primary water management canals to supply wellfields and prevent coastal saltwater intrusion.

LINKAGE TO THE TOTAL SYSTEM

The SEC is linked to other Sub-regions principally by water. The Biscayne Aquifer is the major water resource for the SEC. Releases from Lake Okeechobee and the Water Conservation Areas via canals and ground water seepage recharge the Biscayne Aquifer and supplement natural recharge from rainfall to prevent saltwater intrusion along the coast. The water supply needs of Lake Okeechobee and areas connected to it via the St. Lucie Canal and the Caloosahatchee River can be affected by these releases to the SEC. Urban and agricultural water supply needs, drainage for flood protection and the associated storm water runoff impact water inflow to ENP, Florida Bay, and

Biscayne Bay.

Major ecosystem issues in the SEC include: human population growth and conversion of raw land for development, loss of important agricultural lands; water supply for natural systems and human populations; quantity and quality of freshwater flows to estuaries; quality of groundwater and inland surface water; preservation and restoration of natural areas; loss of habitat; invasive non-indigenous species; sea level rise and its long term effects; and lack of common environmental understanding and perspective. Quality of life and economic sustainability issues are also complex in a society that is built upon and dependent on a fragile ecosystem. To be successful, ecosystem restoration efforts must incorporate the needs of the human population.

The sheer size and continuing expansion of the human population, with its demand for land and water, has permanently altered the South Florida ecosystem. The population is culturally diverse and politically is broken into over one hundred municipalities and two hundred special districts over the three county area. There is a varied sense of collective memory and sense of place as the population shifts over time. Each group views the environment with differing values, demands, and commitment. Development of a public vision that includes environmental quality may be the greatest challenge for Everglades restoration.

As development continues to expand from the coastline west, the cumulative impacts to wetlands, aquifer recharge and lowering of the ground water table are more evident. The water table was lowered to provide flood protection to residents and enable expansion of agriculture. By changing the ground and surface water flows, flows from coastal springs and artesian wells were reduced and the amplitude of seasonal fluctuations increased. Storm water discharges have also increased to maintain flood protection while water quality has declined due to storm water runoff from urbanized and developed areas. Demand for ground water is expected to increase and the threat of contamination will as well due to the transmissivity of the Biscayne Aquifer.

Natural tributary drainage and groundwater flows from the Everglades to the coast have been altered by the construction of an extensive system of water management canals. The receiving estuaries have been detrimentally affected by the impact of reduced groundwater flows and sporadic, short-term, extraordinarily high-volume storm water discharges from agricultural and urban areas and excess water from the WCAs.

The great loss of habitat resulting from extensive land development has almost eliminated some vegetative communities from the SEC landscape. The amount of protected natural habitat, now scattered in fragments within the urban/agricultural landscape, is so small that it does not guarantee the future of threatened and endangered species or other native species.

The SEC is the recipient and new home for many non-native plant and animal species due to the warm, wet climate and lack of frost. Their rampant spread has had devastating impacts on native vegetative communities and the general ecological balance. For example, over 300 species of exotic plants are known to be established in natural community fragments in Dade County south of the Miami River.

A key to achieving the long-term protection and restoration of the South Florida ecosystem in the SEC will be the promotion of sustainable agriculture and

urban development practices and patterns. Minimizing the loss of agricultural lands and facilitating sound infill development and revitalization will be important tools for curbing urban sprawl and enhancing the quality of life for South Florida residents. This will redirect some of the anticipated future population growth in the SEC away from lands that will be needed to restore the Everglades ecosystem and still meet the water needs of urban and agricultural users and the natural system.

RESTORATION OBJECTIVES:

The restoration objectives of critical importance for Sub-region 4 have been identified by the Working Group and are listed as follows:

- Promote water conservation.
- Reduce water supply dependence on Lake Okeechobee/WCA water.
- Protect the Biscayne Aquifer and its functions.
- Avoid/reduce expansion of development into wetlands, and ensure protected wildlife habitat.
- Eliminate invasive exotic species.
- Protect the quality of groundwater.
- Reestablish and maintain fishable, swimmable waters.
- Restore or maintain natural biodiversity.
- Promote more sustainable urban development practices and patterns.
- Promote more sustainable agricultural practices including promoting the retention of agricultural and other open space lands.
- Restore estuary water budgets, circulation dynamics, and salinity.
- Preserve upland biological communities.
- Restore seagrass, mangrove, and other estuarine habitats
- Important restoration projects in progress or proposed for the Sub-region are identified on the following pages

TITLE: Homestead Air Reserve Base Realignment and Closure			
SUBREGION : 4	***PROJECT ID:*** SE01	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:***	USDOD/EPA Superfund oversight	
PROJECT PLAN MANAGER: Richard Harvey (561) 616-8880	***BASIS:***	***TOTAL:***	
LEAD ORGANIZATION(S): USDOD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): EPA			
COUNTY(S): Miami-Dade		***TOTAL:*** $31 million	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:***	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project is an ARB-NPL site and base realignment and closure (BRAC) fast-track cleanup. The 2,940-acre site is located south of Miami in Miami-Dade County. The environmental remediation of the base is pursuant to CERCLA/CERFA acts in implementing the Presidential decision to promote early reuse of military bases undergoing closure by expediting environmental cleanup.

RESTORATION BENEFITS: Cleanup of the base fulfills Superfund objective of promoting human health and environmental protection. Two-thirds of the base will be transferred for community use as a restoration benefit. The cleanup which has high priority from an EPA Superfund perspective would allow economic redevelopment in South Miami-Dade County where an estimated 11,000 jobs have been lost as a result of base closure and Hurricane Andrew. Cleanup of the base is ongoing. DOD contact is Tom Bartol (305/224-7233). Cleanup completion of the base transfer property (2/3 of base) is targeted for the end of FY98. Cleanup completion of cantonment area (retained by DOD as Air Reserve Base) is targeted for end of FY01. Some $31 million has been expended to date for cleanup (FY86-1996).

Time Line and Fiscal Year Budget (in thousands of dollars) for Homestead Air Reserve Base Realignment and Closure

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
DOD																
Subtotal																

TITLE: S-26 Salinity Control Structure Repair			
SUBREGION : 4	***PROJECT ID:*** SE02	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE:	
PROJECT PLAN MANAGER: Glenn Landers 904-232-2125	***BASIS:*** 3	***TOTAL:*** $526,000	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD		***TOTAL:*** $123,000	
COUNTY(S): Miami-Dade ***LINKED PROJECTS:*** **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $403,000	
START: 1999	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: S-26 is a salinity control structure on the Miami canal. The structure discharges flood control flows when necessary and at other times remains closed to hold a freshwater head and prevent salt water intrusion. When the structure was constructed, the upstream/downstream water level differential was underestimated. As a result, discharges through the structure have had higher velocities than were anticipated in the original design. This has caused erosion downstream of the structure that, if left uncorrected, could jeopardize the stability of the structure. The project consists of repairing the down stream scour holes and installing energy dissipation features to prevent further erosion.

RESTORATION BENEFITS: If S-26 were to experience partial or total failure, saltwater could intrude up the canal and contaminate adjacent ground water. Depending on the severity of the failure, urban water supply wellfields could be contaminated and freshwater marshes could be impacted. Additionally, failure of the structure could result in uncontrolled discharge of fresh water into Biscayne Bay. The project can be implemented with existing authority. Detailed design is complete. Plans and specifications will be initiated in FY99. Construction could be initiated in FY99.

TITLE: Stormwater Treatment Area 1 East			
SUBREGION : 4	***PROJECT ID:*** SE03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Federal: $46,000,000	
PROJECT PLAN MANAGER: C. Rinaldi (561) 682-6537	***BASIS:*** 1,2	***TOTAL:*** $46,000,000	
LEAD ORGANIZATION(S): USACE, SFWMD		***APPROPRIATED TO DATE:*** Federal: $46,000,000	
SUPPORTING ORGANIZATION(S): USDOI			
COUNTY(S): Palm Beach		***TOTAL:*** $46,000,000	
		REMAINING FINANCIAL REQUIREMENT: Federal: $0	
LINKED PROJECTS: **Dependent on:** **Critical to:** GL33 **Associated with:**		***TOTAL:*** $0	
START: 1995	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project involves acquisition of approximately 6,500 acres located adjacent to the northeast boundary of the A. R. Marshall Loxahatchee National Wildlife Refuge, south of the C-51 canal in central Palm Beach County. The footprint reflects the combination of a 1,438 acre detention area for the C-51 West End Flood Control Project and an additional 5,063 acre stormwater treatment area (STA). This is consistent with the mediated technical plan developed for Everglades restoration in 1993 by the USACE, SFWMD, DOI, and other stakeholders.

RESTORATION BENEFITS: These lands are needed to implement the restoration plan identified in the proposed modifications to the 1992 Federal Consent Decree and the 1994 Everglades Forever Act. Restoration benefits include: (1) capture, storage, and clean-up of approximately 100,000 acre feet per year of excess stormwater currently lost to tide; (2) reduction in damaging freshwater discharges to the Lake Worth estuary; and (3) protection and conservation of wetlands and habitat values outside the Everglades.

NOTE: The C-51 West End Flood Control Project is currently an authorized project, with the SFWMD responsible for 12.8 percent of construction costs, and 100 percent for land acquisition (and relocation) of the 1,438 acre detention area. The federal government is responsible for the remainder of the project costs. The 1994 Everglades Forever Act establishes a deadline for land acquisition of July 1, 1998, which coincides with the initial construction contract activity for the STA 1-East project.

Time Line and Fiscal Year Budget (in thousands of dollars) for Stormwater Treatment Area 1 East							
Task	1998	1999	2000	2001	2002	Unprog	Total
Land Acquisition	46,000		--	--	--	--	46,000
Project							
Subtotal	46,000						$46,000

TITLE: East Coast Buffer/Water Preserve Areas			
SUBREGION : 4	***PROJECT ID:*** SE05	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Jackson (561)682-6334	***BASIS:*** 2	***TOTAL:*** $314,400,000	
LEAD ORGANIZATION(S): SFWMD, DOI		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USACE		DOI $40,000,000	
COUNTY(S): Palm Beach, Broward, Miami-Dade		SFWMD $40,000,000	
		TOTAL: $80,000,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01		***TOTAL:*** $234,000,000	
START: 1994	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The East Coast Buffer/Water Preserve Areas project involves acquisition of land parcels located along the eastern side of the Everglades Protection Area in western Palm Beach, Broward, and Miami-Dade Counties. Most of the lands in this project area are undeveloped, including a considerable amount of wetland habitat. Current land uses include very low intensity development, pasture land, and limestone mining. The original East Coast Buffer footprint was based on a land suitability analysis which selected lands primarily on the basis of those needed for controlling seepage from the Everglades. Since the original analysis, it has been determined that there are additional water storage and water quality treatment (e.g., S-9) requirements that will require more land. Some specific land parcels have already been identified; the precise acreage and locations for additional parcels needed for water storage and water quality treatment are being identified under the C&SF Project Comprehensive Review Study: Comprehensive Plan, Water Preserve Areas, and L-28 Feasibility Study. Parcels already targeted for acquisition include: (1) remaining P2000 lands (12,650 acres); (2) remaining lands within the Pennsuco wetlands; and (3) the buffer/flow-way in the western 8.5 Square Mile Area (1,065 acres).

RESTORATION BENEFITS: These lands are needed to implement the Everglades restoration plans being developed under the C&SF Project Comprehensive Review Study: Comprehensive Plan, Water Preserve Areas, and L-28 Feasibility Study. The ECB/WPA will consist of a series of surface-water areas that are interconnected and managed as a system of marshlands, reservoirs, water quality treatment areas, and/or aquifer recharge basins. The overall purposes of the project are to: (1) hold more water in the system by controlling seepage from the Everglades; (2) capture, store, and clean up excess stormwater currently lost to tide; (3) provide a buffer between the urban area and the Everglades; and (4) protect and conserve wetlands and habitat values outside the remaining Everglades. Restoration benefits include: improved water supply for restoring hydropatterns of the Everglades; improved water quality; and preservation of wetland habitat.

NOTE: *Because of the extreme development pressure in this area, it is critical that this project be completed as quickly as possible before target parcels are developed or permitted for development.*

TITLE: South Biscayne Bay Watershed Management Plan			
SUBREGION : 4	***PROJECT ID:*** SE06	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: Lee Rawlinson (305)375-2557	***BASIS:***	***TOTAL:*** $6,464,000	
LEAD ORGANIZATION(S): Miami-Dade County		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, Biscayne Natl Park			
COUNTY(S): Miami-Dade		***TOTAL:*** $3.266 Million	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** SE28, SE29 **Critical to:** **Associated with:** SE01, CE17, SE17, SE11, SE18		***TOTAL:*** $6.464 Million	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The project involves preparing an integrated land use and water management plan for the South Biscayne Bay Watershed. This plan will direct the comprehensive management of land use, surface and ground water including its quality, quantity, timing and distribution; and will insure the restoration and sustainability of the environment, viable agriculture, flood protection and assist in the protection of the potable drinking water supply. The identification and establishment of land uses essential to sustaining Biscayne National Park, while protecting the constitutional private property rights of landowners is a primary objective of this plan.

RESTORATION BENEFITS: Miami-Dade County has in the past, and continues to have presently, a very high rate of population growth. The growing demands of the lower east coast of Florida are straining the water resources of the area at a time when the need for ecological restoration is approaching a critical point. The designation of a long-term land use plan for the basins in the study area predicated on a water management plan which insures protection of the downstream waterbodies, Biscayne Bay and Biscayne National Park, is critical. This comprehensive approach to address water quantity, water quality, flood protection, private property rights and agricultural production, is essential in achieving a restored, sustainable, natural system for the critical area.

Time Line and Fiscal Year Budget (in thousands of dollars) for South Biscayne Bay Watershed Mgmt Plan																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
DERM		152	402	250	202											1006
State of FL		229	479	250	200											1158
PDR			1034													1034
															3266	3266
Subtotal		381	1915	500	402										3266	**$6,464**

TITLE: Freshwater Lake Belts EIS			
SUBREGION : 4	***PROJECT ID:*** SE07	***FINANCIAL REQUIREMENT:*** Federal - 100 percent	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management	Funding included in Comp Restudy TS01	
PROJECT PLAN MANAGER: Barron, 904-232-2203	***BASIS:*** 3	***TOTAL:***	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): EPA, SFWMD		***TOTAL:***	
COUNTY(S): Miami-Dade ***LINKED PROJECTS:*** **Dependent on:** TS1I, SE05, CE10 **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:***	
START: 1996	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: A large proportion of the limestone used in the State of Florida to produce cement and aggregate is quarried from areas of the Everglades west of Miami. The mining operations convert drained prairie, some of which has been overgrown with the exotic tree, melaleuca, into open lakes measuring close to a mile on each side and up to 80 feet deep. Approximately 5,000 acres have been mined, permits have been issued for an additional 5,000 acres, and a coalition of miners proposed a plan for mining an additional 16,000 acres over the next 50 years. In addition, this area is figuring prominently in the preparation of the Comprehensive Review Study of the Central and Southern Florida Project (C&SF Restudy.) This has brought together several Federal, State and local regulatory and planning agencies, industry representatives, conservation groups, and concerned citizens to study the 89 square mile area. The Florida Legislature established a Northwest Dade County Freshwater Lake Plan Implementation Committee (Committee) in 1992. The Committee submitted a report in February, 1997, describing a plan to quarry rock to the east while providing for funding to acquire and restore lands to the west. The Legislature extended the life of the Committee and asked for a Phase II report by December 31, 2000. The South Florida Ecosystem Restoration Working Group established an Issue Advisory Team in 1997. From six facilitated meetings, this Team developed alternative plans, evaluated each, developed a preferred plan, and recommended additional tasks. Subsequently, the Committee established a sub-committee to develop a mitigation plan. A plan was developed that provides for collection of a fee from all mining within the study area, the proceeds used to acquire and restore historic Everglades areas and to construct structures to prevent degradation (from mining) of hydropatterns in the restored lands. This arrangement is expected to be introduced during the next legislative session. The plan, alternatives, and other information will be described in the Draft Environmental Impact Statement document that is in the very final stages of preparation. The Corps Regulatory and C&SF Restudy project managers continue to coordinate with the work of the State Committee.

RESTORATION BENEFITS: The goal is to issue permits that balance the public need for the quarry products with environmental restoration goals for the Everglades, regional water management goals, and achieving a "no net loss" of wetland functions from mining activities. This project is funded through the Corps of Engineers regulatory program and no additional funding is required.

Time Line and Fiscal Year Budget (in thousands of dollars) for Freshwater Lake Belts EIS																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Planning																
Project																
Subtotal																

TITLE: Establishing BMPs for Agricultural and Urban Areas of the Eastern C-111 Basin			
SUBREGION : 4	***PROJECT ID:*** SE10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Klassen (305)-246-7038	***BASIS:*** 1	***TOTAL:*** $17,690,000	
LEAD ORGANIZATION(S): University of Florida/IFAS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FDACS, FDEP, USDA,USACE, USEPA, USDI			
COUNTY(S): Miami-Dade		***TOTAL:*** $0	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE06, CE10 **Associated with:**		***TOTAL:*** $17,690,000	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The overall goal is to improve and enhance agriculture as a valuable and durable agent in ecosystem restoration. University of Florida/ IFAS personnel, in cooperation with the South Florida Water Management District, the Florida Department of Agriculture and Consumer Services, the Florida Department of Environmental Protection, the US Environmental Protection Agency, and the US Department of Agriculture (ARS, CSREES, ERS and NRCS), will develop and extend best management practices (BMPs) to fruit, vegetable, landscape and ornamental growers and urban homeowners in the eastern C-111 Basin. The development, utilization and extensive adoption of the latest technologies to (1) minimize ground and surface water pollution, (2) greatly advance water use efficiency, (3) manage plant diseases, insects and weeds largely by means of biologically-based technologies, and (4) to reduce the vulnerability of crops to persistently high water tables in the C-111 Basin are the strategic objectives of the Project. This Project is essential to facilitate technical assistance needed to assure the widespread adoption of thoroughly researched and highly effective BMPs in the C-111 Basin. These BMPs will protect the Biscayne aquifer and prevent the introduction of toxicants and undesirable levels of nutrients into fragile marine and terrestrial ecosystems.

RESTORATION BENEFITS: At the end of the project, a comprehensive strategy together with commensurate technology will exist for a healthy agriculture that contributes to the restoration and maintenance fragile ecosystems within the C-111 Basin and in the adjacent marine areas. The project incorporates economics and works closely with extension in order to facilitate rapid adoption of the necessary technologies through teamwork involving researchers, extension workers, growers and homeowners throughout every phase of the project.

Time Line and Fiscal Year Budget (in thousands of dollars) for Establishing BMPs for Agricultural and Urban Areas of the Eastern C-111 Basin

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unpro	Total
Project																
#1	214	210	285	295	307											1,311
#2	818	554	582	559	587											3,099
#3	742	438	451	465	479											2,575
#4	1583	1003	1053	1106	1165											5,905
#5	1480	834	856	881	750											4,800
Subtotal	4837	3039	3227	3306	3288											**$17,690**

Task #1: Project management, economic research and GIS database.
Task #2: Development of flood- and disease-tolerant fruit, vegetable and ornamental crops.
Task #3: Raised-bed culture of tropical fruit, vegetable and ornamental crops.
Task #4 Biologically-based IPM for crops and exclusion of exotic plants from fallow ground.
Task #5 Control of point source pollution of water, water use requirements of crops, fertilizer leaching, and calibrated soil tests.

TITLE: Agriculture and Rural Land Retention Study			
SUBREGION : 4	***PROJECT ID:*** SE11	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Lee Rawlinson 305/372-2557	***BASIS:*** Gov.'s Com. Rec.#73	***TOTAL:*** $950,000	
LEAD ORGANIZATION(S): Miami-Dade County, SFWMD, DCA, Dade County Farm Bureau		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NRCS, IFAS/ES , FDACS			
COUNTY(S): Miami-Dade		***TOTAL:*** $400,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** CE20 **Associated with:** TS06, TS07, SE04		***TOTAL:*** $550,000	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project will examine agricultural and rural land use trends in Miami-Dade County. Agricultural industry practices associated with each major crop (or commodity), combined with existing surface and ground water hydrologic data, will be inventoried and analyzed. Economic data will be evaluated to establish strategies that will strengthen and sustain Miami-Dade County's agricultural industry. Policies and implementation initiatives will be developed for the purpose of preserving and promoting environmentally sound agriculture and rural character in this 180 square mile area. Specific project goals are to: 1) determine whether, and the extent to which, the County, SFWMD and other regulatory agencies (local, State and Federal) should adjust existing and establish new policies to retain agriculture as a viable economic land use in south Miami-Dade County; 2) determine the extent of this area in which such policies should be implemented; 3) determine any additional land uses and development standards that should be authorized to maintain or promote recommended agricultural and rural development; 4) develop a plan to accomplish the foregoing purposes, including implementation programs and actions.

RESTORATION BENEFITS: Miami-Dade County has in the past, and continues to have a very high rate of population growth. The growing demands of the lower east coast of Florida are straining the water resources of the area at a time when the need for ecological restoration is approaching a critical point. The development of sustainable, environmentally sensitive agriculture in south Miami-Dade County would provide a more environmentally superior land use than the prospect of uncontrolled urban expansion throughout these watershed. In comparison to urban development, agriculture has greatly reduced impacts on water quality and quantity, thus minimizing remediation requirements and costs. This project is prudent in addressing the political reality of coping with the increasing demands of urban growth and the need for sustainable agriculture within this critical south Miami-Dade area, adjacent to both Everglades and Biscayne National Parks.

Time Line and Fiscal Year Budget (in thousands of dollars) for																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unpro	Total
Project & Plan																
Project																
		100	400	450												950
Subtotal		100	400	450												$950

TITLE: Hillsboro Demonstration ASR Project			
SUBREGION : 4	***PROJECT ID:*** SE14	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE : $ 4,00,000 SFWMD: $ 4,00,000	
PROJECT PLAN MANAGER: Louis Devillon 561 682-6383	***BASIS:*** 2 Ecosystem Restoration	***TOTAL:*** $ 8,000,000	
LEAD ORGANIZATION(S): SFWMD, USACE		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Local Governments			
COUNTY(S): Palm Beach, Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		SFWMD: USACE: ***TOTAL:*** $ 8,000,000	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project will implement a regional Aquifer Storage and Recovery (ASR) demonstration project in the Hillsboro canal region to capture and store excess flows that are currently released to tide for use during dry periods. It is anticipated that operation of the system would reduce discharge to the coastal water-bodies resulting in additional storage within the regional system. Recovery of the stored ASR water will be utilized to recharge local utility wellfields helping to prevent further inland migration of the saline interface. Historically, water is brought into the Hillsboro Canal basin to supply local urban users from the Water Conservation Areas and Lake Okeechobee. Area users include the Lake Worth Drainage District, the City of Boca Raton, Palm Beach County and Broward County. The demonstration project would consist of four 5 MGD Floridan Aquifer System wells and at least eight 2.5 MGD Surficial aquifer wells. Water will be withdrawn from the surficial aquifer and injected into the Floridan Aquifer System for later retrieval. It is anticipated that extensive discussions with EPA and DEP will be required. It is projected that water supply deliveries will increase to approximately 130,000 AF/yr for Lower East Coast Service Area 1. Full scale implementation of this option should provide approximately 60,000 AF/yr of this demand allowing the 60,000 AF/yr to be utilized to help meet restoration goals. This project represents the initial demonstration and testing phase.

In addition, the SFWMD is working with the Palm Beach County Water Utilities Department to develop an additional two 5 mgd ASR wells and associated ten 1 mgd surficial wells (Eastern Site) to be located east of the SFWMD site described above (Western Site). These wells would be operated in a manner to provide regional water resource benefits as well as water supply benefits to the utility. The anticipated cost of this (Eastern Site) is estimated to be $ 9,000,000 in addition to the $ 8,000,000 mentioned above.

RESTORATION BENEFITS: By creating additional storage in the region, less water will be required from the regional system to the urban areas which could then be used to meet restoration needs. This project will provide information needed to design and implement larger scale ASR projects that will address the future water resource needs of the Lower East Coast.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hillsboro ASR Pilot Project (Western Site)

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Permitting																
Construction																
Testing																
Project																
USACE				550	2100	750										
SFWMD		300	900	550	2100	750										
Subtotal		300	900	1100	4200	1500										**$ 8,000**

TITLE: North Fork of the New River Restoration

SUBREGION : 4

PROJECT ID: SE15

PROGRAM CATEGORY:
Infrastructure

BUDGET CATEGORY:
Water quality and/or habitat protection, Infrastructure investment.

PROJECT PLAN MANAGER:
Jennifer Schaufele (954/519-1253)

BASIS: **2**

LEAD ORGANIZATION(S): Broward County Department of Natural Resource Protection

SUPPORTING ORGANIZATION(S):
(Florida Department of Community Affairs), FDEP

COUNTY(S): **Broward**

LINKED PROJECTS:
Dependent on :
Critical to :
Associated with: Eastward Ho *SE20*

FINANCIAL REQUIREMENT: **To complete current Restoration Plan**

Revegetation pilot project	**$67,700**
Develop analytical tools	**$8,500**
Water quality/flow study	**$71,100**
Accumulated debris removal	**$48,650**
Shoreline Master Plan	**$62,000**
Broward Urban River Trails	**$49,000**
Dredging design and permit	**$55,000**
Spot dredging	**$350,000**
Operational flow feasibility study	**$40,000**
Eastward Ho	**$75,000**
Operation and Maintenance	**$122,016 (revegetation plots)**
Implement shoreline master plan	**$520,000**
TOTAL:	**$1,474,966**

APPROPRIATED TO DATE:

Revegetation pilot project	$67,700	FDEP, BC
Develop analytical tools	$8,500	FDEP,BC
Water quality/flow study	$71,100	FDEP,BC
Accumulated debris removal	$48,650	SFWMD,BC
Shoreline Master Plan	$62,000	SFWMD,BC
Broward Urban River Trails	$49,000	SFWMD,BC
Dredging design and permit	$55,000	FIND,BC
Spot dredging	$350,000	SFWMD,BC
Operational flow feasibility study	$40,000	SFWMD,BC
Eastward Ho	$75,000	SFWMD,BC
Operation and Maintenance	$2400	BC
TOTAL:	**$829,350**	

*FDEP and SFWMD funds originated as a state appropriation for the North Fork restoration.

REMAINING FINANCIAL REQUIREMENT:

Implementation of the North Fork Shoreline Master Plan ($520,000) and operation and maintenance ($119,616)

TOTAL: **$520,000 + $119,616 = $639,616**

START: ***1997*** | ***END:*** ***2003*** | ***APPROVED:*** | ***LAST REVISION: Aug 7, 1998***

DESCRIPTION: The New River is one of the few naturally occurring surface water bodies in Broward County. Prior to the 1900's, the New River was a prominent drainage feature of the Everglades that seasonally emptied into the Atlantic Ocean. In 1993, DNRP research identified many sources of ongoing and historic pollution. DNRP developed the New River Restoration Plan (1994) to improve water quality, to enhance the River system's biological diversity, and to create a more pristine condition for the inhabitants of this habitat as well as for the enjoyment of the human population of the urban Everglades.

RESTORATION BENEFITS: The intent of the Restoration Plan was to improve the ecologically functional of the New River System and to highlight it as major aesthetic asset to the community. To achieve these goals, DNRP began to implement the plan and in the last three years has received appropriations from the State legislature to implement a feasibility study to improve water flow, to spot dredge shoaled and contaminated areas, begin shoreline restoration including a revegetation pilot project and begin design of a shoreline master plan, remove accumulated debris and support community efforts such as Eastward Ho and the Broward Urban River Trails- A Link in the Florida Greenways Program. While many of these projects are already funded, DNRP is in the early stages of implementation. Additional funds are needed to implement the shoreline master plan upon its completion within the next 2 years.

Time Line								
Task	97	98	99	0	01	02	03	$ spent
Revegetation pilot project	44,362	23338						44362
Develop analytical tools	4800	3700						4800
Water quality/flow study	45434	31666						45434
Accumulated debris removal			48650					0
Shoreline Master Plan			62000					0
Broward Urban River Trails			34000	15,000				0
Dredging design and permit		2000	53000					2000
Spot dredging			175000	175000				0
Operational flow feasibility study			20000	20000				0
Eastward HO!			15000	30000	30000			0
Implement shoreline master plan					173,333	173,333	173,333	0
Operation and Maintenance		2400	4800	4800	18336	36672	55008	1600
Annual budget	94,596	63,104	412,450	244,800	221,669	210,005	228,341	$1,474,966

TITLE: L-31E Flow Redistribution Project			
SUBREGION: 4	***PROJECT ID:*** SE17	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE: $ 600,000 SFWMD: $ 600,000 ***TOTAL:*** $1,200,000	
PROJECT PLAN MANAGER: Rick Alleman (561) 682-6716	***BASIS***:	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION (S): SFWMD, USACE			
SUPPORTING ORGANIZATION (S): NPS, M-D DERM, FDEP		***TOTAL:*** $0	
COUNTY (S): Miami-Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS19, SE06, SE28, SE34, SE38		***TOTAL:*** $1,200,000	
START: 1997	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION***: 7/98

DESCRIPTION: The L-31E Flow Redistribution Critical Project consists of constructing a freshwater distribution system along a 3.5 mile length of the L-31E levee and borrow canal from salinity control structures S-20G (Canal 103) to S-21A (Canal 102). Work will include a series of culverts to convey water from the borrow canal along the west side of the levee into wetlands on the east side.

RESTORATION BENEFITS: Historically, freshwater entered the southern Biscayne Bay estuary through a series of creeks and sloughs. The L-31E levee system was constructed in the 1960s and cut off this natural flow of water. The primary canal system in the southern Biscayne Bay watershed was designed for flood control. Freshwater is indiscriminately discharged from a few control structures into the estuary. Consequently, the estuary is dysfunctional. Freshwater cannot be utilized effectively by the ecosystem. Typical estuarine biological communities are not adapted to frequent and wide swings in salinity that occurs at the mouths of these canals. Studies have documented pauperized benthic communities near the canal discharge zones and even destruction of seagrass beds from slugs of freshwater.

This project will install a freshwater distribution system to facilitate restoring more natural flows of freshwater into Biscayne Bay. Based upon data from ongoing studies, freshwater flow will be restored into the mangrove wetlands at suitable locations. The water will become available to the ecosystem and the numerous species that depend on transitional salinity regimes potentially including the American crocodile, snook and oysters, thus enhancing biological diversity. Water quality of the discharge is expected to improve from natural processes and uptake in the wetlands.

Restoration benefits are threefold. The volumes of freshwater discharged at salinity control structures will be reduced, thereby reducing the frequency of damaging wide swings in salinity at those locations. Freshwater will be delivered into wetlands and made available to estuarine communities thus restoring some of the natural function of the ecosystem. Pollutant loading of Biscayne Bay will be reduced by providing opportunity for natural processes to remove contaminants.

Time Line and Fiscal Year Budget (in thousands of dollars) for L-31E																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Research																$ 200
Design/ Construct																$1,000
Project																
SFWMD USACE	100	100	200 300	200 300												600 600
Subtotal	100	100	500	500												$1,200

TITLE: Lake Worth Lagoon Restoration		
SUBREGION : 4	***PROJECT ID:*** SE19	***FINANCIAL REQUIREMENT:*** (Proposed) Palm Beach County $500,000 USACE $1,500,000 ***TOTAL:*** $2,000,000
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality/Habitat Protection	
PROJECT PLAN MANAGER: J. Barry (561) 233-2400	***BASIS:*** 2	***APPROPRIATED TO DATE:***
LEAD ORGANIZATION(S): Palm Beach County Department of Environmental Resources Management		
SUPPORTING ORGANIZATION(S): SFWMD		
COUNTY(S): Palm Beach		***TOTAL:*** $0
		REMAINING FINANCIAL REQUIREMENT: Palm Beach County $500,000 USACE $1,500,000 ***TOTAL:*** $2,000,000
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		
START: 1998	***END:*** 2001	***APPROVED:*** 11/97 ***LAST REVISION:*** 2/98

DESCRIPTION: This proposal will be broken into three phases of work. Phase 1 will examine both quantity and quality of bottom sediment accumulations both within the C-51 canal and downstream discharge area within the Lake Worth Lagoon. Phase 2 will develop a plan and project design to provide for sediment removal/capping that could include creating a series of sediment traps along the C-51 where sediment accumulations potentially increase. Phase 3 will involve the removal of bottom sediments within the C-51 canal as well as implementing a prototype project to either remove or cap the organic bottom layer within the lagoon. Palm Beach County has been actively involved in managing the Lake Worth Lagoon since 1989. Subsequent to a 1990 study, a 2.5 mile area located within the region of the C-51 canal discharge was found to be severely blanketed by accumulated organic material. This mucky sediment was found to be up to several feet thick creating unnatural, anaerobic substrate devoid of invertebrate life and marine grasses. This has resulted in a loss of fisheries and wildlife habitat and a continued suppression decline of commercial and recreational fish species found within the lagoon. The elimination of the organically enriched sediment from the C-51 Canal discharge will provide for long term improvements to the lagoon and ensure success for enhancement projects currently planned by the county.

RESTORATION BENEFITS: This project will provide immediate benefits in the elimination of the organically-enriched sediments that have accumulated within a 2.5 mile area of the lagoon as well as significantly reducing the flocculent sediments within the C-51 canal that currently flow into the lagoon after rain events. This elimination of polluted sediments will improve water quality and allow for the re-establishment of sea grasses and benthic invertebrate communities. Johnson's sea grass (*Halophila johnsonni*), currently on a list of proposed threatened species, is very common to the Lake Worth Lagoon and would likely re-establish with improvements to water quality. The overall increase in habitat will provide an additional source of food and shelter for many of the estuarine/marine fish species as well as critical habitat for many endangered species of birds and other wildlife.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Worth Lagoon Restoration

Task	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Unprog	Total
Feasibility Study																
Plans & Designs																
Construction																
Project																
Palm Beach	100	100	300	0												500
USACE	0	0	0	1500												1,500
Subtotal	100	100	300	1500												**$2,000**

TITLE: Eastward Ho! Corridor Rival Development Trends Fiscal Impact Analysis			
SUBREGION : 4	***PROJECT ID:*** SE20	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Research, Information Management and Assessment	***TOTAL:*** $150,000	
PROJECT PLAN MANAGER: Phyllis Mofson, (850) 922-1608	***BASIS:*** 2	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): FDCA			
SUPPORTING ORGANIZATION(S): USEPA		***TOTAL:*** $150,000	
COUNTY(S): Miami-Dade, Broward, Palm Beach, Martin, St. Lucie		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $0	
START: 1997	***END:*** 1998	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The purpose of this study is to compare the costs of *trend* (status quo) development patterns to *plan* development patterns (infill development and redevelopment consistent with the Eastward Ho! initiative) in southeastern Florida's urban areas. The results of the study will be used to evaluate and fine tune Eastward Ho! development objectives and -- if the numbers favor plan development -- to educate and build public and local government support of the Eastward Ho! Initiative.

RESTORATION BENEFITS: As part of a comprehensive effort to restore, preserve and protect the South Florida ecosystem, the Governor's Commission for a Sustainable South Florida recommended in it's October 1995 initial report the implementation of an urban redevelopment initiative known as Eastward Ho!. In an effort to slow the westward spread of suburban sprawl from Southeast Florida into the Everglades ecosystem, Eastward Ho! aims to spur infill development and redevelopment in a largely urban 150-mile corridor spanning much of the eastern portions of Dade, Broward and Palm Beach, Martin and St. Lucie counties. Everglades Restoration will require the slowing or reversal of this western development trend, and successful implementation of Eastward Ho! depends on a clear understanding of its benefits among corridor local governments, residents and potential developers.

Time Line and Fiscal Year Budget (in thousands of dollars) for Eastward Ho! Corridor Rival Development Trends Fiscal Impact Analysis																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
EPA	75	75														$150
Subtotal	75	75														**$150**

TITLE: East Coast Canal Structures: C-4*			
SUBREGION : 4	***PROJECT ID:*** SE21	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	A. $2,326,000	
PROJECT PLAN MANAGER: Jorge Marban 561/682-6501	***BASIS:*** 2	(Funding for this project may be through joint cost sharing between SFWMD, USACE, and WASA. ***TOTAL:*** $2,326,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): SFWMD, USACE			
SUPPORTING ORGANIZATION(S): Miami-Dade COUNTY (WASA)		***TOTAL:*** $0	
COUNTY(S): Miami-Dade ***LINKED PROJECTS:*** **Dependent on:** **Critical to:** LEC WATER SUPPLY PLAN, EVERGLADES RESTORATION **Associated with:** TS01		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $2,326,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

***** This project was initially proposed with two components, structure(s) at the C-4 canal and the C-6 canal. Potential flooding of adjacent lands at the proposed C-6 canal location would necessitate extensive land acquisition and would prevent the completion of the project within the Critical Project time line. The C-6 structure project will be considered under the Restudy Program.

DESCRIPTION: This project, will involve the construction of water control structures on the C-4 (Tamiami Canal) to help reduce seepage losses from the Everglades. This project calls for the construction of gated water control structure(s) in the western reach of the Tamiami Canal. Such structure(s) will increase water levels in the southern end of the Pennsuco wetlands and thereby reduce seepage out of WCA-3B. This project will increase the efficiency of the proposed Water Preserve Area concept, while providing immediate benefit to Everglades National Park and the Pennsuco wetlands.

RESTORATION BENEFITS: The proposed structures have the potential to maintain higher water levels in the area west of the Miami-Dade-Broward levee. Previous modeling of the C-4 structure(s) showed increased overland flows to Everglades National Park by approximately 90,000 af/year, on average, resulting in a 15 percent improvement in hydropatterns in the Park. Hydropatterns also improved in WCA-3B and the Pennsuco wetlands. Seepage losses also were reduced from the eastern edge of Everglades National Park. The C-4 structure(s) helped increase ground water elevations in the vicinity of Miami Dade Water and Sewer Authorities western and Northwestern wellfields while improving the South Florida Water Management District's ability to meet minimum flows and levels for the Biscayne aquifer in central-eastern Miami-Dade County. The exact location of the C-4 structures would be evaluated through engineering & design studies and the NEPA process.

Time Line and Fiscal Year Budget (in thousands of dollars) for East Coast Canal Structures: C-4																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
			275	1146	905											2326
Subtotal			275	1146	905											**$2,326**

TITLE: A Program to Reduce Phosphorous, Nitrogen and Pesticide Runoff and Leaching from Turf/Grass into South Florida Surface and Ground Waters			
SUBREGION : 9	***PROJECT ID:*** SE24	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Public Information and Education	***BUDGET CATEGORY:*** Water Quantity		
PROJECT PLAN MANAGER: **George H. Snyder, and J. L Clsar**	***BASIS:***	***TOTAL:*** $280,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): University of Florida, IFAS, Everglades Research and Education Center, Belle Glade, and Ft. Lauderdale Research and Education Center			
SUPPORTING ORGANIZATION(S): NRCS, SFWMD (Proposed)			
COUNTY(S): Palm Beach, Broward, Miami-Dade		***TOTAL:*** $100,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** **State Project FLA-BGL-03460**		***TOTAL:*** $180,000	
START: July 1, 1997	***END:*** June 30, 2000	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: Turfgrasses are widely used in urban areas of south Florida for home lawns, roadsides, and golf courses in close proximity to surface and groundwaters. Agrichemicals applied to the turf can run off into adjacent surface waters and leach into groundwaters which now, or in the future, may be hydrologically linked to the Everglades, Florida Bay, and Biscayne Bay. South Florida ecosystem restoration requires improved quality of run-off and percolate waters from urban areas. Using current knowledge and that which will come from on-going research, an education program is proposed to inform both professional and lay turf managers on methods for reducing agrichemical runoff and leaching from turfgrass in urban areas. A run-off/ leaching demonstration facility will be constructed for training and education. Information will be disseminated through field days, extension programs, degree programs, publications, and radio/TV public service announcements. Changes in turfgrass management practices which protect and improve water resources will be documented.

RESTORATION BENEFITS: Agrichemical (pesticides, P, and N) runoff and leaching from turfgrass in urban areas will be reduced.

Time Line and Fiscal Year Budget (in thousands of dollars) for A Program to Reduce

Phosphorous, Nitrogen and Pesticide Runoff and Leaching from Turf/Grass into South Florida Surface and Groundwaters																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Assemble current BMP information		20	15													
Construct and operate runoff and leaching demonstration facility		40	60	40	20											
Present water protection information			20	30	15											
Monitor results of program			5	10	5											
Project		60	100	80	40											
Subtotal		60	100	80	40											$280

TITLE: Palm Beach County: Lake Worth Lagoon Florida yards & Neighborhoods Program		
SUBREGION : 4	***PROJECT ID:*** SE25	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Public Info & Education	***BUDGET CATEGORY:*** Water Quality & Habitat Prot.	IFAS $150,000 USACE $150,000
PROJECT PLAN MANAGER: **Godwin**	***BASIS:*** **3**	***TOTAL:*** $300,000
LEAD ORGANIZATION(S): IFAS, UF, PBCCES		***APPROPRIATED TO DATE:***
SUPPORTING ORGANIZATION(S):		
COUNTY(S): Palm Beach		***TOTAL:***
		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS22, TS31, TS34, TS6		***TOTAL:*** $300,000
START: 1997	***END:*** 1999	***APPROVED:*** ***LAST REVISION:***

DESCRIPTION: The Florida Yards and Neighborhoods Program will reduce: storm water pollution, pesticide and fertilizer use, while encouraging: mulching and recycling, exotic pest plant removal (Melaleuca, Brazilian Pepper, Australian Pine and Earieaf Acacia), wildlife habitat, and BMP by enlisting the homeowner and the commercial horticulture industry to practice environmentally friendly landscape principles. This will be accomplished through the development of: 1) educational programs and publications (including a commercial FY&N handbook) utilizing the intrastructure of the PBC Cooperative Extension Service and the Master Gardener volunteers, 2) both radio and video public service announcements and programs, 3) educational slide presentations, 4) portable educational displays, and 5) demonstration gardens.

RESTORATION BENEFITS: The project will result in homeowners educated to use and/ or request BMP's from the commercial horticulture industry, while also providing education and training to the industry to meet these needs. The changes in practices will have a positive impact on Lake Worth Lagoon through a reduction of both water consumption the release of release of nonpoint source pollutants from urban and rural residences into the system.

Time Line and Fiscal Year Budget (in thousands of dollars) for Palm Beach County: Lake Worth Lagoon Florida yards & Neighborhoods Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Dem Gardens																
Com. Handbk																
Com/Home Brsh																
Com Training																
Home Training																
Slide Sets																
PSA & Video																
Project																
IFAS/CES	110	95	95													
Subtotal	110	95	95													$300

TITLE: Miami- Dade County Archipelago			
SUBREGION : 4	***PROJECT ID:*** SE26	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Local State ***TOTAL:*** $35,439,907 (estimated)	
Project Plan Manager: **John Outland (850) 488-4892**	***BASIS:*** 1, and 3		
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDEP, Miami-Dade County		Local and State ***TOTAL:*** $30,549,839	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		Local State ***TOTAL:*** $4,890,068	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project includes 1023 acres in Miami-Dade County and contains some of the most outstanding examples of rockland hammock that remain in Miami-Dade County, as well as the best remaining examples of the highly endangered pine rockland natural community outside of Everglades National Park. The Miami Rockridge Pinelands sites located within the County's urban development boundary are considered upland and developable. All sites are zoned residential, agricultural, or general use. The trees and endemics are also sensitive to adjacent development and agricultural activities.

RESTORATION BENEFITS: The subtropical pinelands occur exclusively on the Miami Ridge and have been dramatically reduced in acreage by urbanization. Numerous rare and endangered plant species and several animal species, many of which occur nowhere else, occur within the project area. The lands will be used as a botanical site to preserve the unique and endangered plant communities.

TITLE: South Dade Wetlands Addition			
SUBREGION : 4	***PROJECT ID:*** SE27	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition, Water Quality & Habitat Protection	***TOTAL:*** $35,000,000	
PROJECT PLAN MANAGER: Frost (305) 230-1144	***BASIS: 3***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): NPS			
SUPPORTING ORGANIZATION(S): Friends of the Everglades, DERM		***TOTAL:*** $0	
COUNTY(S): Miami-Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** SE06, SE28 **Associated with:** SE01		***TOTAL:*** $35,000,000	
START: 1997	***END:*** TBD	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This acquisition involves purchase of development rights, easements, and fee title in the South Dade Wetlands Addition, approximately 7,000 acres in south Miami-Dade County immediately north of the of the South Dade Wetlands and west of the coastal wetlands of Biscayne National Park. The Addition encompasses all or part of Sections 28, 29, 32, and 33 in Township 56, Range 40 East; Sections 4, 5, 7, 8, 9, 17,18,19, and 20 in Township 57 South, Range 40 East. Ownership is mixed public and private. The addition is composed of native forested wetlands, sawgrass glades, prairies, and cattail marsh as well as exotics-dominated wetlands, agricultural land, rock mines, and undeveloped open space.

The acquisition will be a combined federal and county effort. It encompasses some tracts designed for purchase by Miami-Dade County's Endangered Environmental lands (EEL) program and complements the work of the county's Biscayne National Park Land Trust Working Group. Portions of the wetlands are already owned by the county or The Nature Conservancy.

RESTORATION BENEFITS: This acquisition will facilitate and expand protection of the South Dade Wetlands and will re-connect fragmented wetlands and open spaces that are essential to the hydrology of Biscayne Bay. It will help buffer coastal and freshwater wetlands from the impacts of rapid urban development occurring in South Miami-Dade. This large, contiguous area will contribute to restoring the quality, timing, and distribution of surface and ground water deliveries into the coastal waters. In addition, several threatened or endangered plants and animals are present in this part of Miami-Dade County and their protection will be improved by the acquisition. They include the snail kite, Peregrine Falcon, American crocodile, cape sable sparrow, woodstork and bald eagle.

NOTE: Estimated costs of acquisition range from $4,000 to $10,000 per acre. At an average cost of $7,000 per acre the estimated acquisition cost is $21,000,000. This total includes future acquisitions by the county, depending on the availability of funds.

TITLE: Biscayne Bay Feasibility Study		
SUBREGION : 4	***PROJECT ID:*** SE28	***FINANCIAL REQUIREMENT:*** Federal, Miami-Dade County, SFWMD/Phase I Phase I - $1,100,000 Phase II - $1,040,000 Phase III - $3,450,000 ***TOTAL:*** $5,590,000
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Management	
PROJECT PLAN MANAGER: Glenn Landers (904) 232-2125	***BASIS:*** 2	
LEAD ORGANIZATION(S): USACE		***APPROPRIATED TO DATE:*** **Phase I $1,100,000 Fed $550K + Non-Fed $550K** **Phase II $ 204,000 Fed $204K** ***TOTAL:*** $1,304,000 Fed + Non-Fed
SUPPORTING ORGANIZATION(S): Miami-Dade County, SFWMD, Biscayne National Park (non financial partner)		
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***
LINKED PROJECTS: **Dependent on:** **Critical to:** SE06, SE29 **Associated with:** TS1, CE36		***TOTAL:*** $4,286,000 total project
START: 1997	***END:*** 2004	***APPROVED:*** 11/97 ***LAST REVISION:*** ***7***/98

DESCRIPTION: Biscayne Bay is a shallow estuary located along the southeast coast of Florida. Biscayne Bay and its unique environment contribute to the economic health of the area through tourism, commercial and recreational fishing, and general recreation. The shoreline and bottoms of Biscayne Bay have been subjected to extensive alterations by local development and the C&SF Project. The cumulative impacts of these projects on water quality of Biscayne Bay are not known. An updated reconnaissance report was completed in July 1995 that proposed developing a modeling system for Biscayne Bay as the first step of a study to address effects of Federal projects on water circulation, biological communities, and water quality of the bay. The Corps executed a Feasibility Cost Sharing Agreement (FCSA) with Miami-Dade County for the Phase I effort in October 1995. Phase I is addressing the creation of a hydrodynamic model, Phase II will develop a water quality model, and Phase III will create biological models of the Bay. The study is authorized, a cost-sharing agreement has been executed by the Corps and Miami-Dade County for phase 1 and work is underway. Federal funds appropriated in FY 94 were used to update the reconnaissance report and to cost-share Phase I of the Feasibility Study ($550K). At the request of the local sponsor, initiation of Phase II studies has been delayed while water quality data is reviewed to determine if materials other than nutrients, i.e. toxics, should be added to the scope of work. Initial Federal funding for Phase II studies has been secured as indicated above.

RESTORATION BENEFITS: The goal of the Biscayne Bay ecosystem models is to provide to resource managers a tool to analyze and evaluate the hydrodynamic water quality and biological impacts on Biscayne Bay resulting from the implementation of proposed modifications to or changes in the operation of the C&SF Project.

Time Line and Fiscal Year Budget (in thousands of dollars) for Biscayne Bay Feasibility Study

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I																1100
Phase II																1040
Phase III																3450
Project																
Subtotal																**$5,590**

TITLE: Comprehensive Water Quality Standards for Biscayne Bay			
SUBREGION : 8, 9	***PROJECT ID:*** SE29	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management/Science	***BUDGET CATEGORY:*** Natural Resources Management		
PROJECT PLAN MANAGER: Frost (305) 230-1144	***BASIS:*** 3	***TOTAL:*** $350,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): NPS			
SUPPORTING ORGANIZATION(S): Miami-Dade County Department of Environmental Resource Management, SFWMD, FDEP		***TOTAL:*** ***$0***	
COUNTY(S): Dade, Broward, Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** SE28 **Associated with:** TS15		***TOTAL:*** $350,000	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Develop water quality standards to regulate and control nutrients and other pollutants being discharged into Biscayne Bay, Card Sound, and Barnes Sound. In northern Biscayne Bay many of the common biological processes have been lost or severely depressed because of habitat destruction. Water quality has also been adversely affected by stormwater runoff. Here the Bay has been degraded primarily because of development combined with a disregard of upland, wetland, and Bay interactions and the linkage between biological processes and high quality of water. This project would include the following phases of work: (1) locate and collate literature and unpublished data; (2) field verification of data and determination of its applicability to existing conditions; (3) prepare regulatory recommendations for action by Florida Legislature and possibly the EPA.

RESTORATION BENEFITS: These standards will be applied by all levels of government to prevent further degradation and restore water quality in the bay. As the local area continues to develop and as restoration efforts are implemented within developed areas as well natural areas within the South Florida ecosystem, water quality standards are needed so that Federal, State, and county agencies can prudently manage the growth of the greater Miami area.

For many years Biscayne Bay has been ecologically degraded by habitat destruction, hydrologic alterations and a wide variety of water-borne pollutants, including urban and agricultural runoff, industrial discharges, and sewage. Specific water quality standards would aid in more effectively controlling the type and quantity of pollutants discharged, by providing regulatory agencies with the authority to apply needed controls. The benefit would ultimately bring an improvement in the ecological condition of the Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Comprehensive Water Quality Standards for Biscayne Bay

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
																350
Subtotal																**$350**

TITLE: South Florida Community – Urban Resources Partnership Ecosystem Restoration Project			
SUBREGION : 4 & 6	***PROJECT ID:*** SE31	***FINANCIAL REQUIREMENT:*** USDA	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Management/ Public Information	Water Quality, Habitat Restoration, Natural Resource Management		
PROJECT PLAN MANAGER:	***BASIS:***	***TOTAL:*** $1,000,000.00	
Thaddeus Hamilton (954) 792-1984	**2,3**	***APPROPRIATED TO DATE:*** USDA- NRCS ---------- $260,000.00 USDA- FS ---------- $210,000.00 **TOTAL**: $470,000.00	
LEAD ORGANIZATION(S): USDA- NRCS & FS			
SUPPORTING ORGANIZATION(S): HUD,BSWCD, FWS, Extension Service, EPA			
COUNTY(S): Palm Beach, Monroe, Broward & Miami-Dade			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** USDA ***TOTAL:*** $530,000.00	
START: 1998	***END:*** 2000	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: This project will assist with the funding coordination, and administration of a multitude of small ecosystem restoration projects ranging from $5,000 to $35,000 in the Quad county area (Monroe, Palm Beach, Broward and Miami-Dade). It is the intent of this South Florida Community- Urban Resources Partnership Ecosystem Restoration Project to facilitate and enable community organizations, environmental groups, local agencies educational institutions, citizen groups, nonprofit groups and interested parties to work closely with one another to address environmental projects. These mini-environmental projects will be geared toward grassroots and community – based efforts to allow for partnering and community empowerment as it relates to the South Florida Ecosystem Restoration Initiative. This project is consistent with the overall goals and objectives of the South Florida Community- Urban Resources Partnership (SFCURP).

RESTORATION BENEFITS: Provide a comprehensive and community approach to promoting water conservation, reducing the water supply dependence on Lake Okeechobee, eliminating invasive species, and protecting the resources of Biscayne National Park and other regional preserves. It would also protect the coastal and urban resources of the South Florida ecosystem. Additional restoration benefits would include ensuring environmental protection and preventing point source and non-point source pollution in the region, through education and empowerment of communities regarding pollution control. Moreover, the project will foster volunteerism, strengthen then local and community support for the South Florida Ecosystem Restoration Initiative and will result in greater buy-in from a broader array of stakeholders.

Time Line and Fiscal Year Budget (in thousands of dollars) for South Florida Community – Urban Resources Partnership Ecosystem Restoration Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USDA- NRCS		90	170													
USDA-FS		60	150													
Subtotal		150	320													**$470**

TITLE: : Ground-Water Quality Discharge Standards		FARM BILL PRIORITY: 27	
SUBREGION : 4	***PROJECT ID:*** SE32	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Information Management and Assessment		
PROJECT PLAN MANAGER: Dick Frost/Curry (305) 239-1144	***BASIS:*** 1	***TOTAL:*** $750,000	
LEAD ORGANIZATION(S): FDEP or EPA		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, Miami-Dade County Department of Environmental Resource Management			
COUNTY(S): All		**$0**	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to**: TS08 **Associated with:** SE29		***TOTAL:*** $750,000	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The project is intended to establish limits on the type and content of pollutants that are disposed underground into water bearing zones. It would explore the development of standards for the purpose of identifying harmful water-borne contaminants and regulatory limitations or criteria that would be applied to reduce or eliminate contamination of ground-water resources in the South Florida ecosystem.

As the population of South Florida continues to grow, there is an increasing use demand upon ground water, as well as an increasing potential for contamination of that limited resource. For example, there are currently proposals intended to increase surface-water availability and usability through decontamination and storage. The impact of these is not yet fully understood, but some appear to have the potential for causing significant ground-water contamination. Deep well injection, a current activity, is used to dispose at depth below freshwater zones a wide variety of wastes, the impact, also, of which is not known. In view of suggestions to use water from the Floridian aquifer to raise water levels in the Everglades ecosystem, and the critical importance of ground water as the fundamental drinking water supply, there is a urgent need to identify both the types and limitations of pollutants that can safely be disposed of in this manner.

RESTORATION BENEFITS: Standards for subsurface waste disposal into water bearing strata would provide protection of drinking water supplies in the Biscayne and deeper Floridian aquifers. Standards should be established for the discharge of waste into these aquifers as well as for the aquifers themselves.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ground-Water Quality Discharge Standards																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
FDEP EPA																
Subtotal																

TITLE: Ground-Water Quantity in Coastal Environments			
SUBREGION : 7	***PROJECT ID:*** SE33	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality		
PROJECT PLAN MANAGER: Dick Frost/Curry (305) 230-1144	***BASIS:*** 2	***TOTAL:*** $400,000	
LEAD ORGANIZATION(S): FDEP or EPA		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, Miami-Dade County Department of Environmental Resource Management			
COUNTY(S):		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** SE32 **Critical to:** TS08 **Associated with:**		***TOTAL:*** $400,000	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project will result in a ground-water hydrology model for the South Florida ecosystem, and will consist of three phases: (1) locating and collating existing published and unpublished data; (2) conducting field verification of existing data and determining applicability to existing ground-water quality and quantity conditions; (3) analyzing data and developing a set of regulatory recommendations for action by the Florida Legislature and possibly the Environmental Protection Agency.

RESTORATION BENEFITS: The restoration of the South Florida ecosystem will require the reallocation of Florida's freshwater resources to provide the quantity of water needed by the Everglades ecosystem. Only recently has there developed widespread concern over the ground-water component of the hydrologic balance and its relation to overall restoration and the continued availability of the important resource. There currently is inadequate information on ground-water hydrology (flow, distribution, movement, recharge/discharge, etc.) and particularly what impacts restoration activities will have on it. This project will develop a conceptual model of ground-water hydrology for the South Florida ecosystem that will aid in designing restoration activities that benefit the total hydrologic balance and preserve and maintain the critical ground-water resource of South Florida.

Time Line and Fiscal Year Budget (in thousands of dollars) for Ground-Water Quantity in Coastal Environments																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
FDEP EPA																
Subtotal																**$300**

TITLE: Surface Water Management Master Plan for the Former Homestead Air Force Base			
SUBREGION : 4	***PROJECT ID:*** SE34	***FINANCIAL REQUIREMENT:*** TBD	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Management		
PROJECT PLAN MANAGER: Pedro Hernandez 305-876-7928	***BASIS:*** 1	***TOTAL:***	
LEAD ORGANIZATION(S): Dade County Aviation Dept., USAF		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): State of Florida		***TOTAL:***	
COUNTY(S): Miami-Dade ***LINKED PROJECTS:*** **Dependent on:** **SE01** **Critical to:** SE06 **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:***	
START:	***END:***	***APPROVED*** 11/97	***LAST REVISION:***2/98

DESCRIPTION: The project involves preparing a Surface Water Management Master Plan for the Homestead Air Reserve Station and the proposed Homestead Regional Airport that would provide an ecologically sound guide for redeveloping the former Homestead Air Force Base. It would involve exploring the best approach to address flood control, water quality, water quantity, wetland protection, and other water resource issues related to the redevelopment of the Base. The plan's principle goal will be to minimize the quantity and improve the quality of, off-site discharges, and other water resource issues. The plan shall provide that all new development and re-development will, at a minimum, comply with all District and Miami-Dade County regulatory criteria in effect at the time of application, including requirements for on-site stormwater detention, industrial stormwater management, and requirements to implement surface water management Best Management Practices.

RESTORATION BENEFITS: As the U.S. Air Force rapidly moves toward conveying the Homestead Air Force Base to Dade County, there is increased pressure to redevelop the base as a major regional airport. A sound surface water management plan would ensure compatibility between South Florida ecosystem restoration efforts and the redevelopment. To ensure the protection of the resources of Biscayne National Park and the coastal resources of the South Florida ecosystem, a comprehensive Base surface water management plan needs to be in place before, or close to the time of final conveyance of the Base.

Time Line and Fiscal Year Budget (in thousands of dollars) for Surface Water Management Master Plan for the former Homestead Air Force Base

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Plan																
Project																
DERM																
Subtotal																

TITLE: New River Forest Restoration Project			
SUBREGION : 4	***PROJECT ID:*** SE35	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management/Public Education	***BUDGET CATEGORY:*** Natural Resource Management Habitat Protection	Incomplete due to lack of management plans. Exotic Vegetation Control 500,000 Shoreline Stabilization 750,000 Boardwalk & Signage 750,000	
PROJECT PLAN MANAGER: Eric Myers (954/519-1230)	***BASIS:*** 2	***TOTAL:*** $2,220,000	
LEAD ORGANIZATION(S): Broward County		***APPROPRIATED TO DATE:*** Rewatering project $ 220,000	
SUPPORTING ORGANIZATION(S): SFWMD		***TOTAL:*** $ 220,000	
COUNTY(S): Broward ***LINKED PROJECTS:*** **Dependent on:** CE22 **Critical to:** **Associated with:** TS14, SE15		***REMAINING FINANCIAL REQUIREMENT:*** Exotic Vegetation Control 500,000 Shoreline Stabilization 650,000 Boardwalk & Signage 750,000 ***TOTAL:*** $1,900,000	Some mitigation dollars possible
START: 1997	***END:*** 2005	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The New River Forest (Pond Apple Slough Ecosystem) Restoration Project will help restore the remaining 200+ acres of freshwater riverine forest system adjacent to the South Fork of the New River. The various tracts of forest are in a variety of public and private ownerships and would benefit from implementation of an area-wide management plan. Important management needs include exotic vegetation control, shoreline stabilization and salinity management. Some aspects of this are being addressed through mitigation funding while other elements remain unfunded. In addition, the site(s) offer great potential for environmental education and research opportunities. Funding is being sought to construct a boardwalk with signage and to assist in exotic vegetation control in the various parcels. This area is also included in the Broward Urban River Trails - A Link in the Florida Greenways System.

RESTORATION BENEFITS: The project would help ensure the preservation of the largest remaining stand of freshwater riverine forest in the Lower East Coast and Urban Area District (Subregion 9). Presently, access is very limited and could be improved to provide important environmental educational opportunities in the region.

Time Line and Fiscal Year Budget (in thousands of dollars) for New River Forest Restoration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Rewatering																
Veg Control																
Shore Stabilization																
Board/Signage																
Project																
Rewatering	10	50	120	40												220
Veg Control			100												500	500
Shore Stabilization															750	750
Board/Signage															750	750
Subtotal																**$2,220**

TITLE: Miami-Dade County Environmentally Endangered Lands Program			
SUBREGION : 4	***PROJECT ID:*** SE37	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Miami-Dade County: $43,500,000 Florida Communities Trust: $ 1,900,000 FDEP: $ 3,950,000	
PROJECT PLAN MANAGER: Dade Co: Young (305) 372-6687	***BASIS:***	***TOTAL:*** $49,350,000	
LEAD ORGANIZATION(S): Mismi-Dade County		***APPROPRIATED TO DATE:*** Miami-Dade County: $ 13,600,000	
SUPPORTING ORGANIZATION(S): Florida Communities Trust, Fl. Dept. Of Env. Protection		Florida Communities Trust: $ 1,900,000 FDEP: $ 3,950,000	
COUNTY(S): Miami-Dade		***TOTAL:*** $ 19,450,000	
LINKED PROJECTS: **Dependent on :** **Critical to :** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** Miami-Dade County: $ 29,900,000 Florida Communities Trust: $ 1,548,000 FDEP: $ 0 ***TOTAL:*** $ 31,488,000	
START: 1991	***END:*** Unknown	***APPROVED:*** 1991	***LAST REVISION:*** 11/1998

DESCRIPTION: This project includes 2,100 acres in Miami-Dade County, 405 of which have been acquired. **The above totals do not include** the EEL Program's joint acquisition of 900 acres of the Miami-Dade County Archipelago **and do not include** the 49,000 acre South Miami-Dade Wetlands Project with the South Florida Water Management District's Save Our Rivers Program, which are accounted for separately in this report.

These sites include the best remaining highly endangered pine rocklands outside of Everglades National Park, the best remaining examples of tropical rockland hammock that remain in Miami-Dade County, small scrub sites and extensive coastal wetlands. Most of the remnant upland forest sites within the urban development boundary are developable, and some of those outside the boundary could be cleared for agricultural use. All sites are zoned residential, agricultural, or general use. The native habitats are also sensitive to adjacent development and agricultural activities.

RESTORATION BENEFITS: The globally endangered rockridge pinelands occur exclusively on the Miami Ridge. Both pinelands and hammocks have been dramatically reduced in acreage by urbanization. Numerous endemic, rare, and endangered plant species and several rare endemic animal species occur within the project area. The lands will be used as preserves for the unique and endangered plant communities. The sites will provide connections with existing natural areas, increase their effective size, thereby improving their sustainability. In some cases the acquired sites will buffer important natural areas from the detrimental impacts of urban development.

Time Line and Fiscal Year Budget (in thousands of dollars) for : Miami-Dade County

Environmentally Endangered Lands Program																
Task	97-98	99	00	01	02	03	04	05	06	07	08	09	10	11	Unprog	Total
Land Acquisition:																
Project																
Acres to be Acquired	465	100	133	133	133	133	133	133	133	100	100	100	100	100	104	2,100
Purchase Price (in 1,000s of dollars)	17,659	1500	2000	2000	2000	2,000	2,000	2,000	2,000	1,500	1,500	1,500	1,500	1,500	8691	49,350
Subtotal																**$49,350**

TITLE: Military Canal Remediation			
SUBREGION : 4	***PROJECT ID:*** SE38	***FINANCIAL REQUIREMENT:*** TBD	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality, Habitat Protection, Infrastructure Investment		
PROJECT PLAN MANAGER: Richard Frost (305) 230-1144	***BASIS:***	***TOTAL:***	
LEAD ORGANIZATION(S): NPS, EPA		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, SFWMD , Miami-Dade DERM			
COUNTY(S): Miami-Dade County		***TOTAL:***	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** SE06 **Associated with:** SE01		***TOTAL:***	
START: 1997	***END:***	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Scientific data is available from past studies and will soon be available from a study being completed by EPA, to further identify the characteristics, degree, and extent of contamination in Military Canal. Based on this analysis, the participating agencies will agree on the appropriate action, lead agencies, and funding sources. The proposed project will (1) Evaluate alternatives for remediation of contaminants in Military Canal using available scientific and engineering data, (2) prepare engineering design and specifications for selected alternative, and (3) implement the selected alternative.

RESTORATION BENEFITS: Sediments in Military Canal have been found to hold contaminants which could end up in Biscayne Bay and Biscayne National Park. There is concern that the existing contaminants may be conveyed to Biscayne National Park during flow events, leading to further sediment and water quality degradation.
Canal improvements achieved through this project will be integrated into broader stormwater management actions for this part of South Florida, including improvement of quality, quantity, timing, and distribution of surface water and sediments into Biscayne Bay and Biscayne National Park.

TITLE: Biscayne Bay Ecosystem Risk Assessment			
SUBREGION : 4	***PROJECT ID:*** SE39	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality & Habitat Protection		
PROJECT PLAN MANAGER: Dick Frost 230-1144	***BASIS:*** 3	***TOTAL:*** $ 1,200,000	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): DERM, SFWMD, USACE, Univ. Of Miami		**TOTAL: $0**	
COUNTY(S): Miami-Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS01; SE05; SE06; SE30; SE29; LEC22-I; Cumulative Stressors		***TOTAL:*** $ 1,200,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Biscayne Bay comprises a unique set of biotic communities that includes coastal mangrove forest, seagrass flats, islands, and coral reefs. These ecosystems contribute to the long-term economic health of the region through tourism, valuable fishery resources, and recreational opportunities. Biscayne Bay has been subject to significant changes in water quantity and quality from local urbanization and the alteration of surface and ground water flows. The proposed project would assess the ecological risks associated with basin-wide changes in water quality and water delivery schedules on biotic communities in the bay and reef tract. To accomplish this, quantitative baseline ecological information would be collected in each major biotic community (Task 1). Community structural and functional elements will be employed to establish biotic indices that will permit an evaluation of biological integrity and aquatic health (Task 2). Links between canal inflow and ecosystem components will be integrated employing bay circulation models to establish a relationship between bay inflow, water quality, seagrass production, upper trophic level consumers such as fish, and biotic indices (Task 3). This integrated model will permit assessment of risks and environmental impacts from changes in water quality, quantity, and inflow schedules. This project relies in part on results of current research (Cumulative Effects of Natural and Anthropogenic Stressors; Biscayne Bay Feasibility Study) to provide a framework of related landscape elements and the relative importance of identified anthropogenic stressors. The proposed project will develop quantitative relationships between stressors and ecosystem elements for predictive models to evaluate the consequences of water and land management actions on the biotic communities of Biscayne Bay.

RESTORATION BENEFITS: Changes to water management operations in South Florida that will be required by implementation of the C&SF Project Restudy for ecosystem restoration will result in changes to surface and groundwater delivery to Biscayne Bay. This will result in large-scale changes to salinity patterns in the bay and in effluent concentrations in canals. The impacts of these actions to the integrity and health of bay ecosystems are not known. This information is critical for understanding the consequences of regional water management alternatives on biotic communities in Biscayne Bay and the reef tract. This project will provide the means for assessing water and land management options for restoration and protect the integrity of Biscayne Bay ecosystems.

Time Line and Fiscal Year Budget (in thousands of dollars) for Biscayne Bay																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total

Task 1																
Task 2																
Task 3																
Task 4																
Project																
		510	265	175	250											**1200**
Subtotal																$1,200

TITLE: Cumulative Effects of Natural and Anthropogenic Stressors			
SUBREGION : 4, 6	**PROJECT ID:** SE40	**FINANCIAL REQUIREMENT:**	
PROGRAM CATEGORY: Science	**BUDGET CATEGORY:** Research		
PROJECT PLAN MANAGER: Carole Goodyear 305/361-4255	**BASIS:** 3	**TOTAL:** $6,250,000	
LEAD ORGANIZATION(S): NOAA Coastal Ocean Program		**APPROPRIATED TO DATE:**	
SUPPORTING ORGANIZATION(S): University of Miami Center for Marine and Environmental Analyses			
COUNTY(S): Miami-Dade, Monroe		**TOTAL:** $4,450,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS62, CE18, FK14, FK15, FK17, FK18, FK21, SE06, SE10, SE17, SE18, SE20, SE28, SE29, SE30		**TOTAL:** $1,800,000	
START: 1995	**END:** 2001	**APPROVED:** 11/97	**LAST REVISION:** 8/4/98

DESCRIPTION: This is a multiyear research program that addresses ecosystem issues on community to landscape levels in the geographic area of Biscayne Bay through the upper Florida Keys reef tract to Long Key. The program is developing integrated seascape-level models supported by laboratory and field research and designed to produce an integrated decision-support system for managers and policymakers. The primary foci for research and assessment activities are sustainability of the fish community, ecosystem integrity of the coral reef tract, and ecosystem integrity of the Biscayne Bay system. For the bay, emphasis is on mapping change in distribution of habitats, modeling stability of the habitat mosaic, characterizing habitat qualities important to fish community sustainability, and addressing primary anthropogenic stressors affecting mangrove and seagrass communities. For the reef tract, emphasis is on characterizing health of the system relative to spatial distribution and changes in community composition or productivity in response to natural or anthropogenic stressors. The study also includes a societal component to illustrate the connections between society's actions and choices and resultant environmental effects. All information will be integrated into a framework that can be used to identify critical linkages between society and ecological systems, rank the associated risks, and predict consequences of management options on the health and sustainability of the region's ecological and societal systems.

RESTORATION BENEFITS: This is the only comprehensive research program addressing community-level to landscape- and seascape-level issues in the area of Biscayne Bay through the Upper Keys. It will provide a management and risk analysis framework capable of addressing the complex environmental and societal issues that characterize the coastal environment of South Florida.

Time Line and Fiscal Year Budget (in thousands of dollars) for Cumulative Effects of Natural and Anthropogenic Stressors

Task	95-97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total

Program	[redacted]															
Project																
Program	2650	1800	900	900												
Subtotal	2650	1800	900	900												$6,250

TITLE: Western C-11 Basin Water Quality Improvement Project			
SUBREGION : 4	***PROJECT ID:*** SE41	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure, Management	***BUDGET CATEGORY:*** Infrastructure		
PROJECT PLAN MANAGER: Melissa Dollar 904/232-3848	***BASIS:*** 1	***TOTAL:*** $14,000,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USACE			
SUPPORTING ORGANIZATION(S): SFWMD, local drainage districts			
COUNTY(S): Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** ENP5-I **Associated with:** ENP1-I, WCA3A-I, TS1		***TOTAL:*** $14,000,00	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The purpose of this project, proposed for funding under the WRDA 1996 Critical Project authority, is to improve the quality and timing of stormwater from the C-11 Basin to the Everglades Protection Area. The project will be located in the C-11 basin at the S-9 structure, located in Broward County at the west end of the South new River Canal (C-11). The S-9 structure pumps untreated urban and agricultural stormwater runoff into WCA-3 from the South New River Canal, and pump seepage under Levees 33 and 37 back into WCA 3.

Concern has been expressed in a number of interagency venues regarding the quality of water discharged through S-9. Because S-9 discharges directly into the Everglades Protection Area, these discharges must meet the new Class III Water Quality Standards by 2006. Furthermore, the Modified Waters Deliveries to ENP Project will construct structures (or gaps) in the L-67 levees that will allow water to flow freely from the S-9 discharge point, down the L-67 canal and directly into the relatively pristine WCA-3B. S-9 water quality concerns have surfaced for discussion at meetings of the Governor's Commission, the Everglades Technical Advisory Committee, the SFER Working Group, the Water Quality Task Team for the Southern Everglades Restoration Alliance and through the non-ECP permit process. Representatives of the Miccosukee Indian Tribe have also voiced water quality issues.

This project will include: 1) water quality monitoring in selected reaches of the Western C-11 Canals and analysis of the sediments, 2) development of suitable Best Management Practices in areas where the water quality concerns are identified, 3) structure and/or operational changes to the S-9 structure and the western C-11 basin water management system (e.g., modifications that will allow slower pumping rates so as to not disturb canal sediments), 4) structural or operational changes in the secondary drainage system. Design development is in progress.

RESTORATION BENEFITS: This project is one component of a more comprehensive strategy for improving water quality in the Western C-11 Basin Restoration benefits will include: 1) will help to ensure that S-9 discharges meet Class III Water Quality Standards for the Everglades; 2) will reduce phosphorus loading to the Everglades Protection Area which will help to protect the long term ecological integrity of Everglades National Park; 3) will reduce eutrophic impacts within the public Everglades; and 4) will reduce loads of other pollutants (e.g. pesticides, heavy metals, etc.);

Time Line and Fiscal Year Budget (in thousands of dollars) for																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Land Acquisition																
Project																
			2400	3400	6200	2000										14,000
Subtotal																

TITLE: Palm Beach County Freshwater Chain-of-Lakes Project			
SUBREGION : 4	***PROJECT ID:*** SE45	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality & Habitat Protection		
PROJECT PLAN MANAGER	***BASIS:*** **3**	***TOTAL:*** **$6,808,000**	
Janet Phipps 561/233-2443		***APPROPRIATED TO DATE:*** **$708,000**	
LEAD ORGANIZATION(S): PBCo ERM			
SUPPORTING ORGANIZATION(S): FGFWFC, DEP			
COUNTY(S): Palm Beach County		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** ***$6,100,000***	
START: 1998	***END:*** 2003	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: The 5 freshwater lakes in Palm Beach County (from north to south Pine, Clarke, Osborne, Eden, and Ida) are a valuable resource to the region through tourism, fisheries, and recreational opportunities. These lakes encompassing approximately 661.3 acres are located along the western slope of the coastal ridge and are part of the C-51, C-16, and C-15 drainage basins. Significant alteration and degradation has occurred to these lakes through channelization, urban and residential development, and from discharges of agricultural and urban runoff. These influences have resulted in water quality degradation and habitat loss. Impaired water quality is reflected by very high nutrient concentrations, bacterial contamination, reduced dissolved oxygen concentrations, low water transparencies, algal blooms and exotic weed control problems. To address these issues a resource inventory and development of a restoration and management plan (Task 1) was completed. Within the Plan thirty-two shoreline restoration projects are proposed (Task 2) covering 8.5 miles of shoreline. Water quality monitoring (Task 3) continues with additional monitoring stations. Reducing stormwater sediment loading by retrofitting stormdrains (Task 4) is planned. Managing and monitoring exotic aquatic plants (Task 5) will continue. Additional studies (Task 6) to further define the issues, such as, heavy metal and nutrient loading, coprostanol, and muck deposition will be completed. Preparation of educational materials (Task 7) to increase public awareness and support as well as encourage environmentally sensitive landscape design and management by homeowners and industry will be developed.

RESTORATION BENEFITS: Implementation of all the projects within the Plan will result in an improvement of the water quality of the freshwater lakes as well as a significant increase in habitat value for wildlife and for fisheries. Improved fisheries and water quality benefit the biological productivity, aesthetics and angling interests of the lakes for the citizens of Palm Beach County and its visitors.

Time Line and Fiscal Year Budget (in thousands of dollars) for Palm Beach County Freshwater Chain-of-Lakes

Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Task 1	75															75
Task 2	160	200	608	425	634	645	645								2957	3317
Task 3	12	24	24	24	24	24	24								120	156
Task 4				562	563	563	562								2250	2250
Task 5	60	172	150	150	150	150	150								750	982
Task 6	5		9	9											18	23
Task 7			5												5	5
Project																
Subtotal	312	396	796	1170	1371	1382	1381								6100	$6,808

TITLE: Eastward Ho! Brownfields Partnership			
SUBREGION : 4	***PROJECT ID:*** SE 46np	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Management	Information Management and Assessment	***TOTAL:*** $2,150,000	
PROJECT PLAN MANAGER: Terry Manning 954-985-4416	***BASIS:*** 3	***APPROPRIATED TO DATE:*** USEPA $400,000 FCDA $75,000	
LEAD ORGANIZATION(S): SFRPC			
SUPPORTING ORGANIZATION(S): TCRPC, FDCA, USEPA		***TOTAL:*** $475,000	
COUNTY(S): Miami-Dade County, Broward County, Palm Beach County		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SE20		***TOTAL:*** $1,675,000	
START: 1998	***END:*** 2000	***APPROVED:*** 9/98	***LAST REVISION:*** 9/98

DESCRIPTION: The Eastward Ho! Brownfields Partnership (the Partnership) is a public-private regional, state, and federal collaboration targeting the remediation and sustainable reuse of urban properties that are abandoned or underutilized due to real or perceived contamination (brownfields). Because brownfields are a significant barrier to redevelopment in the Eastward Ho! Corridor, the Partnership, through its work to remediate and reuse brownfield properties, supports the larger Eastward Ho! Initiative and urban and Everglades restoration strategies. The Partnership's target area is the portion of the Eastward Ho! Corridor lying within Miami-Dade, Broward, and Palm Beach counties. Project activities include the completion of a regional inventory of potential brownfields sites including available information on socio-economic, public health and transportation data; the completion of detailed brownfields site inventories in specific areas within the Eastward Ho! corridor; the development of timely and meaningful community participation in the brownfields redevelopment process, the establishment of financial tools and models for streamlined governmental processes to promote brownfields rehabilitation and redevelopment; and the undertaking of four demonstration projects with federal agencies to apply new resources, programs and technologies to brownfields issues.

RESTORATION BENEFITS: The project provides a comprehensive approach to addressing brownfields and redevelopment in the region's urban corridor (Eastward Ho!). The Governor's Commission for a Sustainable South Florida, recommended the Eastward Ho! Initiative as an effort to slow the westward spread of suburban sprawl from Southeast Florida into the Everglades ecosystem. Eastward Ho! promotes infill development and redevelopment in a largely urban 150-mile corridor spanning much of the coastal ridge that forms a barrier between the Atlantic Ocean and the Everglades Basin. The Corridor runs from Fort Pierce in St. Lucie County to Florida City in Miami-Dade County and includes the major metropolitan areas of Miami, Fort Lauderdale, and West Palm Beach. Urban development practices and patterns such as infill development and stormwater programs have a substantial impact on the Biscayne Aquifer, Biscayne National Park, Water Conservation areas, Biscayne Bay, Florida Bay, the Florida Keys and offshore coral reef, and miles of fragile coastal area. The Eastward Ho! Brownfields Partnership recently competed successfully for National Showcase Community status. The selection of Eastward Ho! as a Showcase Community brings with it the promise of collaboration, support and assistance from approximately 20 Federal Agencies including USEPA, HUD, COE, DOT, NOAA/EDA, USDA, GSA and others.

Time Line and Fiscal Year Budget (in thousands of dollars) for Eastward Ho! Brownfields Partnership

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
National Brownfields Showcase Community		400														
FDCA-BF Partnership		75														
Subtotal		475	875	800												**$2,150**

TITLE: South Dade Stormwater Treatment and Distribution Area Demonstration Project			
SUBREGION : 4	***PROJECT ID:*** SE47np	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality		
PROJECT PLAN MANAGER: Lee Hefty (305)372-6860	***BASIS:***	***TOTAL:*** $2,136,000	
LEAD ORGANIZATION(S): Miami-Dade Co. DERM		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, DEP			
COUNTY(S): Miami-Dade County		***TOTAL:*** $2,136,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on :** **Critical to :** SE06, TS01 **Associated with:** SE17, SE29		***TOTAL:*** $0	
START: 1996	***END:*** 2001	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: To design, construct, and monitor a stormwater treatment wetland demonstration project. The project will demonstrate the effectiveness of the wetland system for improving water quality, providing water storage, and reducing pulse event flows to Biscayne Bay and Biscayne National Park. The project encompasses approximately 80 acres and is located along the Military Canal immediately west of the L-31E levee and borrow canal.

RESTORATION BENEFITS: Due to the construction of the C&SF Project in southern Miami-Dade County, freshwater flows to Biscayne Bay have changed radically over what occurred historically. Many agencies have supported the concept of investigating redirecting existing surface discharges at canal mouths to overland flow discharges in order to minimize existing water quality and quantity impacts to the estuaries in southern Biscayne Bay. This project will be used to assess the effectiveness of this concept on a larger, more regional scale.

Time Line and Fiscal Year Budget (in thousands of dollars) for South Dade Stormwater Treatment & Distribution Area Demonstration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Planning																
Permitting																
Construction																
Monitoring																
Project																
	30	95	223	1625	163											2136
Subtotal	30	95	223	1625	163											**$2,136**

3.6 *SOUTHWEST FLORIDA/BIG CYPRESS BASIN*

Sub-Region 5

ECOLOGICAL SETTING:

The Southwest Florida/Big Cypress Basin (SW/BCB) extends north from Everglades National Park (ENP) to the Caloosahatchee River watershed, and east from the Gulf of Mexico to the L-4 and L-28 canal systems and Lostmans Slough. It includes southern Lee and Hendry, all of Collier, and small portions of western Broward and Dade, and northwestern Monroe counties.

The region provides significant habitat for many threatened and endangered species and species of special concern, including the American bald eagle, Florida panther, woodstork, snail kite, snowy plover, Florida sandhill crane, red-cockaded woodpecker, Big Cypress fox squirrel, Florida black bear, alligator, limpkin, Everglades mink, crocodile, Loggerhead sea turtle, West Indian manatee, snook, jewfish, gopher tortoise, Eastern indigo snake, many species of wading birds and migratory shore birds and songbirds.

The slash pine forests of southwest Florida have been identified as an endangered ecosystem. This sub-region, along with the western Greater Okeechobee sub-region, may have the State's greatest acreage of hydric pine flatwoods, which have significant ecological and hydrological value. Plant species diversity is high, with over 900 species, including 85 protected species. At least 21 Federal and State listed animal species are supported by the flatwoods communities important to groundwater recharge.

The sub-region also encompasses tremendous acreages of ecologically valuable wetlands. Big Cypress National Preserve (BCNP) and its Addition Lands, is approximately 728,000 acres of swamplands. It is dominated by seasonally flooded cypress savannas and freshwater marshes interspersed with islands of slash pine and mixed hardwood hammocks. The BCNP is about one-third covered with cypress trees, mostly dwarf pond cypress. The few remaining giant bald cypresses, escapees of the lumber era, may be 600-700 years old.

Fakahatchee Strand, over 74,000 acres in size, is the center of native U.S. orchid species diversity. The Corkscrew Regional Ecosystem Watershed (CREW) is more than 58,000 acres of mostly functional wetlands. It supports North America's largest nesting colony of endangered wood storks and largest remaining stand of virgin bald cypress. Within CREW is the 1,500-acre Lake Trafford, the largest freshwater lake in the region. Lake Trafford supports significant bass and other fish, invertebrate, and bird populations. The CREW provides habitat for about 75 protected plant and animal species, as well as having significant hydrologic importance by conveying water to the Florida Panther National Wildlife Refuge (NWR), Fakahatchee Strand State Preserve, Rookery Bay, and Estero Bay Aquatic Preserve and Buffer Reserve watersheds. Okaloacoochee Slough encompasses approximately 140,000 acres of mostly priority 1 habitat for Florida panthers. Other significant wetland areas lie within the Big Cypress Area of Critical State Concern (ACSC); Belle Meade and Southern Golden Gate land acquisition projects; Picayune Strand State Forest; the Florida Panther and 10,000 Islands National Wildlife Refuges; and Collier-Seminole State Park.

The coastal areas in this subregion are characterized by mangrove dominated estuaries with salt marsh habitats occurring landward of the mangrove zone. They generally provide a rich and abundant fish and shellfish nursery, as well as supporting bottlenose dolphin, the endangered West Indian Manatee, and an abundance of wading and shore bird species. Seagrasses, oyster bars, and mudflats are common benthic habitats. Beaches and dunes provide critical nesting habitat for many species of protected migratory shore birds and the threatened Loggerhead sea turtle. Important protected beach/dune and estuarine areas include Delnor-Wiggins Pass and Barefoot Beach State Recreation Areas; Estero Bay Aquatic Preserve and Buffer Reserve, Rookery Bay Aquatic Preserve and National Estuarine Research Reserve, the Ten Thousand Islands Aquatic Preserve and National Wildlife Refuge; the Estero Bay Tributaries and the Wiggins Pass/Cocohatchee Estuary Outstanding Florida Waters (OFW), and the Little Estero, Caxambas, and Big Marco Critical Wildlife Areas.

LINKAGE TO THE TOTAL SYSTEM:

Water from the basin flows south and southwest to provide freshwater for the estuaries along the southwest coast, including the Ten Thousand Islands National Wildlife Refuge and Aquatic Preserve, Rookery Bay National Estuarine Research Reserve and Aquatic Preserve, southwestern Everglades National Park (ENP), and indirectly to Florida Bay. The basin also provides water for several southwest Florida communities. Ecological connections between Everglades National Park and the Big Cypress basin are evident, resulting in similar concerns and scientific needs for both sub-regions. The extensive, contiguous areas are distinguished by the large proportion of officially designated wilderness area (in ENP) and by Federal ownership for controlled-use purposes of most of the southern and eastern portion of the BCNP. Development impacts in the remainder of the subregion have a direct effect on ecosystem health within the Everglades basin.

ECOSYSTEM ISSUES AND RESTORATION OBJECTIVES:

Southwest Florida is undergoing tremendous development pressure and has had the highest growth rate in Florida during the last ten years. During the 1950s-1970s, several large-scale residential developments along with major road and drainage projects were constructed throughout the region, causing loss of both wetland and upland habitat, lowering of the water table, and impacts to the region's rivers and estuaries. Incorporated cities include Naples, Ft. Myers Beach, Marco Island and Everglades City. Rapidly developing areas include northern Collier County, northern Golden Gate Estates, Estero, Immokalee, and Bonita Springs.

Recent plans for expanding the Southwest International Airport and constructing Florida Gulf Coast University has spurred development pressure to new levels. Agriculture is a major industry in the area, especially citrus and winter vegetables. Until recently, conversion of natural lands to agriculture occurred at an even greater rate than residential and commercial development in some areas of the basin. There is concern about potential effects on plants, wildlife, and their habitats and on surface and ground water quality and quantity. Some citrus development projections estimate that up to 50% of available Florida panther habitat in the Immokalee Rise area may be lost. Citrus also uses more water per acre than any other type of agriculture, except plant nurseries. There is concern over the

potential impacts for water table drawdown.

Construction of the Tamiami Trail in 1928, the first east-west road across the basin, altered the natural timing and distribution of surface water flow. Since then, other residential road and canal systems have altered natural freshwater sheetflow patterns to the estuaries, resulting in increased rates of runoff and substantial point loads of contaminants. As a result, salinity patterns have changed, the estuarine nursery value for fish and shellfish has decreased, fisheries and seagrass abundance have been reduced, and nutrient loading has increased. One of the most significant examples of this was the development of Golden Gate Estates in the 1950s, which includes approximately 200 square miles of road and drainage canal development in wetlands east of Naples. This project continues to cause drawdown of the water table, impacts to wildlife habitat, increased fire, and unnatural discharges of large volumes of freshwater into the Ten Thousand Islands estuary.

Water quality in the urban estuaries continues to decline as a result of non-point source discharges. Nutrient and turbidity levels are on the rise in the estuaries, and concentrations of heavy metals indicative of polluting conditions (including cadmium, lead, copper and zinc) are found in the sediments. Fresh water systems have suffered a swell. The once sandy substrate of Lake Trafford, which had supported important submerged aquatic vegetation, is now buried under 7 million cubic yards of muck caused by nutrient-rich runoff and chemical aquatic weed control practices. The high biochemical oxygen demand of the muck causes periodic massive fish kills in the lake. Water quality within the BCNP is generally considered to be good to excellent. However, runoff from citrus and other farming operations upstream of the BCNP has long been a concern. Indian lands of the Miccosukee and Seminole Tribes, an important component of the basin, receive surface water that is contaminated with high concentrations of nitrogen, phosphorus, heavy metals, and other pollutants. These pollutants are generally attributed to intensive upstream agricultural development and other anthropogenic activities.

This pollution has resulted in contaminated fish and wildlife, which tribal members consume as part of their traditional subsistence hunting and fishing lifestyle, and significant economic and recreational fisheries and ecotourism for urban/rural communities. The pollution has resulted in conversion of wetlands to areas lacking the natural plant and animal diversity of the past. The subsurface strata contribute nutrients to the groundwater affecting the surface flora and fauna. Subsurface investigations are needed to provide the required data to understand the subsurface stratigraphy and its groundwater impacts to the South Florida Ecosystem.

Vegetation in conservation areas of the Big Cypress Basin has not been substantially altered compared to other sub-regions, but is threatened by the invasion of a variety of exotic plants. Melaleuca, in particular, now occupies about 6% of the BCNP and resists control efforts. This and other invasive species may lower the water table and hasten extinction of native species. Non-native fishes have colonized natural and disturbed habitats during the past three decades. Documented impacts include predation, nest-site competition, and habitat disturbance. Without strict border controls, relevant legislation, and support from the nursery industry, more exotic species will invade with unknown ecological consequences.

Continued loss of floral and faunal diversity from upland communities is of great concern. Though issues of biodiversity are frequently discussed in relation to wetlands, many of the known and imminently threatened losses of

species in the basin appear to be associated with uplands.

Slash pine forest ecosystem acreage in Southwest Florida declined 88% from 1900-1989. Large acreages of hydric pine flatwoods have been lost to logging, development, and agriculture activities. Habitat destruction from residential and commercial development continues. Agricultural conversion has abated, but there are many large permits pending. Approximately 130,000 acres of citrus exist, with approximately 500,000 acres currently permitted. Melaleuca and other invasive exotic plants are a serious ecological problem.

Principal threats to survival of the Florida panther are habitat loss, automobile traffic, and inbreeding. Survival of Florida's state mammal is dependent on stabilizing the extant population, genetic restoration, and reintroduction elsewhere in its historic range. With the exception of the well-studied panther, black bear, and white-tailed deer, there is only limited information on the biology or population ecology of most native mammals. In addition, the ecological consequences of an expanding population of feral pigs have not been measured.

The total number of wading birds nesting in the Big Cypress and Everglades Basins has declined by more than 95% from peak estimates of nesting birds in the 1930s. Impacts of altered hydropatterns include (1) reduced number of birds attempting to nest, (2) relocated colonies, (3) changed timing of nesting, and (4) fewer years of successful nesting.

Several initiatives with public and private interests have formed to address the problems associated with the intense development pressure being experienced in this environmentally sensitive region. Some of these include the Southwest Issues Group of the Governors Commission for a Sustainable South Florida, Southwest Coast Ecosystem Management Team, Estero Bay Agency for Bay Management, Southwest Focus Group, Panther and Private Lands team, Lake Trafford Restoration Task Force, Southern Golden Gate Technical Committee, Big Cypress Basin Science Steering Committee, Greenways and Trails, and others.

RESTORATION OBJECTIVES:

The restoration objectives of critical importance for Sub-region 5 have been identified by the Working Group and are listed as follows:

- Restoration of more natural distribution, timing and quantities of fresh water into the coastal estuaries.
- Improvement to water quality by addressing point source and non-point source discharges.
- Restoration of degraded habitat, and minimization of further habitat loss.
- Protection of flood plains from further development to minimize needs for additional drainage projects.
- Improvement of aquifer recharge, and protection of ground water from pollutant loading, saltwater intrusion.
- Promotion of best management practices to agriculture, development, local governments, and the general public.
- Protection, buffering, and management of existing public lands.

RESTORATION PROJECTS:

Important restoration projects in progress or proposed for the Sub-region are identified on the following pages:

TITLE: Additional Water Conveyance Structures Under Tamiami Trail			
SUBREGION : 5	***PROJECT ID:*** SW01	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infra Invest, Natl Res Man.	Potential cost shares: SFWMD, FDOT, FDEP, NPS, USGS	
PROJECT PLAN MANAGER: Feeder (941) 338-2341 Tears (941) 597-1505 Hibbard (941) 695-2000	***BASIS:*** 2	***TOTAL:*** $4,355,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDOT			
SUPPORTING ORGANIZATION(S): SFWMD,NPS, FDEP, USGS			
COUNTY(S): Collier		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** SW24 **Critical to:** SW03, SW05, SW10, SW11 **Associated with:**		***TOTAL:*** $4,355,000	
START: 1998	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: U.S. Highway 41 (Tamiami Trail), constructed in the 1920's, is a two-lane highway in south Florida that connects Miami to Naples. Currently, the Tamiami Trail impedes the north-south sheetflow in Ten Thousand Islands, Southern Golden Gate Estates, Fakahatchee Strand, Big Cypress National Preserve, Water Conservation Area 3A, and Everglades National Park, which is critical to supporting the regional wetland ecosystems. The existing bridges and water control structures are inadequate for transmitting surface water beneath the Tamiami Trail- The elevated roadbed of the Tamiami Trail is a physical barrier to the natural surface water sheetflow. The borrow canal immediately north of the Tamiami Trail intercepts this south-southwest flow and transfers it to an east-west flow direction until it exits south through bridges or water control structures. Currently, due to this channelization of flowways, some wetland habitats receive too much freshwater, while others do not receive enough. Also, the seasonal hydropatterns (quantity, timing and distribution of surface water flows) are interrupted.

This project will help to restore a more natural hydropattem to the southern Big Cypress Basin (Subregion 6) and Coastal Areas (Subregion 8). This project will be accomplished in three phases: Phase I - conduct a comprehensive assessment of the hydrological impacts from the Tamiami Trail (the USGS is currently working with FDOT to initiate this effort), Phase 11 - identify locations for additional water conveyance structures (i.e., bridges, culverts), and Phase III - install additional water conveyance structures and upgrade existing structures, as appropriate. The project area is located on the Tamiami Trail between Collier-Seminole State Park - immediately south of the Miller Canal - to the west, and 50-Mile Bend to the east (approximately 65 km), The L-28 Levee Modification project will address the hydrological impacts of the Tamiami Trial from 50-Mile Bend to the eastern boundary of Big Cypress National Preserve (40-Mile Bend). The Modified Water Deliveries to Everglades National Park project will address the hydrological impacts of the Tamiami Trail east of 40-Mile Bend. The conveyance types and number of structures, along with their cost estimates are now being finalized in consultation between SFWMD,NPS, FDOT, USACE, and USGS and a PCA is being developed.

RESTORATION BENEFITS: This project will improve the natural sheetflow of surface water within the watersheds of Ten Thousand Islands National Wildlife Refuge & Aquatic Preserve, Southern Golden Gate Estates, Fakahatchee Strand State Preserve, Big Cypress National Preserve, and Everglades National Park. By creating a more diffuse **flowway** beneath the Tamiami Trail, a **more** natural hydropattern will be established north and south of this highway. Improvement of the natural hydrology will also enhance biological restoration (i.e.. Cape Sable Sparrow habitat) for the region. This project will directly support objectives for several other south Florida Projects (i.e., Levee 28 Modification, Restoration of Southern Golden Gate Estates). In order for these projects to meet their respective design objectives, the additional water conveyance structures under the Tamiami Trail **will** need to be completed.

Time Line and Fiscal Year Budget (in thousands of dollars) for Additional Water Conveyance Structures Under Tamiami Trail																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I Hydrologic Assessment																
Design, Permit and Real Estate																
Phase II Construction																
Phase III Construction																
Final Report																
Project																
		175	470	1000	1500	1210										4,355
Subtotal																**$4,355**

TITLE: Seminole Tribe Water Conservation Project for the Big Cypress Reservation			
SUBREGION : 5	***PROJECT ID:*** SW03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Infrastructure	Infrastructure Investment	***TOTAL:*** $70,053,000	
PROJECT PLAN MANAGER: Tepper (954)966-630 X1120	***BASIS:*** 1	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): Seminole Tribe of Florida			
SUPPORTING ORGANIZATION(S): USACE, NRCS, BIA			
COUNTY(S): Hendry, Broward		TOTAL: $0	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW14, TS85		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $48,307,000	
START: Jan 1998	***END:*** 2005	***APPROVED:*** 11/97	***LAST REVISION:*** 5/98

DESCRIPTION: This project includes design and construction of water control, management, and treatment facilities for all seven basins of the Big Cypress Reservation. The funding needs for this project total $70,053,000. Basins 1-4 of the Water Conservation Project have been submitted as a Critical Project under the procedures outlined by the USACE. This subset of the Water Conservation Project can be constructed and will function independently of the infrastructure required in Basins 5, 6 and 7 in the eastern potion of the Big Cypress Reservation and the BMP Project (BCB14-M). The Seminole Tribe is working with NRCS to design and construct the infrastructure for Basins 5, 6, and 7.

RESTORATION BENEFITS: The planned network of surface water management structures is designed to accomplish the following four objectives:

(1) Remove phosphorus and other pollutants from water leaving the Reservation. The removal of these pollutants will be achieved using natural treatment processes, in pretreatment cells and water resource areas (WRA's). Unlike the stormwater treatment areas in the Everglades Construction Project, the Tribe's WRA's will take advantage of the natural treatment processes and will serve additional functions in the storage and conveyance of water.

(2) Convey and store irrigation water. To make use of water provided by the District (to replace the Tribe's diverted Compact water rights), the Tribe needs to be able to take this water, when it is available, to move it and to store it. This will be accomplished through water conveyance improvements and irrigation storage cells.

(3) Provide improved flood control. Stormwater must be controlled on the Reservation to prevent extended periods of flooding and limit impacts downstream. This will be accomplished by means of stormwater attenuation areas which will detain large storm events.

(4) Rewater Big Cypress National Preserve. The Seminole Water Conservation Project will provide the opportunity to restore more natural hydroperiods in the Big Cypress National Preserve. Bypass structures will be placed under the West Feeder Canal that will sheetflow clean water south along the length of the Feeder Canal into the Big Cypress Addition.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe Water Conservation Project for the Big Cypress Reservation																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Studies																
Dev& Constr.																
Project																
			Bas 1	Bas 2	Bas 3	Bas 4	Bas 5	Bas 6	Bas 7							
Seminole Tribe		904	8588	7232	4520	1355	514	434	2780							26,327
COE		904	8588	7232	4532	1355										22,599
NRCS		0	0	0	0	0	2915	2460	15,752							21,127
Subtotal		1,808	17,176	14464	9040	2,710	3,429	2,894	18,532							**$70,053**

TITLE: Belle Meade Land Acquisition			
SUBREGION : 5	***PROJECT ID:*** SW04	***FINANCIAL REQUIREMENT:*** (proposed)	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State: 50 percent Federal: 50 percent	
PROJECT PLAN MANAGER: Boler 941-332-6975	***BASIS:*** 2	***TOTAL:*** $33,726,136 estimated	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:*** State: $10,916,425	
SUPPORTING ORGANIZATION(S): Big Cypress National Preserve			
COUNTY(S): Collier		***TOTAL:*** $10,916,425	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW10, SW09		Federal: State: ***TOTAL:*** $22,809,711	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This area of 17,987 acres, includes some of the most extensive examples of mature old-growth hydric pine flatwoods in southwest Florida not within other CARL projects. The hydrology of the hydric pine flatwoods and dwarf cypress communities within the project are relatively intact, as is the hydrology. Three archaeological sites have been recorded within the project boundaries, and additional sites may be present. The area is vulnerable to changes in the timing and amount of water flowing through it. Residential and commercial development spreading from Naples threaten it.

RESTORATION BENEFITS: The additional land would protect habitat for at least five FNAI Special Plants and a reported 23 Special Animals, including the Florida panther, red-cockaded woodpecker, and Florida black bear. The area is adjacent to the Save Our Everglades Golden Gate Estates project and would aid in protection of the primary watershed of the Rookery Bay National Estuarine Preserve. The project area also shares a 2-mile border with Collier-Seminole State Park. If acquired, Belle Meade will ultimately be an important part of a contiguous public conservation area extending across South Florida from the Gulf Coast to approximately 10 miles from the Atlantic Ocean. The project will provide a state forest with uses such as hiking, hunting, and nature appreciation. Use will be limited in the wet seasons.

Time Line and Fiscal Year Budget (in thousands of dollars) for Belle Meade Land Acquisition																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal	10,916	10,916	11,894													**$33,726**

TITLE: Big Cypress National Preserve Addition			
SUBREGION : 5	***PROJECT ID:*** SW05	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State: $6,064,000 20 percent Federal: $24,256,000 80 percent ***TOTAL:*** $30,320,000	
PROJECT PLAN MANAGER: Hibbard 941-695-2000	***BASIS:*** 3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): NPS		State: *$8,900,000 Federal: $9,620,000 ***TOTAL:*** $18,520,000	
SUPPORTING ORGANIZATION(S): FDOT/FDEP			
COUNTY(S): Collier			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS17, TS06		***REMAINING FINANCIAL REQUIREMENT:*** State: 0 Federal: $15,800,000 ** ***TOTAL:*** $15,800,000 **	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

NOTE: THIS IFP PROJECT IS PART ONE OF TWO PARTS OF BASE LAND ACQUISITION NEEDS IN BIG CYPRESS NATIONAL PRESERVE. IT MUST BE ACCOMPANIED BY PROJECT ID SWO7.

DESCRIPTION: Public law 100-301 provided for expansion of the Preserve by 146,120 acres, of which approximately 32,154 acres will be transferred by the State of Florida. Of the total, 85,000 acres have been transferred from the Collier Companies as a result of the Florida/Arizona land exchange. The remaining private lands (27,000 acres) are to be acquired by the Federal Government. As of March 1997, approximately 10,896 acres remain to be acquired.

RESTORATION BENEFITS: The acquisition will preclude uses of the remaining private land tracts incompatible with the preservation, conservation, and restoration management objectives of the NPS. Public ownership will assure consistent land management throughout the watershed. These remaining private tracts effectively preclude full implementation of restoration plans of the Seminole Tribe of Florida, SFWMD, and the NPS. The tracts are scattered throughout wetlands critical to restoration of the natural hydrologic regime upstream of WCA-3A, Big Cypress National Preserve, and Everglades National Park.

***** The State of Florida has purchased the 32,154 acres at a cost of $8,900,000.
****** Some properties are "deferred " from acquisition (from willing sellers only). Approximately $8,000,000 will be needed to acquire these properties but is not programmed. This applies to both this project (BCB5-L), and (BCB-L).

Time Line and Fiscal Year Budget (in thousands of dollars) for Big Cypress National Land Acquisition																
Task	97&Prior	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquisition																
Project																
Acquisition	18,520	2000	2000	5800	6000											30,320
Subtotal	18,520	2000	2000	5800	6000											$30,320

TITLE: Big Cypress National Preserve Mineral Rights			
SUBREGION : 5	***PROJECT ID:*** SW06	***FINANCIAL REQUIREMENT:*** TBD Federal 100 percent	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Hibbard (941) 695-2000	***BASIS:*** 2	***TOTAL:*** unknown	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier, Monroe & Dade		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW05, SW07		***TOTAL:*** Unknown	
START: On completion of determination of values	***END:***	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Acquire the value of and acquire non-Federal mineral rights on approximately 700,000 acres in Big Cypress Preserve. Until mineral interests are appraised, it is difficult to define the relative importance of acquisition to restoration of South Florida. In order to prevent potential harm, strict environmental standards need to be applied in the Preserve and throughout the ecosystem. This project would provide one additional safeguard to environmental integrity within the boundaries of the Preserve.

RESTORATION BENEFITS: Acquisition of all mineral interests would preclude surface disturbance associated with mineral exploration and development in relatively pristine wetlands.

Time Line and Fiscal Year Budget (in thousands of dollars) for Big Cypress National Preserve Mineral Rights																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal																

TITLE: Big Cypress National Preserve Private Inholdings			
SUBREGION : 5	***PROJECT ID:*** SW07	***FINANCIAL REQUIREMENT:*** Federal 100 percent	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Hibbard (941) 695-2000	***BASIS:*** 2	***TOTAL:*** $165,261,364	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier, Monroe, & Dade		***TOTAL:*** $154,561,364	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS06, TS17, WCA1-I, SW05		***TOTAL:*** $14,700,000*	
START: Ongoing	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

NOTE: THIS IFP PROJECT IS PART ONE OF TWO PARTS OF BASE LAND ACQUISITION NEEDS IN BIG CYPRESS NATIONAL PRESERVE. IT MUST BE ACCOMPANIED BY PROJECT ID SW05.

DESCRIPTION: This project consists of acquiring 180 privately owned tracts (597 acres) scattered throughout the original Preserve. Tracts average 3 acres in size with tracts ranging from less than 1 to over 250 acres. Several tracts involve businesses along U.S. Highway 41 and SR 29.

RESTORATION BENEFITS: Acquisition will allow the lands to be restored and managed consistent with the conservation mandates in the Big Cypress National Preserve enabling legislation (PL. 93-440, P.L. 100-301). Several of the tracts straddle surface water flow-ways (i.e. sloughs, strands) critical to sustaining natural hydropatterns. Private ownership of the scattered tracts precludes full implementation of ecological restoration and long-term management plans of the NPS.

***** Some properties are "deferred" from acquisition (from willing sellers only). Approximately $8,000,000 will be needed to acquire these properties but is not programmed. This applies to this project (BCB-7) and BCB-5L.

Time Line and Fiscal Year Budget (in thousands of dollars) for Big Cypress National Land Acquisition												
Task	95-97	98	99	00	01	02	03	04	05	06	Unprog	Total
Acquisition												
Project												
	154,561	2000	1000	6000	5700							165,261
Subtotal	154,561	2000	1000	6000	5700							**$165,261**

TITLE: Corkscrew Regional Ecosystem Watershed			
SUBREGION : 5	***PROJECT ID:*** SW08	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Lee County: $10,000,000 FDEP: $18,765,000 SFWMD: $18,765,000	
PROJECT PLAN MANAGER: Chuck Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $47,530,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Lee County		Lee County: $10,000,000 FDEP: $13,045,000 SFWMD: $13,765,000	
COUNTY(S): Collier, Lee		***TOTAL:*** $36,810,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW12,SW13		***REMAINING FINANCIAL REQUIREMENT:*** Lee County: $0 FDEP: $5,720,000 SFWMD: $5,000,000 ***TOTAL:*** $10,720,000	
START: 1995	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The CREW covers nearly 55,968 acres in Lee and Collier counties and is located at the top of the western Big Cypress watershed. It conveys surface water to private, State, and federally protected natural areas, including Corkscrew Swamp Sanctuary, Florida Panther National Preserve, and the Everglades National Park. The area supports populations of at least two species of rare and endangered orchids and includes an unusual stand of dwarf bald cypress. Land management will be carried out by the SFWMD and the FGFWFC under contract with the SFWMD

RESTORATION BENEFITS: Hydologic restoration of the CREW restore and protect important habitat for the Florida Panther and the Florida Black bear and will protect the quality of water delivered to Corkscrew Swamp Sanctuary, Florida Panther National Preserve, ENP, and Estero Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for: Corkscrew Regional Ecosystem Watershed													
Task	95-97	98	99	00	01	02	03	04	05	06	07	Unprog	Total
Acquisition													47,530
Project													
Subtotal	23,400	890	12,520	5,720	5,000								$47,530

TITLE: Fakahatchee Strand Land Acquisition Project			
SUBREGION : 5	***PROJECT ID:*** SW09	***FINANCIAL REQUIREMENT:*** (proposed) State: 50 percent match: $11,655447 Federal: 50 percent match: $11,655,447 ***TOTAL:*** $23,310,945 (estimated)	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Boler (941) 332-6975	***BASIS:*** 2	***APPROPRIATED TO DATE:*** State: $19,044,116 ***TOTAL:*** $19,044,116	
LEAD ORGANIZATION(S): FDEP			
SUPPORTING ORGANIZATION(S): Big Cypress National Preserve			
COUNTY(S): Collier		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $4,266,929	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW10, SW34			
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Fakahatchee Strand is located in Collier County. Of the subtropical swamps in South Florida, Fakahatchee Strand is perhaps the most significant, being the richest in orchids and other rare tropical plants. It is the most critical to the survival of the Florida panther, and the most important for the mangrove swamps of the Ten Thousand Islands. The project area is probably the best example of the strand swamp found in the United States. It is linked hydrologically to the Everglades system and is important to the estuarine ecosystem of the Ten Thousand Islands.

The Strand has several archaeological sites and excellent potential for future archaeological investigations. It is threatened by unnatural patterns of water flow and unrestricted use in the private ownerships (several thousand). Acquisition started in 1972 through litigation and continued subsequently with EEL funds. The project is part of the Save Our Everglades initiative, with 5,815 acres remaining to be acquired.

RESTORATION BENEFITS: Completion of public acquisition efforts will help reduce the effects of unnatural patterns of water flow; help protect the largest concentration and the greatest diversity of native orchids in North America; and help protect several rare and endangered species, including the Florida panther.

Time Line and Fiscal Year Budget (in thousands of dollars) Fakahatchee Strand Land Acquisition Project																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal																**$23,310**

TITLE: Southern Golden Gate Estates Hydrologic Restoration			
SUBREGION : 05	***PROJECT ID:*** SW10	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition & Infrastructure	***BUDGET CATEGORY:*** WQ/Habitat Protection	Phase I Land Acquisition (Remaining)	$38,200,000
		Phase II Project, Design and Construction	$15,560,000
PROJECT PLAN MANAGER: Ed Kuester (850) 488-2351 Phase I Ananta Nath (941) 597-1505: phase II	***BASIS: 2***	***TOTAL:*** $53,760,000	
		APPROPRIATED TO DATE:	
		DEP:	$13,200,000
		Farm Bill:	$25,000,000
LEAD ORGANIZATION(S): FDEP , SFWMD, USACE		SFWMD (BCB):	$ 360,000
SUPPORTING ORGANIZATION(S): FDCA ,FDACS, and NRCS		WRDA	$ 0
COUNTY(S): Collier		***TOTAL:*** $38,560,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		Total Remaining Project Need	$15,200,000
		WRDA Match at 50%	$ 7,600,000
		SFWMD/DOF:	$ 7,600,000
		TOTAL: $53,760,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The primary objective of this project is to acquire land under public ownership and to implement structural measures to restore the ecology of the Southern Golden Gate Estates (SGGE). The SGGE encompasses an approximately 94 square mile area of sensitive environmental landscape in south central Collier County. It is an important surface water storage and aquifer recharge area with a unique ecology of cypress, wet prairie, pine and hardwood hammock and swamp communities, and includes three major flowways that contribute freshwater input to the Ten Thousand Island Estuary of the western Everglades watershed. The Faka Union Canal system, constructed in the 1960s to provide drainage for land development of approximately 173 square mile area, have overdrained the area resulting in reduction of aquifer storage, reduction of wetland functions invasion of upland vegetation, increased frequency of forest fires and increased fresh water discharges to the estuary. Variations of freshwater discharges at large amplitudes have resulted in large fluctuations of salinity level and have eliminated or displaced a high proportion of the benthic, midwater and fish plankton communities in the estuary.

Concern over the gradual degradation of environmental quality and water supply potential of the region prompted the State of Florida to include the area as a component of the Save Our Everglades (SOE) program in 1985. Subsequently, the project was included in the State's Conservation and Recreation Lands (CARL) Acquisition program initiative for acquiring the entire project area under public ownership. Out of a proposed 55,200 acres of land proposed for acquisition, the total area remaining to be acquired is approximately 36,000 acres. Approximately 7,500 acres are now being acquired under a settlement agreement. Active land acquisition is presently ongoing for the Fakahatchee Strand State Preserve adjacent on the east, and the Belle Meade CARL project to the west edge of the project. In 1996 the SFWMD developed a conceptual hydrologic restoration plan utilizing a continuous process hydrologic-hydraulic simulation model of the watershed. Five alternative restoration measures were evaluated. The structural elements of the most economic and environmentally sound plan consists of a combination of spreader channels, canal plugs, road removal and pump stations with a cost estimate of $15,560,000 in 1998 dollars. The implementation of the project is entirely contingent upon acquisition of lands. Once the land acquisition is complete, the project can be expected to be implemented without public controversy.

NOTE: The land acquisition component of this project was rated #4 on the Farm Bill Priority List.

RESTORATION BENEFITS: The implementation of the SGGE restoration plan would improve the water quality of the coastal estuaries by converting the voluminous freshwater point discharges to the traditional overland sheetflow along a six-mile wide front into the Ten Thousand Islands Estuaries Aquatic Preserve, part of the western Everglades. The reintroduction of overland flow through coastal marshes would increase marsh and mangrove productivity, moderate salinity fluctuations, provide a desirable mix of fresh and saline water environment conducive to the survival and protection of juvenile fishes and shellfish beds, and would enhance the recreational

and commercial fishery values of the region. Improved groundwater recharge will protect the City of Naples eastern Golden Gate wellfield, provide for a long term water supply source and serve as a natural barrier to a saltwater intrusion. Adjacent sensitive lands, including the Fakahatchee Strand State Preserve and the Florida Panther National Wildlife Refuge, will benefit from this plan with enhanced habitat quality. Existing level of flood protection for the Northern Golden Gate Estates will be maintained, and tremendous costs associated with providing drainage infrastructure to a poorly planned urban development on a wetland environment will be avoided.

Time Line and Fiscal Year Budget (in thousands of dollars) for Southern Golden Gate Estates Hydrologic Restoration

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Land Acquisition																
Engineering																
Project design																
Permitting																
Construction																
Final Report																
Project																
DEP	8800	4400	3000	5000	5000	5000	5000									38,200
BCB/DOF	360	125	100	175	1800	1800	1800	1800								7,960
WRDA				1520	1520	1520	1520	1520								7,600
Subtotal	9,160	4,525	5,100	6,695	8,320	8,320	8,320	3,320								**$53,760**

TITLE: Lands Adjacent to Dade County Training Jetport			
SUBREGION : 5	***PROJECT ID:*** SW11	***FINANCIAL REQUIREMENT:*** May involve donation or swap.	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Hibbard (941) 695-2000	***BASIS:*** 3	***TOTAL:***	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Dade County			
COUNTY(S): Collier, Dade		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS17, TS06, WCA1-I, SW07		***TOTAL:***	
START: Upon agreement	***END:***	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The Dade-Collier County Transition and Training Airport (jetport), an approximately 25,000-acre area within the boundary of Big Cypress National Preserve, is owned by Dade County. The property consists of approximately 24,000 acres of undisturbed wetlands, and 1,000 acres of wetlands that were dredged and filled for the development of the airport. The construction of the runway and associated taxi ways and facilities, has altered the hydrologic regime of the eastern Big Cypress Swamp. In 1970, the "Jetport Pact' between the United States and Dade County recognized that impacts of the airport on the Everglades Ecosystem. This pact called for the parties to acquire a suitable site for a regional airport and upon completion the Jetport would be abandoned.

RESTORATION BENEFITS: Acquisition of these lands would bring them under management of the NPS and thus eliminate any potential for the expansion of this airport. Having the lands under the management of the NPS would allow for land management practices such as prescribed fire and exotic vegetation control to occur. In addition the acquisition of this area would allow for the restoration of the area, thus eliminating the hydrologic impacts.

NOTE: There is the potential for transferring these lands, or at a minimum, the 24, 000 acres of undeveloped lands, to the NPS without the necessity of expending financial resources.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lands Adjacent to Dade County Training Jetport																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal																

TITLE: Southern CREW Project Addition/Imperial River			
SUBREGION : 5	***PROJECT ID:*** SW12	***FINANCIAL REQUIREMENT:*** (proposed) Potential Co-sponsors: SFWMD, Lee County	
PROGRAM CATEGORY: Land Acquisition& Infrastructure	***BUDGET CATEGORY:*** Land Acquisition & Infrastructure		
PROJECT PLAN MANAGER: Merriam (941)-338-2929	***BASIS:*** 2 Ecosystem Restoration	***TOTAL:*** $30,484,000 ***APPROPRIATED TO DATE:*** SFWMD: $2,500,000	
LEAD ORGANIZATION(S): SFWMD, USACE			
SUPPORTING ORGANIZATION(S): Lee County			
COUNTY(S): Lee		***TOTAL:*** $2,500,000 ***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** CREW, Save our Rivers, Estero Bay Aquatic Preserve OFW **Associated with:** SW13, SW8		Lee Co./ SFWMD $12,742,000 USACE: $ 15,242,000 ***TOTAL:*** $27,984,000	
START: 1997	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project will involve acquisition of 4,670 acres of land that, after restoration of historical hydrological flows, will be added to the Corkscrew Regional Ecosystem Watershed (CREW). The proposed project site is located in the southern Flint Pen Strand region of Lee County and the historical Imperial River flow way to Estero Bay. The lands proposed for acquisition have been divided into 5 and 10-acre tracts that are being actively developed as single family homes by the landowners of the 5-acre tracts. This project will involve purchase of lands in the impacted region before additional homes are constructed and hydrologic restoration of the impacted areas. Hydrologic restoration will include the following structural modifications: removal of existing road beds, single family homes, junk debris, fill material, agricultural canal and berms; placement of equalizer culverts; and replacement of undersized culverts and bridges. Undersized culverts and bridges are currently responsible for increasing the depth and duration of storm water over the lower Flint Pen Strand.

Acquisition of these lands soon is critical because of extreme development pressures in this area. Currently, the possibility exists for an additional 800 to 1000 single-family homes to be constructed in the area targeted for acquisition. This has been evident not only in new home starts during 1996,1997 and 1998, but also in the application for a DRI for the Parklands adjacent to the southern section of this proposed project. New residential development will involve construction of improved roads and other infrastructure that will further adversely impact the ecosystem, and increase the cost of subsequent acquisition/restoration. The roads and house pads associated with this type of development will block or alter the surface water flow and create adverse impacts to this environmentally sensitive area. Additionally, the cumulative impact of these homes will increase the depth and duration of stream flow which would increase the demand for flood intervention. During heavy rains in the summer of 1995, approximately 1700 people were evacuated from this project area and adjacent lands to the west. There is a great deal of pressure from the surrounding business community to develop a secondary levee system to provide additional flood protection to these home sites and allow continuation of single-family home development that would further impact the natural system. Based on past experience with areas such as the 8.5 Square Mile Area, it is clear that if the level of protection offered by this type of construction is not substantial; the homes ultimately flood and agencies are left with buy-out as the only option after homes have been constructed.

RESTORATION BENEFITS: This project will provide the following ecosystem restoration benefits: 1) preserve the natural water storage potential provided by the natural attributes of these lands; 2) re-establish historical flows across these lands currently impeded by roads and residential structures - this will avoid forcing more water eastward through the CREW Project and the Corkscrew Swamp Sanctuary which could harm natural wetlands by increasing hydroperiods in these areas; 3) restore the historical flow way of the Imperial River by removing structures and filled areas reducing the depth and duration of stormwater impacting natural areas; 4) reduce existing loads of nutrients and other pollutants to the Imperial River (e.g., septic, fertilizers, pesticides) and preclude the exacerbation of this pollution through increased development; and 5) preclude the development of another flood-prone residential development similar to the 8.5 Square Mile Area.

This acquisition not only mitigates future impacts, it becomes the ultimate solution for managing the prolonged health of a watershed of greater than 300 square miles. This project, coupled with proposed improvements to the Kehl Canal Weir, can reduce dry season flows (over drainage) to the Imperial River by acting as a natural storage area. Restoring the historical flow way of the Imperial River will return some of the normal water levels within the environmental areas reducing impacts created by the manmade impoundments.

Time Line and Fiscal Year Budget (in thousands of dollars) for Southern CREW Project Addition/Imperial River														
Task	98	99	00	01	02	03	04	05	06	07	08	09	Unprog	Total
Weir Construction														1,364
Land Acquisition														27,520
Demolition /Restoration														1,600
Project														
	4364	13982	12138											30,484
Subtotal														**$30,484**

TITLE: Twelve Mile Slough			
SUBREGION : 5	***PROJECT ID:*** SW13	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State: $3,300,000	
PROJECT PLAN MANAGER: Chuck Rinaldi (561) 682-6537	***BASIS:*** 3	***TOTAL:*** $3,300,000	
LEAD ORGANIZATION(S): SFWMD		***APPROPRIATED TO DATE:*** State $3,300,000	
SUPPORTING ORGANIZATION(S): Federal (Potential) - Forestry			
COUNTY(S): Hendry		***TOTAL:*** $3,300,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW12, SW08		***TOTAL:*** $0	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This site contains 3,300 acres in Hendry County and is tributary to the much larger and regionally significant Okaloacoochee Slough. It contains a mosaic of uplands and wetlands, as well as improved pasture areas which appear to be reverting to native range. Based on a 1993 FGFWFC report, this single-owner tract provides habitat for the endangered Florida Panther. Significant restoration on the site is necessary to correct overdrainage of the wetland communities.

RESTORATION BENEFITS: Restoration and protection is important because the Twelve Mile Slough is a headwater tributary to Okaloacoochee Slough, which supplies a major source of water for Fakahatchee Strand State Preserve and Big Cypress National Preserve. Surface water storage in the numerous wetlands provides for ground-water recharge of the underlying surficial aquifer and provides surface water supply to the Caloosahatchee River.

Time Line and Fiscal Year Budget (in thousands of dollars) for Twelve Mile Slough																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquisition																
Project																
Acquisition			3300													3300
Subtotal																**$3300**

TITLE: Seminole Tribe Best Management Practices for the Big Cypress Reservation			
SUBREGION : 5	***PROJECT ID:*** SW14	***FINANCIAL REQUIREMENT:*** Seminole Tribe:	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Water Quality, Natural Resources Management		
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** **1**	***TOTAL:*** $4,013,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): NRCS, ARS, IFAS/ES			
COUNTY(S): Hendry, Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** BCB3-I, BCB16-M, BCB15-M, BCB5-L		***TOTAL:*** $4,013,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Seminole Tribe has contracted with the NRCS to implement a comprehensive system of best management practices (BMP's) for all seven basins in the Big Cypress Reservation. Construction could be completed in 3 years starting in 1998. Enhanced water management will be accomplished through BMP's that include: conservation irrigation systems; nutrient loading reduction; application procedure training; fencing of WRA's and irrigation cells as detailed in the Water Conservation Plan; cross fencing for grazing management; livestock watering facilities; grazing management plans; closed-end irrigation systems; and a tail-water recovery system.

RESTORATION BENEFITS: The project will result in immediate, measurable improvements in the quality of water discharged to the Everglades Protection Area. It will also provide tangible improvement of the water quality leaving the Western Basins, an area not addressed completely by the Everglades Construction Project and the Everglades Forever Act. Although this project can be constructed and will function independently of the Water Conservation Project, the two will work best together to create the most benefit for the ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe BMP's for Big Cypress Reservation																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Devel. & Constr.																
Const. Mgt.																
Project																
Seminole Tribe		1843	1364	806												4,013
Subtotal																**$4,013**

TITLE: Seminole Tribe Exotic Species Removal			
SUBREGION : 2,5	***PROJECT ID:*** SW15	***FINANCIAL REQUIREMENT:*** Seminole Tribe:	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Area Management		
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** 1	***TOTAL:*** $988,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:*** Seminole Tribe of Florida: $0	
SUPPORTING ORGANIZATION(S): BCNP,BIA		BIA: $76,000	
COUNTY(S): Hendry, Broward, Glades		***TOTAL:*** $76,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW05, TS11		***TOTAL:*** $912,000	
START: 1/1998	***END:*** 12/2010	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This program will eradicate and control exotic species, such as melaleuca and Brazilian pepper. An effort will be implemented to encourage growth of native species in appropriate vegetative communities on the Big Cypress and Brighton Reservation. The control of exotic and aquatic species, such as hydrilla, water hyacinth, and water lettuce on the Big Cypress and Brighton Reservation will be continued in order to maintain flows and facilitate the conveyance of the surface water management and conservation systems on the Reservations. The Tribe will also work in conjunction with the BCNP to control and eradicate exotic species along their common border.

RESTORATION BENEFITS: Exotic species, such as melaleuca and Brazilian pepper, occur in some of the degraded wetlands on the Big Cypress Reservation, adjacent to the Big Cypress National Preserve Addition, where natural hydropatterns have been disrupted. Controlling these exotics will result in reestablishment of native species and promote more beneficial wetland characteristics, including enhanced water quality functions and improved habitat for threatened and endangered species. The Brighton Reservation needs appropriate eradication and control to limit sources of exotic/aquatic vegetation being conveyed to Lake Okeechobee.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Tribe Exotic Species Removal																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
BIA		76	76	76	76	76	76	76	76	76	76	76	76	76		988
Subtotal		76	76	76	76	76	76	76	76	76	76	76	76	76		$988

TITLE: Picayune Strand State Forest Exotic Species Management			
SUBREGION : 5	***PROJECT ID:*** SW16	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resources Management	FDEP $12,457,000 DOI $12,457,000	
PROJECT PLAN MANAGER: Folks (904) 414-9928	***BASIS:*** 3	***TOTAL:*** $24,914,000	
LEAD ORGANIZATION(S): FDACS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP, DOI			
COUNTY(S): Collier		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW04, SW09, SW10		FDEP $12,457,000 DOI $12,457,000 ***TOTAL:*** $24,914,000	
START: 1998	***END:*** 2010	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Ecosystem restoration activities including the removal and control of approximately 18,500 acres of melaleuca and 3,400 acres of brazilian pepper. This process includes the use of prescribed burning on 20,000 acres per year and site preparation and replanting of almost 11,000 acres in areas destroyed by wildfire.

RESTORATION BENEFITS: This project will implement the control of invasive, exotic plant species. This will allow native species, including many threatened and endangered, to reestablish the populations destroyed by these invasive, exotic species. In addition, the encouragement of native plant growth and the reforestation of these areas will provide more favorable habitat to threatened and endangered animals such as the Florida Panther. The regular use of prescribed burning will reduce the threat of wildfire, the loss of property, and help provide long term control of exotics and maintenance of the fire-dependent natural communities.

Time Line and Fiscal Year Budget (in thousands of dollars) for Picayune Strand State Forest Exotic Species Management

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
FDEP																
DOI																
Project																
FDEP			1277	1000	1000	1250	1250	1250	1250	1250	1250	560	560	560		12,457
DOI			1277	1000	1000	1250	1250	1250	1250	1250	1250	560	560	560		12,457
Subtotal																**$24,914**

TITLE: Assimilative Capacity for Phosphorus of C&SF Canals on the Big Cypress Reservation			
SUBREGION : 5	***PROJECT ID:*** SW17	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	NPS: **$400,000**	
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** 2	***TOTAL:*** $400,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:*** NPS: $100,000 TOTAL: $100,000	
SUPPORTING ORGANIZATION(S): EPA, BIA, SFWMD, NPS , COE, DOI			
COUNTY(S): Hendry, Broward			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS08, SW03, SW05 TS85, TS86		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $300,000	
START 1997	***END:*** 12/2004	***APPROVED:*** 5/97	***LAST REVISION:*** 1/3/98

DESCRIPTION: This research is required to determine the assimilative capacity of the plants and sediments of the C&SF Canals running through Big Cypress Reservation for the nutrient phosphorus. Data on the assimilative capacity will be useful in the general design of the Big Cypress Water Conservation Plan. The research would include sampling of sediments and vegetation, model simulation to assess assimilative capacity and analysis of historical data**.** The Tribe obtained designs and proposals from universities, and other consultants in FY 1997. Assessments of existing water quality data will provide information needed for this project and the Impacts of Sludge Deposition on Phosphorus Levels on the Big Cypress Reservation (SW19). The Tribe will use $100,000 from NPS in FY 1998 and plans to use $90,000 from the FY 1999 CESI. The remaining $210,000 is needed through FY 2004.

RESTORATION BENEFITS: A better understanding of the assimilative capacity of the C & SF Canals conveying surface waters through the Big Cypress Reservation is a necessary component in the Seminole Tribe's comprehensive effort of reducing the high levels of phosphorus both entering and leaving the Big Cypress Reservation. This research will directly lead to a reduction in the amount of phosphorus discharged to the Everglades**.**

Time Line and Fiscal Year Budget (in thousands of dollars) forAssimilative Capacity for Phosphorus of C&SF Canals on the Big Cypress Reservation

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Permitting																
Implem.& Monit.																
Assessment																
Project																
Seminole Tribe NPS		190	90	50	40	40	40	40								400
Subtotal																**$400**

TITLE: Forested Wetland Nutrient Uptake Research			
SUBREGION : 5	***PROJECT ID:*** SW18	***FINANCIAL REQUIREMENT:*** Seminole Tribe:	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** 2	***TOTAL:*** $400,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:*** NPS: $100,000	
SUPPORTING ORGANIZATION(S): EPA, BIA, SFWMD, NPS, USACE, DOI			
COUNTY(S): Hendry, Broward		***TOTAL:*** $110,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW03, TS08, TS85 TS86, SW05		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $290,000	
START: 1/1998	***END:*** 12/2004	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This research would analyze the level at which forested wetland, e.g. Cypress forest, can fix nutrients without causing any adverse effects on the natural wetland functions of the native flora and fauna. Because no data exists on the question of nutrient uptakes in forested (as opposed to sawgrass) wetlands, this research is critical in order to determine the effective loading levels for such wetland systems used for the restoration. The Tribe's Water Conservation Plan for the Big Cypress will use forested wetlands to treat nutrient laden water for release to the Everglades system. The Tribe's design may be applicable in other areas as well.
This research should begin during FY 1998; the Tribe plans to use $110,000 of the funds provided through the National Parks Service (NPS) Critical Ecosystem Studies Initiatives (CESI) funding. Therefore, the funding requested in FY 1999 will provide the second year funding. Total funding needs for the completion of the research are estimated to be $430,000. The funding needs remaining after FY 1999 total $180,000 through 2004.

RESTORATION BENEFITS: A thorough understanding of the optimization of nutrient removal from Cypress or forested wetlands will be critical in determining how effective these wetland systems will be in accomplishing restoration goals. This information will be essential both in the Tribe's Surface Water Conservation System on the Big Cypress Reservation and other restoration efforts (STAs).

Time Line and Fiscal Year Budget (in thousands of dollars) for Nutrient Threshold Work for Cypress

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Permitting																
Implem.& Monit.																
Assessment																
Project																
NPS		110	110	60	30	30	30	30								400
Subtotal																**$400**

TITLE: Impacts of Sludge Deposition on Phosphorus Levels on the Big Cypress Reservation			
SUBREGION : 5	***PROJECT ID:*** SW19	***FINANCIAL REQUIREMENT:*** NPS: $50,000	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Tepper (954)966-6300X1120	***BASIS:*** 2	***TOTAL:*** $30,000	
LEAD ORGANIZATION(S): Seminole Tribe of Florida		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): ARS, BIA, NRCS, BCNP/NPS, USGS, SFWMD			
COUNTY(S): Hendry, Broward		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS08		***TOTAL:*** $30,000	
START: 1/1998	***END:*** 12/1998	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Big Cypress Reservation has experienced high levels of phosphorus loading from the canals entering the Reservation from the north where sludge has historically been deposited as a means of disposal and fertilization. Studies are needed to determine if the sludge deposition is related to the high levels of phosphorus. Water quality data collected will be analyzed in the Tribe's Assimilative Capacity for Phosphorus of C&SF Canals on the Big Cypress Reservation (SW17) for determinations in meteorological, historical, seasonal, and/or event driven episodes of flushing excess surface water from local land uses.

RESTORATION BENEFITS: Understanding the implications of sludge deposition on lands in or adjacent to nutrient sensitive areas will lead to appropriate regulation of these practices, eventually leading to a reduction of the amount of phosphorus entering the Big Cypress Reservation and discharged to the Everglades.

Time Line and Fiscal Year Budget (in thousands of dollars) for Impacts of Sludge Deposition on Phosphorus Levels on the Big Cypress Reservation

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Data Assessment																
Project																
NPS			30													30
Subtotal																**$30**

TITLE: Melaleuca Control (Critical) on Big Cypress National Preserve			
SUBREGION : 05	***PROJECT ID:*** SW20	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Management		
PROJECT PLAN MANAGER: Hibbard (941) 695-2000	***BASIS:*** 3	***TOTAL:*** $1,400,000	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:*** Dade County $700,000	
SUPPORTING ORGANIZATION(S): Dade County			
COUNTY(S): Collier, Dade, Monroe		***TOTAL:*** $700,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $700,000	
START: 1998	***END:*** 2005	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The spread of invasive exotic plants is producing profound environmental consequences in the Big Cypress /Everglades ecosystem. Invasive exotic plants are "out competing" native plants and altering topography and soils at an alarming rate. *Melaleuca quinquenervia,* an introduction from Australia, is regarded as the most serious threat to the integrity of the Big Cypress/Everglades ecosystem. Melaleuca currently infests more than 150 square miles of fragile Big Cypress wetlands.

An existing memorandum of agreement between Big Cypress National Preserve and Metropolitan Dade county provides for the development and implementation of a mitigation plan to satisfy the permitting requirements for a joint Dade County/Florida Department of Corrections jail facility. This mitigation plan will provide for the treatment of all melaleuca on 20,000 acres in the vicinity of Monroe Station.

Increased funding will enable BCNP to treat an additional 14,000 acres of adjacent melaleuca. This plan will provide for the treatment, re-treatment and subsequent monitoring and evaluation.

RESTORATION BENEFITS: The removal of melaleuca from sensitive BCNP wetlands will permit the re-establishment of native plant communities. This project is of greater ecosystem benefit in that it is compatible and compliments other agency efforts for melaleuca eradication.

Time Line and Fiscal Year Budget (in thousands of dollars) for Melaleuca Control (Critical)

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Treatment																
Re-Treatment																
Monitoring																
Project																
		450	450	150	150	50	50	50	50							1,400
Subtotal																**$1,400**

TITLE: Characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay			
SUBREGION : 3 & 5	***PROJECT ID:*** SW21	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Scott (904)488-9380	***BASIS:*** 1 and 3	***TOTAL:*** $1,500,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDEP (FGS)			
SUPPORTING ORGANIZATION(S): USGS, SFWMD			
COUNTY(S): Collier, Dade, Monroe		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on :** BCBx-s **Critical to :** C&SF Restudy **Associated with:** TS41		WRDA 50% $750,000 FDEP 50% $750,000 ***TOTAL:*** $1,500,000	
START: 1997	***END:*** 2000	***APPROVED:*** 5/97	***LAST REVISION:*** 8/97

DESCRIPTION: Stratigraphic core tests drilled by the Florida Geological Survey (FDEP) and well cuttings and geological descriptions on file at the FGS revealed the presence of a subsurface siliciclastic (sand, silt and clay) formation in southern Florida. It has been suggested that ground water from this formation may be reaching Florida Bay providing nutrients to the bay waters. The proposed investigation will characterize the geological framework of the formation, determine if ground-water flow into the bay is occurring and characterize the ground-water flow path. Currently, without any funding, this formation is being investigated using existing cores and cores being drilled for other projects within the FGS and the USGS. This, however, does not give a full understanding of the system. A more focused study which is smaller in scope and financial requirement is proposed (BCBx-s). The findings of that work will indicate whether this larger study is needed.

RESTORATION BENEFITS: The data obtained by the proposed investigation is required to better understand the Florida Bay and southern Florida ecosystems The ground-water contribution and its effect on the bay have not been fully considered. Proper restoration of the ecosystem requires comprehending the entire system.

Time Line and Fiscal Year Budget (in thousands of dollars) for "Characterization of the geologic framework of the subsurface coarse sand zone and its influence on Florida Bay

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Drilling/ sample analyses																
Project																
State			400	275	75											750
Federal			400	275	75											750
Subtotal																**$1,500**

TITLE: Subsurface Sand Body Investigation (Sunniland)			
SUBREGION : 5	***PROJECT ID:*** SW22	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: **Science**	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Scott DEP (904)488-9380**	***BASIS:*** **1**	***TOTAL:*** $10,000	
LEAD ORGANIZATION(S): FDEP, UM/RSMAS, SFWMD		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier		***TOTAL:*** $10,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS03, TS41		***TOTAL:*** 0	
START: 1996	***END:*** 1997	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project was designed to provide core samples from the sediments occurring up to 800 feet below the land surface in the updip portion of the sand body suspected to provide ground water to Florida Bay. This core was completed during the Spring, 1997, at a total depth of approx. 800 feet in the carbonate sediments that underlie the siliciclastic (sands, silts and clays) of the "River of Sand." Analysis of the sediments is ongoing at UM/RSMAS.

RESTORATION BENEFITS: In order to determine the possibility of the siliciclastic unit providing ground water into Florida Bay and the subsequent effects on the ecosystem, the lithostratigraphic and hydrostratigraphic framework of these sediments needs to be better understood.

Time Line and Fiscal Year Budget (in thousands of dollars) for Subsurface Sand Body Investigation (Sunniland																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Drilling core samples																
Project																
State	$10															$10
Subtotal																**$10**

TITLE: Southwest Surficial Aquifer System Investigation			
SUBREGION : 5	***PROJECT ID:*** SW23	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: Scott (904) 488-9380	***BASIS:*** 3	***TOTAL:*** $60,000	
LEAD ORGANIZATION(S): USGS, FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Collier		***TOTAL:*** $60,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS41		***TOTAL:*** $0	
START: July, 1997	***END:*** June, 1998	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Characterization of sediments of the surficial aquifer system, and potential function of the aquifer in the subregion's ecology. The project timeline has been extended into 1998.

RESTORATION BENEFITS: Obtain an understanding of geological and hydrological relationships between groundwater and other water resources of the Big Cypress Basin.

Time Line and Fiscal Year Budget (in thousands of dollars) for																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
State	20	40														60
Subtotal																**$60**

TITLE: Henderson Creek/Belle Meade Restoration Project			
SUBREGION : 5	***PROJECT ID:*** SW24	***FINANCIAL REQUIREMENT:*** (proposed)	
PROGRAM CATEGORY Infrastructure	***BUDGET CATEGORY:*** Infra Invest, WQ/Habitat Protect Natural Resource Man	WRDA: $1,200,000 State: $2,610,000 County: $380,000 USFWS: $950,000	
PROJECT PLAN MANAGER: Haner (941) 417-6310	***BASIS:*** 2	***TOTAL:*** $5,140,000	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:*** County: $380,000 State: $2,610,000	
SUPPORTING ORGANIZATION(S): SFWMD/Collier County /USFWS		**USFWS:** $950,000	
COUNTY(S): Collier		***TOTAL:*** $3,940,000	
LINKED PROJECTS: **Dependent on:** **Critical to:** Rookery Bay Aquatic Preserve and National Estuarine Research Reserve **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** WRDA: $1,200,000 State: 0 County: 0 USFWS: 0 ***TOTAL:*** $1,200,000.00	
START: 1997	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Collier County is currently facing unprecedented urban growth rates, with Naples leading the nation in metropolitan growth. Changes in land use within the primary watersheds draining into Rookery Bay have been identified in the Rookery Bay National Estuarine Research Reserve management plan as the highest priority resource issue that threatens the long term preservation of the research reserve's Estuarine resources. This project will return a portion of the historic timing, duration and volume of freshwater inflow, as well as providing much needed treatment of stormwater, into Rookery Bay.

Land acquisition, placement of culverts under SR 951, restoration of sheetflow, habitat preservation and exotic vegetation removal: Four additional culverts under this road (4 are currently existing and at times, overloaded), are proposed to restore historic surface water flows into the estuary, and alleviate some upstream flooding problems. Lands have been and are currently in the process of being purchased by DEP to allow this work, and a portion of the exotic vegetation removal/habitat enhancement is beginning within the next two months.

Henderson Creek Filter Marsh and Land Acquisition: The purchase of 25 acres (CARL) adjacent to Henderson Creek, and conversion to a filter marsh-water management system by regrading of lands and upgrading the weir structure in coordination with the SFWMD, will assist in treating the stormwater flowing from the upstream canal prior to discharge into the estuary. Ten acres have recently been purchased and the remaining portion is currently being assessed.

Manatee Basin Hydrologic Restoration: Purchase of 100 acres of land by State, USFWS and County adjacent to the Manatee Basin, an upwelling area at the headwaters of the south fork of Henderson Creek, and restoration of sheet flows and stormwater treatment by adding culverts, filling ditches, roadbed removal, exotic removal, and berm creation to prevent downstream flooding of private property. The County has purchased a 70 acre parcel and is currently donating that to the State. The State and USFWS will be purchasing the remainder of the area.

Swale and Spreader Systems: Two swale and spreader systems are proposed from US 41 canal into McIlvane Marsh, which will enhance water quality, quantity, timing, and distribution of freshwater into the marsh. Engineered plans are complete at this point for this project.

Road to Nowhere Roadbed Removal: Removal of this old roadbed, or portions thereof, will restore historic sheetflow into McIlvane Marsh. The area is currently being used by a breeding population of endangered American crocodiles. Work will be coordinated with GFC and USFWS to assure no adverse impact to the crocodiles.

RESTORATION BENEFITS: Immediate restoration of historic sheetflow into the estuary, treatment of stormwater, improvements to water quality, increased habitat value and wetland functions.

Time Line and Fiscal Year Budget (in thousands of dollars) for Henderson Creek/Belle Meade Restoration Project																
Task	94-97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
SR 951 Culverts																
Filter Marsh and Land Acquisition																
Manatee Basin Hydro Restoration																
Spreader Systems																
Road Removal																
Project																
SR 951 Culverts	2000	190	190													
Filter Marsh and Land Acquisition	286	400	400	172	172											
Manatee Basin Hydro Restoration		360	85	250	250											
Spreader Systems	20	65	150	50												
Road Removal			100													
Subtotal	2306	1015	925	472	422											$5,140

TITLE: Lake Trafford Restoration			
SUBREGION : 5	***PROJECT ID*** SW26	***FINANCIAL REQUIREMENT:*** Phase I - Permitting an/sampling - $143,000 Phase II - Pre-dredging Construction - $100,000 Phase III - $7,000,000 Phase IV - $1,000,000 ***TOTAL:*** $ 8,243,000	
PROGRAM CATEGORY: Management /Infrastructure	***BUDGET CATEGORY:*** Water Quality, Habitat Protection, Natural Resource Mngt.		
PROJECT PLAN MANAGER: Boler (941) 332-6975	***BASIS:*** 2		
LEAD ORGANIZATION(S): FGFWFC/SFWMD/ Collier County/DEP		***APPROPRIATED TO DATE:*** FGFWFC: $14,000, Collier CO.: 26,000 DEP: 3,000 ***TOTAL:*** $43,000	
SUPPORTING ORGANIZATION(S): IFAS/NRCS/National Audubon Society/FDACS/Immokalee Chamber of Commerce /USGS			
COUNTY(S): Collier			
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** Collier County/ SFWMD/ FGFWFC/ FDEP/ IFAS/ USGS/ NRCS/FDACS/other potential partners: 50% - $4,100,000 ***TOTAL:*** $8,200,000	
START: 1998	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Lake Trafford is the largest lake south of Lake Okeechobee (1,494 acres) and is located roughly three miles west of the City of Immokalee. The lake is the headwaters of the Corkscrew Swamp Sanctuary and CREW to the west-southwest and the Fakahatchee Strand system including Camp Keais Strand and the Florida Panther National Wildlife Refuge to the south.

Approximately 7 million cubic yards of unconsolidated muck on the bottom of the lake was created in the 1970s after herbiciding a hydrilla bloom. During storm events, the sediments are disturbed causing an increase in suspended solids, dissolved nutrients and BOD. Loss of water clarity, unconsolidated sediments and low DO has resulted in a decimated fishery.

A multi-agency task force has evaluated the project and determined that a one - time dredge event would restore the lake. Sediment analysis has found that the spoil material is suitable for disposal on farmland. Additionally, long term management of the lake and surrounding lands will assure continued benefits of the restoration. The long-range plan includes restoration of native aquatic plant communities to enhance habitat for fish and wildlife populations, control of nonpoint source pollution through BMPs, and development of a long-term management plan to ensure that the benefits of the project are maintained through time. Components of the project will include (1) physical and biological assessment of the lake and watershed, (2) development of restoration needs and options, (3) selection of initial restoration strategy in cooperation with all stakeholders, (4) design of restoration engineering and biological components (5) development of management programs for adjacent homeowners, landowners, fishermen, and other lake users (6) implementation of a first-generation restoration and real-time modeling/management program for the lake and adjacent lands, (7) assessment of restoration results, (8) revision of restoration strategies and designs, (9) implementation of the second-generation restoration strategies, and (10) implementation of on-going management programs.

RESTORATION BENEFITS: The objective of this project is to restore water quality and habitat functions of Lake Trafford. Removal of the muck to farmland will immediately improve lake quality and enhance farmland productivity. Reoccurance of the muck layer is unlikely due to improved aquatic plant control methods. Furthermore, surrounding agricultural development have committed to using BMPs to reduce pollutant loading into the lake, to allow for a long-term improvement to the lake habitat. The lake provides recreational fishing activities and supports a tourism industry for an economically depressed region. Restoration of the Lake would be consistent with the Governor's Commission for a Sustainable South Florida recommendations for quality and sustainable communities.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lake Trafford Restoration																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Permit Sampling And Engineering																
Predredging earthwork																
Dredging																
Long range mgmt																
Project																
Permit Sampling And Engineering	43	100														
Predredging earthwork		50	50													
Dredging			4000	3000												
Long range mgmt		200	200	200	200	200										
Subtotal	43	350	4250	3200	200	200										$8,243

TITLE: Estero Bay Land Acquisition Program			
SUBREGION : 5	***PROJECT ID:*** SW28	***FINANCIAL REQUIREMENT:*** State	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Boler (941) 332-6975	***BASIS:*** 3	***TOTAL:*** $20,784,050 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:*** State $7,973,750	
SUPPORTING ORGANIZATION(S): USFWS, The Nature Conservancy			
COUNTY(S): Lee		***TOTAL:*** $7,973,750	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW35		***TOTAL:*** $12,810,300	
START: 1997	***END:*** Completion of acquisition	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Much of the Estero Bay Project is comprised of wetlands fronting Estero Bay (mangrove swamp, salt marsh, and salt flats). These communities provide nutrients to the Bay, contributing substantially to its biological productivity. The Bay, one of the most productive estuaries in the State, supports a diversity of wildlife, including the federally endangered bald eagle. These communities provide an important nutrient for the Bay, thus contributing to biological productivity. The wetlands are in a natural condition and help maintain high quality of water in the Estero Bay Aquatic Preserve. The project also includes the largest remaining block of rosemary scrub in southwest Florida. Several archaeological sites attributed to the Calusa Indians and their prehistoric ancestors are known to be within the project area. The project is threatened by the rapid residential development in the area.

RESTORATION BENEFITS: The area will be managed as a buffer preserve. Because the wetlands still are in a natural condition, the project will protect the Bay's high-quality water and the area's native plants and animals and archaeological sites. Additionally, it will provide recreational opportunities to the people of the rapidly growing Fort Myers area.

Time Line and Fiscal Year Budget (in thousands of dollars) for Estero Bay Land Acquisition Project

Task	85-97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal	7,974	4,270	4,270	4,270												**$20,784**

TITLE: Lakes Park Restoration Project			
SUBREGION : 5	***PROJECT ID:*** SW29	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality/ Habitat Protection, Natural Resources Mngt.	County/private $2,541,000 WRDA: $2,459,000	
PROJECT PLAN MANAGER: Boler (941) 332-6975	***BASIS:*** 2	***TOTAL:*** $5,000,000	
LEAD ORGANIZATION(S): Lee County/Private		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): FDEP/SFWMD		Lee County: $2,391,000 FDEP: $150,000	
COUNTY(S): Lee		***TOTAL:*** $2,541,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		WRDA 50 %: $2,459,000 Lee County: $0 ***TOTAL:*** $2,459,000	
START: 1997	***END:*** 2003	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Lee County Lakes Regional Park is owned and managed by Lee County for conservation and recreational purposes. The project consists of a public/private effort to construct a 40-acre marsh/flow-way in an abandoned rock mine to improve present habitat conditions and water quality trends discharging to Hendry Creek and Estero Bay. Lee County is attempting to secure necessary funds for construction, Private contributions include land donations for project expansion and funding for long-term maintenance.

RESTORATION BENEFITS: The project is expected to enhance surface water runoff quality by creating a meandering flow-way with shallow littoral zones, removing aquatic and upland exotic infestation while allowing public access into upland areas of improved native habitat.

The project will remove exotic vegetation and replant native vegetation on 11 acres of uplands and 9 acres of littoral zone. The creation of a filter marsh and connection of the islands to form a meandering flow-way will increase residence time of the surface water and enhance pollution removal and oxygen content. The systems should adequately treat the inflow from the existing watershed of approximately 2,560 acres with the potential to accept additional flow diverted from other watersheds. The restoration will provide immediate habitat and water quality benefits at Lakes Park and improve downstream conditions in Hendry County and the Estero Bay Aquatic Preserve.

Time Line and Fiscal Year Budget (in thousands of dollars) for Lakes Park Restoration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pollutant calcs																50
Exotic removal																50
Finalize Plans																50
Earthwork																3,900
Maintenance																50
Project																
																5,000
Subtotal																$5,000

TITLE: Town of Ft. Myers Beach Stormwater Retrofit Project			
SUBREGION : 5	***PROJECT ID:*** SW30	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Water Quality, Habitat Protection, Infras Investmnt		
PROJECT PLAN MANAGER: Boler (941) 332-6975,	***BASIS:*** 2	***TOTAL:*** $120,000	
LEAD ORGANIZATION(S): Town of Ft. Myers Beach		***APPROPRIATED TO DATE:*** (Conversion of 48,000 square feet of asphalt to pavers, completed, $177,000.)	
SUPPORTING ORGANIZATION(S): FDEP, SFWMD, Charlotte Harbor NEP		***TOTAL:*** $0	
COUNTY(S): Lee		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		Possible grants from FDEP, SFWMD, and Charlotte Harbor NEP $60,000 and WRDA 50% match - $60,000 ***TOTAL:*** $120,000	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: The newly incorporated (1/95) Town of Ft. Myers Beach has identified that the protection of Estero Bay and the local beaches requires the management of pollutants carried by stormwater runoff from the island. Because the majority of the Town is already urbanized with no stormwater management system in place, the town is beginning the environmental enhancement and restoration process by identifying stormwater hot spots through an inventory and sampling, reducing non-stormwater discharges by inspection, and highlighting urban rehabilitation through one or more retrofit projects. The town has already converted 48,000-sq. ft. of asphalt to pervious pavers at cost of $177,000. Specific project components are as follows: Inventory of stormwater system, sediment sampling, illicit connection screening, and implementation of urban retrofit project.

This project is strictly for environmental enhancement of Estero Bay with full support of local government and citizens. There is no drainage or flood control component. There is no other alternative for stormwater treatment, such as filter marsh creation, due to lack of space.

RESTORATION BENEFITS: This project will have immediate water quality and ecological benefits to Estero Bay Aquatic Preserve (ranked 6th on the CARL list) by reducing pollutant loading into the bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Town of Ft. Myers Beach Stormwater Retrofit Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Inventory of Stormwater Sys																20
Sediment Sample																18
Illicit screening																7
Retrofit project																75
Project																
		20	60	50												120
Subtotal																$120

TITLE: Rookery Bay Land Acquisition Project			
SUBREGION : 5	***PROJECT ID:*** SW31	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	State 100 percent	
PROJECT PLAN MANAGER: Boler (941) 332-6975	***BASIS:*** 3	***TOTAL:*** $38,826,750 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):		State	
COUNTY(S): Collier		***TOTAL:*** $31,355,418	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW04		State ***TOTAL:*** $7,471,332	
START: 1997	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project consists of 12,006 acres in Collier County and provides an outstanding example of a subtropical estuarine system. Its mangroves shelter important nesting colonies of water birds, and feed and protect many aquatic animals, which are the foundation of a commercial and sport fishery. The natural communities associated with the estuary are relatively undisturbed and range from mangrove and marsh to flatwoods and maritime hammock. As part of the national estuarine research reserve system, Rookery Bay is representative of the West Indian biogeographic type. The area is believed to have good potential for archaeological investigations. The area is threatened by dredging and filling associated with the rapid development of the area.

RESTORATION BENEFITS: Acquisition will protect the Bay's water quality and its native plants and animals and will provide recreational opportunities to the people of southwest Florida. Additionally, the project will further coastal ecosystem research and environmental education.

Time Line and Fiscal Year Budget (in thousands of dollars) *:* Rookery Bay Land Acquisition Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Appraisal																
Acquisition																
Project																
Subtotal	15677	15677	7,471													**$38,826**

TITLE: Collier- Seminole Resource Management/Acquisition			
SUBREGION : 6	***PROJECT ID:*** SW 33	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management /Acquisition	***BUDGET CATEGORY:*** Water Quality / Habitat Protection	USACE -	$404,000
PROJECT PLAN MANAGER:	***BASIS:***	Florida Park Service -	$16,850
Bob Henry (941) 394-3397	2	State Lands -	$355,311
		DEP -	$37,150
LEAD ORGANIZATION(S): Florida Park Service District 4		***TOTAL:***	$813,311
		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): Dept of Environmental Protection		State Lands	$350,000
		DEP	$37,150
COUNTY(S): Collier		Fl Park Service	$16,850
		TOTAL:	$404,000
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:***	
		USACE	$404,000
		TOTAL:	$404,000
START: 1997	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Collier-Seminole State Park, a 6,423 acre unit, is part of the Everglades system. Its attributes include tropical hammock, cypress swamp, freshwater marsh, and the Blackwater River which flows through a mangrove swamp. The property is linked hydrologically and geographically to the Rookery Bay and Cape Haze/10,000 Islands Aquatic Preserves and to Belle Meade, Southern Golden Gate Estates and Picayune Strand State Forest, and Fakahatchee Strand. The park features tropical and temperate plants and animals mixing together, as do fresh and salt water. Sandy soil is present with deep mucky organic soil. Life is held together here in a delicate balance. Twelve different natural communities have been mapped and described, and are intermixed in the park in a mosaic of habitat types. Among them is the finest remaining tropical hardwood hammock on the west coast of Florida, noted for its stand of native royal palms.

Exotic plant species threaten the existence of this rich resource. Melaleuca trees and Brazilian pepper can eventually crowd out native species, creating a monoculture of the exotic species. The Park Service continues to control infestation by exotic plants; however, the control aspect of the exotic problem is hampered by forced reductions on the Service over the last 8 years. The hope is that be contracting exotic removal on a large scale, and continued maintenance by the Park Service as part of its routine management, the problem can be solved.

Urban development is also rapidly approaching Collier-Seminole State Park. Property adjacent to the park is commercially valuable and is highly vulnerable to intensive development. This proposal also seeks funds to acquire additional buffering lands around the park.

RESTORATION BENEFITS: RESTORATION BENENFITS: Additional funds will enable the DEP Florida Park Service to make greater strides against exotic plants' serious encroachment on the native communities of the park. Approval of this project will ensure the complete eradication of melaleuca from Collier-Seminole State Park.

Further land acquisition will exclude commercial development from inholdings in the park and provide a buffer against development to the north. It will also ensure the integrity of surface water flow and help to create a natural corridor between Collier-Seminole State Park and Fakahatchee Strand State Preserve.

Time Line and Fiscal Year Budget (in thousands of dollars) for Seminole Resource Management/Acquisition																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Exotic removal																
Land Acquisition																
DEP																
Florida PK																
USACE																
State Lands																
Project																
Exotic removal		54	54													108
Land Acquisition	350	175	175													700
DEP		37,150														37,150
Florida PK		16,850														16,850
USACE			229,000	175,000												404,000
State Lands	355,311															355,311
Subtotal																$813,311

TITLE: Fakahatchee Strand State Preserve Exotic Removal Project (Critical)			
SUBREGION : 05	***PROJECT ID:*** SW34	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Natural Resource Management		
PROJECT PLAN MANAGER: Greg Toppin (941) 695-4593	***BASIS:*** 3	***TOTAL:*** $200,000	
LEAD ORGANIZATION(S): DEP		***APPROPRIATED TO DATE:*** approx DEP: . $5,000/yr. for maintenance	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier		***TOTAL:*** 0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW09		DEP: $100,000 WRDA: $100,000 ***TOTAL:*** $200,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: Invasion by exotic plants is a severe threat to the natural biota of Fakahatchee Strand State Preserve. The 66,997 acre preserve contains a rich assemblage of plants and animals, **boasting the greatest biological diversity of any swamp community in the United States.** Fakahatchee Strand is noted for an abundance of imperiled plant and wildlife species, including the Florida Panther. The preserve is hydrologically important as its waters flow into Everglades National Park, nourishing the Ten Thousand Islands' estuarine ecosystem.

Fakahatchee Strand State Preserve continues to control and monitor exotic plant infestations as part of its ongoing activities. Currently, there is a 75 acre tract of Melaleuca monoculture which requires additional funds to remove, as well as an unspecified acreage of Brazilian pepper. Once the initial removal and follow-up treatments occur, ongoing management activities will assure that re-infestation does not occur.

RESTORATION BENEFITS: The removal of melaleuca and Brazilian pepper from the Fakahatchee Strand wetlands will permit the re-establishment of native plant communities. This project is of greater ecosystem benefit in that it is compatible and compliments other agency efforts for melaleuca and other exotic pest plant eradication.

Time Line and Fiscal Year Budget (in thousands of dollars) for Fakahatchee Strand State Preserve Exotic Removal Project (Critical)

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
exotic removal and retreatment		50	50	50	50											200
Subtotal																**$200**

TITLE: Estero Bay Aquatic Preserve and Buffer Preserve Enhancement and Exotic Removal Project		
SUBREGION : 05	***PROJECT ID:*** SW35	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Management/acquisition	***BUDGET CATEGORY:*** Natural Resource Management/habitat protection	WRDA $682,500 DEP $682,500
PROJECT PLAN MANAGER: Heather Stafford (941) 463-3240	***BASIS:*** 3	***TOTAL:*** **$1,365,000**
		APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): DEP		DEP: $50,842
SUPPORTING ORGANIZATION(S):		***TOTAL:***
COUNTY(S): Lee		***REMAINING FINANCIAL REQUIREMENT:***
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW28		DEP: $631,658 CARL match WRDA: $682,500 ***TOTAL:*** ***$1,314,518***
START: 1998	***END:*** 2001	***APPROVED:*** 11/97 ***LAST REVISION:*** 7/98

DESCRIPTION:

I. Melaleuca removal: Removal, treatment, monitoring, and follow-up treatment of 450 acres of Melaleuca within the 5,494 acre Estero Bay State Buffer Preserve.

II. Dog Key Exotic Removal: Removal, treatment, monitoring, and follow-up treatment of exotic vegetation on Dog Key, a 40 acre island within the Estero Bay Aquatic Preserve and part of the Estero Bay State Buffer Preserve with documented Calusa Indian middens/mounds.

RESTORATION BENEFITS:

Removal of stands of Melaleuca in the buffer preserve will allow the return of natural functioning of an ecosystem composed of pine flatwood, salt marsh, salt flats, and mangroves, and regaining pre-infestation condition of water and nutrient flow to the Estero Bay Aquatic Preserve. The exotic removal and control program on Dog Key will allow the area to regain its native plant communities on this culturally and historically important site.

Time Line and Fiscal Year Budget (in thousands of dollars) for Estero Bay Aquatic Preserve and Buffer Preserve Enhancement and Exotic Removal Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Dog Key Exotic Removal monitoring and follow-up																
Land Acquisition in Buffer Reserve																
Exotic Removal in Buffer Preserve																
Project																
Dog Key Exotic Removal monitoring and follow-up		9	3	3												
Land Acquisition in Buffer Reserve		632														
Exotic Removal in Buffer Preserve		218	167	167	167											
Subtotal		859	170	170	167											$1,365

TITLE: Long-term Study of Fire Regimes in Pineland and Associated Cypress Wetland			
SUBREGION : 3,5,6	***PROJECT ID:*** SW36	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: James R. Snyder	***BASIS:***	***TOTAL:*** $660,000	
LEAD ORGANIZATION(S): USGS/BRD, NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier, Dade, Monroe		**TOTAL:** $282,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $378,000	
START: 1994	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Most of the natural areas in south Florida, including >4,000 km^2 managed by the U.S. Department of the Interior, require fire for long-term maintenance. This study is designed to determine the response of pine forest vegetation to a range of fire regimes and to elucidate the natural role of fire in the south Florida ecosystem. Three seasons and two frequencies of experimental burns will be carried out in the Raccoon Point area of Big Cypress National Preserve. The study will document the effect of the experimental treatments on the structure and composition of the vascular vegetation, population responses of selected endemic herbaceous taxa, and the distribution of pine and cypress along landscape gradients.

RESTORATION BENEFITS: This study will provide direction for the fire management of Big Cypress National Preserve, Everglades National Park, Florida Panther N.W.R., and National Key Deer Refuge. It will improve the use of fire to restore vegetation, increase populations of endemic plants, and maintain habitat for listed species such as the red-cockaded woodpecker and the Key deer.

Time Line and Fiscal Year Budget (in thousands of dollars) for Long-term Study of Fire Regimes in Pineland and Associated Cypress Wetland

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Burns																
Vegetation																
Endemic Taxa																
Pine/Cypress Ecotone																
Project																
	141	141	144	76	76	82										660
Subtotal																$660

TITLE: Stand Structure and Productivity of Short-Hydroperiod Graminoid Wetlands			
SUBREGION : 3,5	***PROJECT ID:*** SW37	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Science	Research	***TOTAL:*** $470,000	
PROJECT PLAN MANAGER: James R. Snyder	***BASIS:***	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): BRD/USGS, NPS		TOTAL: New	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier, Dade, Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $470,000	
START: 1999	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The short-hydroperiod marshes (wet prairies, muhly prairies, marl prairies) constitute a major component of Everglades National Park and Big Cypress National Preserve and are habitat of the endangered Cape Sable seaside sparrow. These habitats are thought to have been affected by altered hydrologic and fire regimes. This study will establish permanent vegetation plots in short-hydroperiod marshes throughout the lower Everglades and Big Cypress, including current and past Cape Sable seaside sparrow habitat. Vegetation structure and composition will be measured and aboveground biomass estimated seasonally and after fires. This will establish baseline conditions against which to measure future changes and will provide necessary information for modeling of vegetation dynamics.

RESTORATION BENEFITS: The baseline information will be used evaluate changes brought about by hydrologic restoration and to develop and refine landscape vegetation models.

Time Line and Fiscal Year Budget (in thousands of dollars) for Strand Structure and Productivity of Short-hydroperiod Graminiod Wetlands																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Establish Plots																
Resample Plots																
Project																
			146	106	108	110										$470
Subtotal																**$470**

TITLE: Aquatic Animal Dynamics in Big Cypress Habitats			
SUBREGION : 5	***PROJECT ID:*** SW38	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research	***TOTAL:*** $210,000	
PROJECT PLAN MANAGER: William F. Loftus	***BASIS:*** 2,3	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USGS - BRD			
SUPPORTING ORGANIZATION(S): FL International Univ.			
COUNTY(S): Dade, Collier, Monroe		TOTAL: $0	
LINKED PROJECTS: **Dependent on:** Hydrological Projects and ATLSS **Critical to:** ATLSS **Associated with:**		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $210,000	
START: Jan 1999	***END:*** Sept 2004	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Most studies of aquatic animals have been located in Everglades habitats. But the Big Cypress Swamp offers a different series of landscapes to aquatic animals, non-indigenous species, and their predators. The Big Cypress ecosystem plays an integral, but poorly defined role in the function of the greater Everglades ecosystem. This project would document the use of major aquatic habitats in the Swamp by fishes and macroinvertebrates across seasons and years, and a several spatial scales, to understand how the habitat mosaic supports these populations. The first part of the study will involve pilot sampling and statistical consultation to determine an efficient, stratified sampling design. Sampling will continue for four years, and will hopefully lead to a long-term monitoring plan for the Swamp to track the effects of the Restudy actions. The empirical data will feed into the ATLSS modeling, which presently must use Everglades data in its Big Cypress model cells, because of lack of data for that region.

RESTORATION BENEFITS: Provide data for ATLSS models to evaluate alternatives for ecological effects of the C&SF Restudy, C-111 Project, and MODFLOW.

Time Line and Fiscal Year Budget (in thousands of dollars) for Aquatic Animal Dynamics in Big Cypress Habitats

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pilot Study															20	20
Field Work															100	100
Lab Work															75	75
Final Report															15	15
Project																
Subtotal			35	40	40	40	40	15							210	**$210**

(Note: The project proposal was submitted to the CESI evaluation committee in April, 1998. Action on this and other new ecosystem process proposals has been deferred until later in 1998.)

TITLE: Seminole Critical Project for the West side of the Big Cypress Water Conservation Project			
SUBREGION : 5	***PROJECT ID:*** SW39	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Infrastructure	***BUDGET CATEGORY:*** Infrastructure Investment	USACE: $22,599,000 Tribe: $22,599,000	
PROJECT PLAN MANAGER: Tepper (954) 966 630 x1120 and Brooks-Hall	***BASIS:*** 1	***TOTAL:*** $45,198,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): Seminole Tribe of Florida			
SUPPORTING ORGANIZATION(S): USACE, NRCS, BIA			
COUNTY(S): Hendry and Broward		***TOTAL:*** $0	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** Sw14, TS85, TS86, SW15, SW05, SW03		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $45,198,000	
START: 1998	***END:*** 2002	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Seminole Tribe's Big Cypress Reservation is located in Hendry and Broward Counties, directly north of the Big Cypress National Preserve. This critical project provides for the design and construction of water control, management, and treatment facilities in Basins 1,2,3, and 4, which compose the western portion of the Big Cypress Reservation. The project elements include conveyance systems, including major canal bypass structures, irrigation storage cells, and water resources areas. This project is designed to meet 50 ppb phosphorus, which is the current performance level designed to be achieved by the Everglades Construction Project. Should design performance levels for phosphorus become more stringent, this project is designed to be able to incorporate additional technology to meet stricter levels. This project will enhance the hydroperiod in Big Cypress National Preserve through Mullet Slough and improve the water quality in the Everglades Protection Area.

As demonstrated below, this project will produce substantial restoration, preservation, and protection benefits and will do so immediately and independently of the completion of any other project. A water conservation project for the eastern side of the reservation, as well as the reservation-wide agricultural best management practices (BMPs), have been planned also. This critical project can be constructed and will function independently of the infrastructure needed on the eastern side of the Reservation and the BMPs.

This project is estimated to cost $45,198,000; this amount is well under the $50 million cap. The Seminole Tribe will be the local sponsor. This project can be initiated well before the 30 September 1999 deadline, primarily because the Tribe has such a well developed conceptual plan for the project. The Letter Report for this Critical Project has completed Washington level review, and approval within the USACE.. The Project Cooperation Agreement (PCA), which included Section 215 and 105 Agreements, is currently being reviewed for transmittal to USACE headquarters.This project is not an authorized component of the C & SF Project. Finally, this project is incorporated into the Governors Commission's Conceptual Plan.

RESTORATION BENEFITS: This network of surface water management structures will produce the following substantial restoration, preservation, and protection benefits and will do so immediately and independently of the completion of any other projects:

-Remove phosphorus and other pollutants from water leaving the Reservation and flowing to the Big Cypress National Preserve into Mullet Slough to the Everglades Protection Area.. The removal of these pollutants will be achieved using natural treatment processes, in pretreatment cells and water resource areas (WRA's). Unlike the stormwater treatment areas in the Everglades Construction Project, the Tribe's WRA's will take advantage of the natural treatment processes and will serve additional functions in the storage and conveyance of water.

-Rewater the Big Cypress National Preserve. This project will provide the opportunity to restore more natural hydroperiods in the Big Cypress National Preserve. Bypass structures will be built under the West Feeder Canal that will sheetflow clean water south along the length of the Feeder Canal into the Big Cypress Preserve. The clean water sent I a sheetflow over the Preserve and into Mullet Slough will improve the hydrology in the Everglades Protection Area as well.

-Convey and store irrigation water. To make use of water provided by the SFWMD to replace the Tribe's diverted Compact water rights, the Tribe needs to be able to move and store such water when it is available. Water conveyance improvements and irrigation storage cells will move and store the Compact water converted for Everglades Restoration. This diversion allowed for treatment of water flowing to the Everglades Protection Area.

-Provide improved flood control. To [prevent extended periods of flooding and to limit downstream impacts of flooding, stormwater must be controlled. Stormwater attenuation areas will detain water from large storm events.

Time Line and Fiscal Year Budget (in thousands of dollars) for the *:* Seminole Critical Project for the West side of the Big Cypress Water Conservation Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Studies																
Develop/Constr																
Project																
Seminole Tribe		904	8588	7232	4520	1356										22,599
USACE		904	8588	7232	4520	1356										22,599
Subtotal		1,808	17,176	14,463	9,040	2,712										$45,198

TITLE: Plant Biodiversity of Big Cypress National Preserve			
SUBREGION : 5	***PROJECT ID:*** SW40	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Science	Research	***TOTAL:*** $48,000	
PROJECT PLAN MANAGER: James R. Snyder	***BASIS:***	***APPROPRIATED TO DATE:*** $48,000	
LEAD ORGANIZATION(S): NPS, BRD/USGS			
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Collier, Dade, Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $0	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Intensive field surveys will be conducted in the 147,000 acres of Big Cypress National Preserve addition lands over a two year period to document vascular plant species present. Emphasis will be on finding species new to the preserve, including potential problem exotic species such as the tropical soda apple. Populations of rare and endangered species will be recorded in a GIS database. Voucher specimens will be collected and deposited in appropriate herbaria. An annotated vascular plant list for the preserve will be published. Because the BICY addition lands are mainly north of the original preserve, where the Big Cypress grades into the western flatlands of J.H. Davis, it is expected that a large number of new species will be found on these Interior trust lands. The principal investigator will be Dr. Daniel Austin of Florida Atlantic University.

RESTORATION BENEFITS: Knowledge of the vascular flora of public trust lands within the restoration area is a prerequisite to monitoring the effects or appropriateness of restoration actions. The survey may discover other noxious plant pests such as tropical soda apple that must be controlled.

Time Line and Fiscal Year Budget (in thousands of dollars) for Plant Biodiversity of Big Cypress National Preserve

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field Work																
Report																
Project		48														
																48
Subtotal																**$48**

TITLE: Hydrologic reconnaissance of the gray limestone aquifer of South Florida			
SUBREGION : 5	***PROJECT ID:*** SW41	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: Ron Reese 305-594-0655	***BASIS:*** 2	***TOTAL:*** $817,000	
LEAD ORGANIZATION(S): USGS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD, FDEP			
COUNTY(S): Collier, Monroe, Dade, Broward		***TOTAL:*** $323,600	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $493,400	
START: 10/1996	***END:*** 9/1999	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: The gray limestone aquifer, a major component of the surficial aquifer system of south Florida, was initially identifed in western Broward and Dade Counties and has since been found to extend westward. It is generally 50-70 ft. thick, extends from 50 to 150 ft in depth, and has a transmissivity of as high as 90,000 ft^2/day. It could be stratigraphically equivalent to the Lower Tamiami Aquifer. The lithology, areal extent, thickness, and hyraulic characteristics of this aquifer will be identified. Most of the study area is in eastern Collier County, east of SR 29, and in southern Hendry county. It overlaps into some of Palm Beach, Broward, Dade, and Monroe Counties. Study boundaries are 26° 32'N, 81° 22'W on the northwestern corner and 25° 30'N, 80° 33'W on the southeastern corner.

RESTORATION BENEFITS: The relationships between wetlands and shallow ground water, such as found in the gray limestone aquifer, need to be better defined.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrologic reconnaissance of the gray limestone aquifer of South Florida

Task	97& Prior	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USGS	152	211	86													449
SFWMD	152	131	85													368
Subtotal	304	342	171													$817

TITLE: Stratigraphy and hydrogeology of the surficial aquifer system of Southwest Florida			
SUBREGION : 5	***PROJECT ID:*** SW43	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
PROJECT PLAN MANAGER: Bruce Wardlaw 703-648-5288	***BASIS:*** 2	***TOTAL:*** $939,177	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS			
SUPPORTING ORGANIZATION(S): SFWMD, FDEP			
COUNTY(S): Monroe and Collier		***TOTAL:*** $635,050	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $304,127	
START: 10/1996	***END:*** 9/1999	***APPROVED:*** 11/97	***LAST REVISION:*** 08/98

DESCRIPTION: About 25 coreholes will be drilled to the base of the surficial aquifer system (averaging 200 ft depth) in Collier and Monroe Counties. Drilling, permeability testing, lithologic and geophysical logging, age determination, and interpretation will be accomplished by personnel of the U.S. Geological Survey and the Florida Geological Survey, in cooperation with the South Florida Water Management District. Continuous cores through the surficial aquifer system are being drilled and examined for mineralogy, composition, texture, structures, and fossils to determine lithology, age, alteration, and porosity of the aquifer rocks and to construct a depositional model to aid in the extrapolation of subsurface data. Stratigraphic units will be correlated between coreholes, and their lithologic and hydrologic properties estimated where core data are absent. Permeability tests will be run on core samples and integrated with hydrologic and geophysical logs to estimate transmissivities of lithofacies. Geophysical logs (natural gamma, caliper, resistivity [long and short normal], focused resistivity, temperature, neutron, density, flowmeter, televiewer) will be run as holes are drilled. The primary product will be an array of cross sections of the surficial aquifer system that, when combined, will yield a three-dimensional grid of the stratigraphy and hydraulic conductivity of the system. The project's geographic extent is roughly 26.1° N on north, 81.68° W on west, 25.73° N on south, and 80.87° W on east. The area bounded roughly by Route 941 on the west, Tamiami Trail and the Loop Road on the south, and the Collier County line on the east; it extends slightly beyond I 75 on the north. This project will be share cores and hydrogeological data with a complementary project directed by Ron Reese, USGS-Miami, to assess the spatial extent of the gray limestone aquifer of the surficial aquifer system in south-central Florida.

RESTORATION BENEFITS: Management decisions will be made in part on the basis of groundwater models of the surficial aquifer system. Models that accurately simulate the hydrologic system will be essential for efficient utilization of the limited freshwater resources of southwest Florida. Hydrologic models require input of high-resolution stratigraphic and sedimentologic data to accurately describe groundwater flow in the surficial aquifer system. However, the stratigraphy and sedimentology are poorly known. This study will provide essential hydrogeologic data to extend existing and next-generation water management, natural system, and other models to the southwest coast.

Time Line and Fiscal Year Budget (in thousands of dollars) for Stratigraphy and hydrogeology of the surficial aquifer system of Southwest Florida																
Task	97& Prior	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
USGS/Reston	305	330	304													
Subtotal	305	330	304													$939

TITLE: Okaloacoochee Slough

SUBREGION : 5	***PROJECT ID:*** SW44	***FINANCIAL REQUIREMENT:***
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	SFWMD $ 5,751,030 State $14,601,030 ***TOTAL:*** $20,352,060
PROJECT PLAN MANAGER: Chuck Rinaldi (561) 682-6537	***BASIS:*** 3	***APPROPRIATED TO DATE:***
LEAD ORGANIZATION(S): SFWMD		SFWMD $ 5,751,030
SUPPORTING ORGANIZATION(S): DEP, Forestry, GFC		State $14,601,030
COUNTY(S): Hendry and Collier		***TOTAL:*** $20,352,060
		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** SW12, SW08, SW13		***TOTAL:*** $0
START: 1998	***END:*** 2001	***APPROVED:*** 11/97 ***LAST REVISION:*** 7/98

DESCRIPTION: This site contains more than 31,000 acres in Hendry and Collier Counties. It is a major tributary to Fakahatchee Strand and Big Cypress National Preserve. It is dominated by a central slough, consisting of sawgrass marshes and wet prairies, with fringes of live oak/cabbage palm hydric hammocks. Most of the pines have been logged, but otherwise the site is pristine. SFWMD acquired 21,000 acres in 1996. Approximately 10,018 acres remain to be purchased. Prior to the acquisition, it was used for native range grazing. Okaloacochee Slough is critical habitat for the Florida Panther.

RESTORATION BENEFITS: Some exotic treatment is needed to control minor infestations of Brazilian pepper and melaleuca. Hydrologically, the property remains undisturbed. The remaining land acquisition costs will be shared 50/50 between SFWMD and DEP. The initial purchase totaling $11.5 million was funded entirely by SFWMD. DEP will reimburse SFWMD for a portion of the initial acquisition costs and acquire a 50% undivided interest in the entire project.

Time Line and Fiscal Year Budget (in thousands of dollars) for Okaloacoochee Slough																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquisition																
Project																
Acquisition	11502		8850													
Subtotal	11502		8850													$20,352

TITLE: Southwest Florida Water Management Model and Natural System Model			
SUBREGION : 5	***PROJECT ID:*** SW50	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Natural Resources Mgmt Habitat Protection, Water Qty, Research	$2,000,000	
PROJECT PLAN MANAGER: Merriam (941) 338-2929 Nath (941) 597-1505 Browder (305) 361-4270	***BASIS:*** 1, 2, 3	***TOTAL:*** $2,000,000	
		APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USFWS			
SUPPORTING ORGANIZATION(S): SFWMD, NOAA, USACE, BCP		***TOTAL:*** $-0-	
COUNTY(S): Collier, Lee and Hendry		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** SW01, 04, 05, 08 **Critical to:** SW09, 10,12, 13 **Associated with:**		***TOTAL:*** $2,000,000	
START: 2000	***END:*** 2005	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: The coverage of the South Florida Water Management Model (WMM) and the Natural System Model (NSM), which presently are being used to evaluate proposed water management alternatives for the South Florida Ecosystem restoration efforts is incomplete in Southwest Florida. The WMM covers portions of the big Cypress National preserve and fringing mangrove system. The NSM has broader coverage and includes Hendry County to a longitude that aligns with the southern part of SR 29, but does not include the part of Southwest Florida west of SR 29. Existing hydrologic models used by the SFWMD Big Cypress Basin and others are more geared toward stormwater management, and are inadequate in their structure to provide meaningful information about how a change in the hydrologic system will affect the ecosystem.
As part of the South Florida Ecosystem restoration initiative, there is a desire to either maintain or re-establish more natural (i.e. pre- drainage) patterns of hydroperiod and water flow in parts of Southwest Florida, particularly the Big Cypress National Preserve, the Fakahatchee State Preserve, the Florida Panther National Wildlife Refuge, Southern Golden Gates Estates, Corkscrew Swamp Sanctuary, and the Ten Thousand Islands, including Rookery Bay. Many changes are being made to the hydrologic system to accommodate growing urban and agricultural uses. These changes could affect neighboring or downstream natural areas. A knowledge of hydroperiod effects is essential to evaluating ecosystem effects. The development of a grid- based (spatially explicit) surface and surficial groundwater model that contains presently existing network of canals and water control structures, and a corollary model without any control structures that approximates the natural response of the system to rainfall - in the fashion represented in WMM and NSM is proposed.

RESTORATION BENEFITS: The proposed models will improve the ability to evaluate the ecologic impacts of proposed hydrologic changes and to design more ecologically beneficial water management strategies. The models could be used to evaluate the effect of existing and proposed changes on the regional water supply, flood control and water quality.

Time Line and Fiscal Year Budget (in thousands of dollars) for Southwest Florida Water Management Model and Natural System Model																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
SWFWWM development																1,200
SWFNSM																800
Project																
SWFWWM Dev				200	200	200	200	200								2,000
SWFNSM dev				200	200	100	100	100								
Subtotal				400	400	300	300	300								$2,000

TITLE: Conservation Easements for Multi-Species Recovery and Water Quality Maintenance		
SUBREGION : 5 and 2	***PROJECT ID:*** Sw51	***FINANCIAL REQUIREMENT:***

PROGRAM CATEGORY: Acquisition, Management	***BUDGET CATEGORY:*** Natural Resources Management, Habitat Protection, Water Quality	Potential Cost Shares FG&FWFC, USDA, DEP, SFWMD, non-profit organizations
PROJECT PLAN MANAGER: Krakowski 941-353-8442 ext. 27 Eller 941-353-2814	***BASIS:*** 1 and 3	***TOTAL:*** $50.7 million
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***
SUPPORTING ORGANIZATION(S): USDA, USFS, NPS, FG&FWFC, DEP, FDACS, SFWMD, non-profit organizations		
COUNTY(S): Collier, Hendry		***TOTAL:*** $0
		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: **Dependent on:** **Critical to:** TS19-M **Associated with:** TS4, TS5, TS10, TS14, TS17, and TS27		***TOTAL:*** $50.7 million
START: 2000	***END:*** 2009	***APPROVED:*** ***LAST REVISION:***

DESCRIPTION: (This project has two phases)

- **Phase 1 (Easement Acquisition):** This project will benefit the South Florida Ecosystem multi-species recovery effort by targeting Florida panther land preservation needs. The Florida Panther Interagency Committee (i.e. the Florida Department of Environmental Protection, Florida Game and Fresh Water Fish Commission, National Park Service, and U.S. Fish and Wildlife Service) published a Habitat Preservation Plan in 1994 that identified 926,300 acres of privately owned lands considered essential to the survival and recovery of Florida's state mammal. Protecting habitat for the flagship species of the South Florida Ecosystem will protect a myriad of Federal and State threatened and endangered species. Voluntary annual sign-ups will allow willing private landowner participants to sell conservation easements on 150,000 acres of land in the unprotected headwaters of the Big Cypress Watershed. This land, designated as Priority 1 by the Florida Panther Interagency Committee, consists of some of the largest remaining tracts of high quality native habitats most frequently used by the Florida panther. The easements will protect native habitats from degradation, fragmentation, and loss due to drainage, clearing, and development. Non-profit, state, and federal landowner incentive programs will enhance this project.

- **Phase 2 (Easement Monitoring):** An easement biologist will be recruited to initiate the program. The easement biologist will conduct voluntary annual sign-ups, post easement boundaries, monitor easements for compliance, conduct public relations, and (with landowner permission) establish and monitor biological baselines. The easement biologist will be employed by the U.S. Fish and Wildlife Service and based at Florida Panther National Wildlife Refuge in Naples, Florida.

RESTORATION BENEFITS: The protection of the headwaters of the Big Cypress Watershed through conservation easements is critical to the survival of the endangered Florida panther. Many other rare species of the South Florida Ecosystem will also benefit including, but not limited to: wood stork, Florida black bear, snail kite, and red-cockaded woodpecker. The project will also conserve aquifer recharge areas, hydric pine flatwoods, and wetlands that are being lost and fragmented. Easement monitoring could lead to cooperative habitat restoration projects including control of invasive exotic plant species.

Time Line and Fiscal Year Budget (in thousands of dollars) for Conservation Easements for Multi-Species Recovery and Water Quality Maintenance																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquisition																
Monitoring																
Project																
Acquisition				5000 70	5000 70	5000 70	5000 70	5000 70	5000 70	5000 70	5000 70	5000 70	5000 70			50,000 700
Subtotal																$50,700

3.7 *FLORIDA KEYS*
Sub-Region 6

ECOLOGICAL SETTING

Sub-region 6 is comprised of a rich diversity of terrestrial and marine habitats, including tropical hardwood hammocks, globally endangered pine rocklands, fringing mangrove, transitional wetland habitats, seagrass meadows, tidal passes, hard bottom communities, and patch and fringing reefs.

The geographic setting of the Sub-region includes the southern portions of Florida Bay and Biscayne Bay, the Florida Keys from Soldier Key to the Dry Tortugas, and the Florida reef tract. Also included are the nearshore and tidal pass areas between and surrounding the Keys and the Gulf of Mexico shelf area lying just north of the westernmost Keys.

Geologically, the area is characterized by the emergent islands of the Keys which are representative of a Pleistocene reef tract (100,000 years) known as the Key Largo Limestone formation, in the easternmost Keys, and the Miami Oolite formation in the westernmost Keys.

Though only the southern portion of Florida Bay lies within the Sub-region, it is worth noting that this is an expansive area of interconnected shallow water banks and mangrove islands. Recently, extensive seagrass die-offs and the development of algal blooms and areas of high turbidity have threatened the ecological health of Florida Bay (Sub-region 3) and this Sub-region.

The Florida Keys represents a complex mix of tropical flora and temperate fauna. Many endemic species are found in the Keys. Because of the small island setting, in addition to the encroaching impacts of humans, approximately 71 plant and over 20 animal species are considered Threatened or Endangered.

Shallow water patch reef complexes and the reef tract make the Sub-region unique in the continental Untied States. Characteristic of coral reef environments, they exhibit high biodiversity of both invertebrate and fish species. The overall health and stability of these areas is dependent on clear, oligotrophic waters. Currently, the flow of degraded waters from Florida Bay is having a defined impact on some of the reef tract areas, particularly adjacent to major tidal passes between the Keys. Additional impacts are result from less manageable impacts that seem to be occurring on both a Caribbean and global scale. Researchers have noted increasing incidents of coral disease and diminishing coral cover.

The population of the Florida Keys is over 85,000 based on 1990 census projections. The Keys rely heavily on their tourist-based economy and the health of the marine and upland resources factors heavily in individual decisions to visit the Keys. During a recent study (1995-96), it was determined that approximately 3 million visitor trips annually are made to the Keys totally over 16 million person days of time spent while visiting. These visitors generate over 1.1 billion dollars in direct output and income that result in the creation of over 13,600 jobs within the Keys economy.

The shallow water environments of the Keys and Florida Bay support extensive

nursery grounds for a variety of important commercial fish and crustaceans species most of which are also harvested in the area. Among important economic species, pink shrimp, spiny lobster, and stone crab landings alone brought over 125 million dollars to the local Keys economy in 1994.

SPECIAL MANAGEMENT AREAS

The Florida Keys were designated as an Area of Critical State Concern by the State of Florida in 1975. In 1987 the State also designated the waters surrounding the Keys as Outstanding Florida Waters. There are a number of important marine, wildlife, and ecological management areas in and surrounding the Florida Keys. These include the Florida Keys National Marine Sanctuary, which encompass approximately 2,800 nautical square miles, Biscayne National Park, and the Dry Tortugas National Park and Monument. The Fish and Wildlife Service manages four important refuge areas in and surrounding the Keys; these include the Key Deer, Great White Heron, Key West, and Crocodile Lakes National Wildlife Refuges. There are at least five state parks, John Pennekamp Coral Reef, Long Key, Curry Hammocks, Bahia Honda, and Fort Zachary Taylor State Parks; four state aquatic preserves, including Biscayne, Card Sound, Lignum Vitae, and Coupon Bight, Aquatic Preserves; two state botanical sites, including Lignum Vitae State Botanical Site; one state historic site, and one state geologic site.

LINKAGE TO THE TOTAL SYSTEM

Sub-region 6 lies at the southern extreme of the South Florida Ecosystem. The many diverse habitats of the Sub-region constitute a closely coupled interface between the land and water areas of the Region.

Inland areas of south Florida are the source of fresh water to the coastal areas, including Florida and Biscayne Bays, Manatee Bay, and Barnes, Card, and Blackwater Sounds. Aside from the natural influences of the freshwater drainage through these areas, a number of water management canals discharge to these receiving waters. These serve as a direct link to upstream areas and are a source of nutrient and contaminant contributions from urban and agricultural areas.

The influences of Sub-region 3, particularly Florida Bay, on the water quality of the Florida Keys and the adjacent reef tract are of major concern. Though, there appears to be some improvement in the state of Florida Bay, algal blooms and turbid water conditions persist. These influences may have their most dramatic impacts at the coral reef. The reef tract is characterized by coral species which do not tolerate high turbidity or nutrient loads.

Southern Dade County ground water is the source of potable water for the Florida Keys; thus, wellfield contamination problems or salt water intrusion in Sub-region 3 impact Sub-region 6.

The Florida Keys provides linkages to the broader continental and Caribbean regions. As is well noted in the Fall and Winter, migratory birds utilize the Keys as a final “jumping-off point” to the Caribbean, and Central and South America. Endangered sea turtles migrate broadly within the greater Atlantic and Caribbean Regions, often frequenting the Keys area and nesting on their beaches. Valuable commercial and recreational fish species, particularly those that use the Straits of Florida and the Gulf Stream, also

establish important linkages to the South Florida, Atlantic, Caribbean, and Gulf Regions.

ECOSYSTEM PROBLEMS AND RESTORATION OBJECTIVES

The upland, near-shore, and coral reef environments of Sub-region 6 have all been altered by anthropogenic influences within and external to the sub-region.

Integral to the improvement of the Sub-region is the improvement of Sub-region 3, the Everglades and Florida Bay. This is essential to the ultimate improvement in Sub-region 6. The Sub-region includes the southern edge of Florida Bay where stresses such as extensive seagrass die-off, diminished water clarity, phytoplankton blooms, the death of mangroves on isolated mangroves islands, and reduced numbers of both benthic species and notable commercial species are all a concern.

Extensive areas of upland habitat have been destroyed or fragmented by development in the Keys. Little additional, development is currently allowed within larger intact areas at this time. However, for the sake of improved management, it is important to provide these areas with an enhanced level of protection. The tropical hardwood forests and pine rocklands of the Keys are significant remnants of historically more expansive plant communities found in the South Florida ecosystem. Threats from exotic plant invasion are significant in this light. The influences of exotic plant species intrusion and the poaching of endangered plant species, particularly bromeliads and orchids, has a significant impact on the current and future quality of these resources. Exotic plant pests, including Australian pine, Brazilian pepper, and Asiatic colubrina represent nearly 10 percent of the land cover in the Keys. Land acquisition and active land management, including exotic removal programs, are key components of necessary protection efforts in the Sub-region.

Nearshore components of the Sub-region are receiving a variety of stresses as a result of direct and indirect impacts. The Keys have grown from a rural community to a suburban or even urban setting through the last fifty years. Antiquated wastewater management practices reminiscent of its rural past still predominate. There are over 20,000 permitted on-site septic systems in the Florida Keys and as many as 9,000 unpermitted cesspits. The nutrient impacts of either system influence the heath of the Keys nearshore waters. Improvements in current wastewater management practices are essential.

The Keys shallow water resources, including seagrass meadows and algal flats, are being impacted directly by boaters who cross these areas either unwittingly or intentionally. Some 30,000 acres of seagrass have been prop scarred by boaters in the Florida Keys area. These are impacts that may be managed and improved by appropriate use of education, channel marking, zoning, and enforcement measures.

The coral reef is receiving both external and internal impacts in the Sub-region. The health of the coral ecosystem is in question as a result of the influences of Florida Bay, Caribbean and global influences, and the direct impacts of humans. Significant study is still necessary to determine the proportional cause and effect relationships. However, efforts to manage access to the most utilized areas, through marine zoning and use restrictions should help improve the coral reef tract area.

RESTORATION OBJECTIVES:

The restoration objectives of critical importance to Sub-region 6 have been identified by the Working Group and are listed as follows:

- Restore water budgets, circulation dynamics, and historic salinity patterns to Florida Bay.
- Restore water quality and nutrient cycling in Florida Bay and in nearshore and confined waters.
- Restore seagrass, mangrove, coral reef, and other habitats.
- Preserve and restore upland biological communities.
- Protect and restore endangered species.

RESTORATION PROJECTS:

Important restoration projects in progress or proposed for the Sub-region are identified on the following pages:

TITLE: Complete Land Acquisition for Biscayne National Park			
SUBREGION : 6	***PROJECT ID:*** FK02	***FINANCIAL REQUIREMENT:*** Federal/ County (TBD)	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: Dick Frost (305)230-1144	***BASIS:*** 3	***TOTAL:*** $3,600,000	
LEAD ORGANIZATION(S): NPS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Dade County			
COUNTY(S): Dade		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:***	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project includes acquisition of the five Ragged Keys (602 acres) and approximately 1400 acres of coastal wetlands and mangrove forest in Biscayne National Park. The Ragged Keys are five islands immediately adjacent to the most popular public use area in the Park, Boca Chita Key. Four of the five islands are unoccupied and are used by the public for overflow camping, fishing, and swimming, with resulting damage to natural habitat on the islands and in the surrounding shallows. Litter and human waste are serious problems. Least terns nest on land and endangered sea turtles nest on the shoreline, and these nesting areas are being greatly disturbed. All five of the islands have been repeatedly considered by developers for major resort or recreation facilities.

RESTORATION BENEFITS: Acquisition of the Ragged Keys would preclude land uses that are incompatible with the protection, conservation, and restoration management objectives of the NPS. Public ownership will assure consistent management of the Keys within the Park. The coastal wetlands and mangrove fringe are essential for protecting the Biscayne Bay ecosystem and are part of the last remaining mangrove forest on the east coast of Florida. So little is left that loss of any of this habitat is prejudicial to the health of the bay ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Complete Land Acquisition for Biscayne National Park

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Acquition																
Project																
Fed/ County	0	0	0	600	1500	1500										3,600
Subtotal	0	0	0	600	1500	1500										**$3,600**

TITLE: Complete Crocodile Lake National Wildlife Refuge			
SUBREGION : 6	***PROJECT ID:*** FK03	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: **Stieglitz/Klett 305-872-2239**	***BASIS:*** **1, 2, 3**	***TOTAL:*** $786,000	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		***TOTAL:*** $400,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $386,000	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The Crocodile Lake National Wildlife Refuge consists of approximately 5,500 acres of mangrove wetlands, 300 acres of open water, and 1,200 acres of globally endangered tropical hardwood hammock on Key Largo. The Refuge was established in 1980 to protect habitat critical to several endangered endemic animals, including the Schaus' swallowtail butterfly, Key Largo woodrat, Key Largo cotton mouse, and American crocodile. Approximately one-quarter of all American crocodile nests in the US occur on this Refuge. The Refuge also provides habitat for other imperiled species, including the white-crowned pigeon, liguus tree snail, Eastern indigo snake, West Indian manatee, and osprey.

RESTORATION BENEFITS: Completion of this acquisition project will significantly contribute to the Multi-Species Recovery Strategy (TS19-M) by protecting and preserving a globally endangered plant community which provides habitat for four federally-listed endemic animals and a host of associated imperiled plants and animals. This project compliments complete North Key Largo Hammocks (CA7-L), which provides many of the same restoration benefits. In addition, public ownership will allow control of invasive exotic species on the lands slated for purchase, thereby reducing the threat posed by these species to native communities. These lands also serve as a buffer to the Outstanding State Waters of Card and Barnes Sounds at the southern end of the C-111 canal.

Time Line and Fiscal Year Budget (in thousands of dollars) for Complete Crocodile Lake National Wildlife Refuge																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
USFWS																
Project																
Subtotal		400	200	186												$786

TITLE: Complete Florida Keys Ecosystem CARL Project			
SUBREGION : 6	***PROJECT ID:*** FK05	***FINANCIAL REQUIREMENT:*** FDEP:	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition		
PROJECT PLAN MANAGER: John Outland (850) 488-4892	***BASIS:*** 1, 2 and 3	***TOTAL:*** $37,692,832 (estimated)	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:*** FDEP:	
SUPPORTING ORGANIZATION(S): USFWS, FGFWFC, MCLA			
COUNTY(S): Monroe		***TOTAL:*** $29,696,425	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS19, FK06		***TOTAL:*** $7,996,407 (estimated)	
START: 1992	***END:*** when completed	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: This project, in conjunction with the Complete National Key Deer Refuge proposal, includes the remaining 4,438 acres of tropical hardwood hammocks and pine rocklands of significant size and quality remaining in the Florida Keys from southern Key Largo to Sugarloaf Key.

RESTORATION BENEFITS: This project will result in the protection of the largest remaining parcels of the rapidly diminishing globally endangered tropical hardwood hammock and pine rocklands plant communities and critical freshwater resources. The benefits of protecting these habitats will extend to a host of associated imperiled species of plants and animals, such as the white-crowned pigeon, Florida *(Liguus)* tree snail, Florida tree cactus, Lower Keys marsh rabbit, and Garber's spurge, as well as hundreds of species of migratory birds. Public ownership of these lands will allow the removal of invasive exotic species which are further threatening native ecosystems. Protection of these remaining natural areas is also critical to preventing further declines in nearshore water quality associated with development and stormwater runoff. Completion of this project supports the FWS's and FDEP's approximately $50,000,000 investment in protecting the natural resources of the Keys. Completion will significantly contribute to the Multi-Species Recovery Strategy (TS19) by protecting and preserving habitats critical to many imperiled plant and animal species.

Time Line and Fiscal Year Budget (in thousands of dollars) Complete Florida Keys Ecosystem CARL Project																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
FDEP		3,000	3,000	1,996												
Subtotal		3,000	3,000	1,996												**$7,996**

TITLE: Complete National Key Deer Refuge			
SUBREGION : 6	***PROJECT ID:*** FK06	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** Land Acquisition	Federal: Land and Water Conservation Fund	
PROJECT PLAN MANAGER: Stieglitz 305/872-2239	***BASIS: 1, 2, and 3***	***TOTAL:*** $14,000,000	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): DEP, SFWMD, MCLA			
COUNTY(S): Monroe		***TOTAL:*** $0	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS19, FK05		***TOTAL:*** $14,000,000	
START: 1997	***END:*** 2001	***APPROVED:*** 8/96	***LAST REVISION:*** 11/97

DESCRIPTION: The National Key Deer Refuge was established to protect and maintain the remaining 4,059 acres of habitat for the endangered Key Deer, which is threatened by land clearing for residential housing. This project would complete the Refuge by acquiring a system of no-development corridors on the south half of Big Pine Key to ensure the continued protection of Key Deer habitat. At the same time, the Refuge maintains more than 80 percent of the remaining pine Rockland habitat in the Florida Keys.

RESTORATION BENEFITS: Acquisition of these lands is the highest priority recovery action for the endangered Key deer by protecting the largest remaining parcels of the rapidly diminishing globally endangered tropical hardwood hammock and pine rocklands plant communities and critical freshwater lenses on Big Pine Key. The benefits of protecting these habitats will extend to a host of associated imperiled species of plants and animals, such as the white-crowned pigeon, liguus tree snail, Florida tree cactus, Lower Keys marsh rabbit, and Garber's spurge, as well as hundreds of species of migratory birds. Public ownership of these lands will allow the removal of invasive exotic species which are further threatening native ecosystems. Protection of these remaining natural areas is also critical to preventing further declines in nearshore water quality associated with development and stormwater runoff. Completion of this project supports the FWS's and FDEP's approximately $50,000,000 investment in protecting the natural resources of the Keys. Completion will significantly contribute to the Multi-Species Recovery Strategy (TS19) by protecting and preserving habitats critical to many imperiled plant and animal species.

Time Line and Fiscal Year Budget (in thousands of dollars) for Complete National Key Deer Refuge																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Master Plan																
Project																
		4000	4000	4000	2000											14,000
Subtotal		**4000**	**4000**	**4000**	**2000**											**$14,000**

TITLE: Complete North Key Largo Hammocks State Botanical Site			
SUBREGION : 6	***PROJECT ID:*** FK07	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Land Acquisition	***BUDGET CATEGORY:*** **Land Acquisition**		
PROJECT PLAN MANAGER: **John Outland 850-488-4892**	***BASIS:*** 1 & 3	***TOTAL:*** $73,733,875 Estimated	
LEAD ORGANIZATION(S): FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USFWS			
COUNTY(S): Monroe		***TOTAL:*** $74,374,416	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**	***CA3-L, TS19***	***TOTAL:*** $2,733,841 Estimated	
START: 1983	***END:*** Completion	***APPROVED:*** 8/96	***LAST REVISION:*** 7/98

DESCRIPTION: The hammocks of north Key Largo form the largest stand of West Indian tropical forest in the United States. This rapidly disappearing forest, which is called Rockland forest, supports a wide diversity of rare plant and animal species. Degraded water quality is becoming an increasing issue in Florida Bay and the Florida Keys, as natural lands are converted to residential housing and commercial development. The project area has over 10 miles of shoreline that directly influences the adjacent waters of John Pennekamp Coral Reef State Park. As in other parts of the Keys, development seriously threatens this area.

RESTORATION BENEFITS: Protecting the remaining natural areas in the Keys will be critical to preventing water quality from degrading further. The preservation of this area in its natural state is important for maintaining the high degree of water quality that is necessary to support the living reef of John Pennekamp State Park. The project is designated for use as a botanical site, with such uses as hiking and nature appreciation. Completion of this acquisition project will signficantly contribute to the Multi-Species Recovery Strategy (TS19) by protecting and preserving a globally endangered plant community which provides habitat for four federally-listed endangered endemic animals and a host of associated imperilled plants and animals. This project compliments Complete Crocdile Lake National Wildlife Refuge (CA3), which provides many of the same restoration benefits. In addition, public ownership will allow control of invasive exotic species on the lands slated for purchase, thereby reducing the threats posed by these species to native communities.

Time Line and Fiscal Year Budget (in thousands of dollars)																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Master Plan																
Project																
		1,000	1,000	733												
Subtotal		**1,000**	**1,000**	**733**												**$2,733**

TITLE: Florida Keys Carrying Capacity Study			
SUBREGION : 6	***PROJECT ID:*** FK14	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management	USACE: $3,000,000 State of Florida: $3,000,000	
PROJECT PLAN MANAGER: Charles Pattison: (850) 922-1751 CPT Ted Pruett: (904) 232-3952	***BASIS:*** 1	***TOTAL:*** $6,000,000 ***APPROPRIATED TO DATE:*** DCA: $500,000	
LEAD ORGANIZATION(S): USACE/State of Florida			
SUPPORTING ORGANIZATION(S): FWS, FDOT, SFWMD, FDEP, HRS, FDCA, Monroe Co.		***TOTAL:*** $500,000	
COUNTY(S): Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** FK15, FK16,FK17 **Critical to:** **Associated with:** FK18		***TOTAL:*** $5,500,000	
START: 1998	***END:*** 2001	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: In 1996 the Governor issued Executive Order 96-108, which directed public agencies to take action to improve environmental conditions in the Keys. Included in the order was the direction to conduct a carrying capacity study/analysis. The analysis will develop information that will improve decision--making regarding development approvals and infrastructure investments, and its impact on the ecology and natural system in the Florida Keys and Florida Bay. The study will specifically address recent findings made by the Governor and Cabinet that the Monroe County Comprehensive Plan was not in compliance with growth management statutes. This finding was made because near shore waters, sea grasses, and the Key Deer have reached their carrying capacity limits, public hurricane evacuation is at the upper limit of acceptability, and impacts from the development of existing and vacant property are inconsistent with the continued protection of sensitive environmental resources. The State of Florida has spent $177,000 to date in scope of work development for the study with the U.S. Army Corps of Engineers. The Department of Community Affairs and the Corps of Engineers are in the final stages of negotiations for $1.5 million for work in kind credit. This commitment by the state combined with an aggressive effort to include public input into the scoping process has resulted in the Corps of Engineers developing a unique scope of work for the study.

RESTORATION BENEFITS: The Florida Keys, including Florida Bay and the offshore coral reefs and seagrasses, are a threatened natural area of international significance. Poorly managed growth and development in the Keys has overwhelmed the area's fragile ecology and quick action must be taken to arrest and reverse the decline. While not blocking all new growth, the Governor and Cabinet recently limited the number of building permits that can be issued by Monroe County.

The study will determine what level of human population and activities that can be supported by a healthy, balanced, functioning ecosystem in the Florida Keys through the identification of component thresholds which define ecosystem sustainability. The study will combine existing and new data in a usable form and provide a comprehensive basis for coordinating and strengthening land use planning efforts by local, state, and federal agencies. This study will combine data from all agencies active in the Florida Keys and provide projections of the consequences for both action and inaction. This study will provide a tool, for making sound planning decisions, decisions that are central to a sustainable Florida Keys ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys Carrying Capacity Study																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Study																
Project																
State of Florida			500	1,250	1,250											3,000
USACE		200	500	1,250	1,050											3,000
Subtotal		200	1,000	2,500	2,300											**$6,000**

Note: *** Critical Project Funding - requires approval from HQ USACE, PCA negotiation (this project is currently in the final stages negotiations) with sponsor, contract development and contract award prior to start of project, this is underway now and is estimated to take approximately a year to complete.

TITLE: Florida Keys Nutrient Feasibility Study			
SUBREGION : 6	***PROJECT ID:*** FK15	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Research	State $6,000 Federal $560,000	
PROJECT PLAN MANAGER: Jack Teague (305) 293 7511	***BASIS:*** 1	***TOTAL:*** $566,000	
LEAD ORGANIZATION(S):		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): USEPA ***COUNTY(S):*** Monroe		DOH $6,000 EPA $560,000 **Total** **$566,000**	
LINKED PROJECTS: **Dependent on:** **Critical to:** FK21 **Associated with:** FK17, FK18		*REMAINING FINANCIAL REQUIREMENT* ***TOTAL:*** $0	
START: Project Underway 9/96	***END:*** 1998	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: The purpose of this project is to establish the capabilities of known on-site sewage disposal system (OSDS) technologies to consistently meet an established nutrient effluent standard. Effective 1 July 1993 Chapter 381.0065, F.S. only permits the use of OSDS in the Keys which are capable of meeting the AWT effluent standard (Chapter 403.086, F.S.) Prior to the adoption of this effluent standard, there had been no specific nutrient standard for OSDS. Thus, there was no Institutional knowledge or experience with any OSDS technologies regarding their capacity to meet a nutrient standard. Five technologies, were chosen for the demonstration and testing phases of the project. Four are aerobic treatment units and one consists of a standard septic tank configuration with a drip irrigation component. The systems and their components are connected in such a ways that components may be mixed among systems to achieve the most efficient system for nutrient removal possible.

This project was intended to be a one year effort. It was extended an additional year(1998-99) to determine if nutrient removal efficiencies change with the age of the system. Additionally, project managers can better establish how fast certain components of the systems will load with nutrients, and therefore, determine how often these components will have to changed or recharged.

RESTORATION BENEFITS: As these systems are completely tested, are approved for use in Chapter 64E-6, Part II, and become available for general use, significant reductions in nutrient loading will occur.

This is one of a number of efforts under way currently to improve wastewater treatment technologies in the Keys. The Sanitary Wastewater Master Plan (SWMP) for the Keys will prioritize improvements overall, making recommendations as to the most economically and environmental efficient systems throughout the Keys. The SWMP project team will rely heavily on the information from this project before making any recommendations as to the best systems, mix of systems, or institutional approaches to managing wastewater in the Keys.

STATUS: COMPLETED

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys Nutrient Feasability Study																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Research																
Project																
State	0	6														6
EPA	500	60														560
Subtotal	500	66														$566

TITLE: Florida Keys National Marine Sanctuary Water Quality Protection Program			
SUBREGION : 8	***PROJECT ID:*** FK18	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY:	***BUDGET CATEGORY:***		
Management	Research	***TOTAL:*** $8,474,200 for first five years	
PROJECT PLAN MANAGER: McManus (404) 562-9385	***BASIS:*** 2	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): USEPA		EPA: 1995	$1,458,200
		1996	$1,861,000
		1997	$1,795,000
SUPPORTING ORGANIZATION(S): NOAA, FDEP, SFWMD, Monroe County, FDCA, FDOH, NPS		1998	$1,680,000
COUNTY(S): Monroe		TOTAL:	$6,794,200
LINKED PROJECTS: **Dependent on:** **Critical to:** FK14, FK15, FK16, FK17 **Associated with:** FK28		***REMAINING FINANCIAL REQUIREMENT:*** ***TOTAL:*** $1,680,000 for next year	
START: 1995	***END:*** 1999	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: : EPA and the State of Florida , in consultation with NOAA, developed the Water Quality Protection Program (WQPP) for the Florida Keys National Marine Sanctuary. The purpose of the WQPP is to recommend priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the Sanctuary. A WQPP Document (September 1996) describes the suite of activities that must be performed to fulfill the goals of the Program. Those activities include, but are not limited to, wastewater and stormwater demonstration projects, comprehensive water quality, seagrass, and hard bottom monitoring, and special studies. Special studies are addressing the role of Florida Bay and land-based sources in water quality, movement and nutrient dynamics of wastewater injected into the groundwater in the Keys, human health concerns in residential canals, coral diseases, and effects of mosquito spraying on nontarget organisms. The WQPP is a long term program and the financial requirements reflect the first five years of this effort.

RESTORATION BENEFITS: The WQPP will restore and maintain a balanced, indigenous population of corals, shellfish, and wildlife in Sanctuary waters

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys National Marine Sanctuary Water Quality Protection Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
EPA	1795	1680	1680													$8,474.2
Subtotal	1795	1680	1680													**$8,474.2**

TITLE: : Florida Keys Cesspit Identification and Elimination Program - Administrative Funding					
SUBREGION :	***PROJECT ID:*** FK21	***FINANCIAL REQUIREMENT:***			
PROGRAM CATEGORY:	***BUDGET CATEGORY:***	Local	192,000	Operating Permit Fees by Local Ord.	
Management	Water Quality	State	200,000	FY 99-00 Leg. Bud. Req. (DOH) submitted as contingency if local fees do not materialize	
PROJECT PLAN MANAGER: Jack Teague 305-293-7511	***BASIS:*** 1	***TOTAL:***	$250,000	comb. of local/state must provide this amount as a minimum	
LEAD ORGANIZATION(S): DOH		***APPROPRIATED TO DATE:***			
		Monroe	~$15,500	Operating Permit Fees by Local Ordinance in FY 97-98.	
SUPPORTING ORGANIZATION(S): Monroe County, EOG		EOG	905,000	3 successive fiscal years of gen. rev. appropriation	
COUNTY(S): Monroe		FDCA	110,000	1 time Coastal Program Grant FY 96-97	
				Total:	$1,030,500
LINKED PROJECTS: **Dependent on:**		**REMAINING FINANCIAL REQUIREMENT**			
Critical to:	FK14, FK18	State	200,000	FY 99-00 Leg. Bud. Req. (DOH)	
Associated with:	FK17		50,000	Operating permit fees/other local contribution	
		TOTAL:	$250,000	minimum necessary to sustain program at Monroe County Health Department	
START: 8/96	***END:*** 2007	***APPROVED:*** 11/97			***LAST REVISION:*** 7/98

DESCRIPTION: The cesspit identification and elimination program is required as part of the implementation of Monroe County's 2010 Comprehensive Plan. The Comprehensive Plan received its final adoption by the Governor and Cabinet in July of 1997. Approximately 25,000 residential and commercial units in the Florida Keys are served by On-Site Sewage Disposal Systems (OSDS). Over 7,000 of these systems have no known permit history. Monroe County adopted Ordinance 03-1997 early in 1997, which requires the inspection of all on-site systems by the year 2007. In the first five years, the program will focus on the inspection of those systems with no known permits. Inspections of older properties will be conducted first, with successively newer properties inspected in succeeding years. Many properties will contain cesspits and these will be required to be replaced immediately. Non functioning permitted systems will be required to be upgraded or replaced as well, dependent on the condition of the system. Each property owner with a functioning and permitted system will receive a five year renewable operating permit for the system on their property. After the initial ten year period, during which all systems will be inspected for the first time, a program requiring five year operating permit renewals will remain in place indefinitely. The cesspit identification and elimination program was adopted by the Monroe County Board of Commissioners and is being implemented by DOH, through a Memorandum of Understanding between Monroe County, DOH, FDEP, and the Executive Office of the Governor.

Significant costs are associated with initiating a new program such as this. In its inaugural year, the program was funded through the efforts of the Executive Office of the Governor (EOG). The EOG placed $500,000 in the legislative budget to carry out the first phase of the program. Remaining funding dollars were to be obtained from application fees for the initial inspection phase of the project and later from the approval of new operating permits as they come due each five years. Application fees have not materialized as projected because Monroe County government has not enforced compliance with the ordinance. The Monroe County Health Department continues to seek General Revenue appropriations to support staff to conduct the program until enforement of the ordinance generates anticipated permit revenue.

RESTORATION BENEFITS: Implementation of the cesspit identification and elimination program will assist in the reduction of the nutrient load of such systems to Keys' ground, confined, and nearshore waters. Nutrient loading has been identified as one of the major impacts resulting from existing and future development in the Keys. Though stormwater is also a significant contributor to overall loading, the majority emanates from wastewater systems. The majority of the wastewater loading outside of the City of Key West comes from on-site systems. Since cesspits, unit for unit, are the worst contributors to the nutrient loading problem, they have been targeted first. Efforts underway with the Monroe County Sanitary Wastewater Master Plan will provide a more comprehensive and long term view of potential solutions to the nutrient loading problem.

Time Line and Fiscal Year Budget (in thousands of dollars) for : Florida Keys Cesspit Identification and Elimination Program - Administrative Funding																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
EOG	500	282	123	200												1105 155
Subtotal	500	2,975														$11205

TITLE: Florida Keys Tidal Creek Restoration Project			
SUBREGION : 8	***PROJECT ID:*** FK28	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: R.J. Hebling (305) 289-2310	***BASIS:*** 1,2	***TOTAL:*** $1,500,000	
LEAD ORGANIZATION(S): USEPA		***APPROPRIATED TO DATE:*** FDEP $250,000	
SUPPORTING ORGANIZATION(S): NOAA, EPA, SFWMD, Monroe County, FDCA, FDOT, FGFC			
COUNTY(S): Monroe		TOTAL: $250,000	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to**: FK18 **Associated with:**		***TOTAL:*** $1,250,000	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 8/98

DESCRIPTION: This project will restore historic flow ways between the Atlantic Ocean and the Gulf of Mexico which were blocked during construction of Highway U.S. 1. An existing tidal creek restoration project in the vicinity of the proposed restoration projects was fully successful. Three tidal creeks in the vicinity of Marathon, Florida have been selected for restoration. Culverts will be located and sized to maximize flow and placed under U.S. 1 to allow tidal exchange and flushing. Sites of the three flow ways to be restored are: Tarpon Creek, Fat Deer Key (MM 54), unnamed flow way between Fat Deer Key and Long Point Key (MM56), and unnamed creek at Little Crawl Key (MM57). Monitoring of water quality, benthic community composition, and sediment particle size will be performed before construction and 0.5 and 1 year after construction. Additional tidal flow way restoration projects will be identified in the future based upon results of these three initial restoration projects.

RESTORATION BENEFITS: It is fully anticipated that adequate culverting will improve circulation and tidal flushing of the currently blocked flow ways. Flushing will remove accumulated organic matter which has collected in the upper reaches of the impounded creeks. Increased flushing and circulation will result in improved water quality and habitat value of the tidal creek habitats.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys Tidal Creek Restoration Project

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Construction																
Monitoring																
Project																
FDEP		250														
Subtotal		250	600	650												**$1,500**

TITLE: Florida Keys Invasive Exotic Plant Control Strategy			
SUBREGION : 6	***PROJECT ID:*** FK31	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Management		
PROJECT PLAN MANAGER: Stieglitz (305) 872-2239	***BASIS:*** 1, 2	***TOTAL:*** $190,000	
LEAD ORGANIZATION(S): USFWS		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): TNC, FAS, FDOT, GFC, FDEP, Monroe County		***TOTAL:*** **0**	
COUNTY(S): Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS19, FK14		***TOTAL:*** ***$190,000***	
START: 1998	***END:*** 2000	***APPROVED:*** 11/97	***LAST REVISION:*** 10/97

DESCRIPTION: This project will gather, synthesize and distribute critical data on the extent, distribution and treatment of harmful, non-indigenous plant species in the Florida Keys. This information will meet needs identified in the 1996 publication *South Florida Restoration: Scientific Needs* for the Florida Keys related to harmful non-indigenous plant species.

The Florida Keys Invasive Exotics Task Force has completed a Keys-wide survey of exotic plant distribution with participation from its members, which include the Florida Audobon Society; Florida Departments of Community Affairs, Environmental Protection, and Transportation; Florida Game and Freshwater Fish Commission; Monroe County; Key Deer Protection Alliance; The Nature Conservancy; Lewis Environmental Services; and the U.S. Fish and Wildlife Service. This project will capitalize on the information collected by these agencies by integrating, synthesizing and distributing the information, then testing it through demonstration projects.

Funding for this project will allow the completion of (a) research into Best Management Practices (BMP's) for leadtree, (b) investigations of the biological agent responsible for a mysterious die-off of Australian Pines in the Florida mKeys (to identify another biological control agent that could be used elsewhere in South Florida), (c) demonstration projects of BMP's for revegetation of sites that have been cleared of exotic vegetation, and (d) monitoring of plant eradication projects currently being conducted by federal, state, local, and non-governmental agencies and organizations. All of these efforts are consistent with the recommendations of the Florida Keys Invasive Exotic Task Force and will provide a major contribution to exotic plant control in the Florida Keys.

RESTORATION BENEFITS: The identification and ultimate removal of exotic vegetation currently degrading the globally-endangered pine rocklands and tropical hardwood hammocks will restore the healthy functioning of these communities and increase their ability to restore and maintain the native flora and fauna of the Florida Keys, increase the carrying capacity of the Florida Keys for native species, contribute to the recovery of endangered and threatened species (a critical element of the Multi-Species Recovery Strategy), Maintain wildlife corridors in productive native habitats, and restore natural system functions. For instance, indicator species identified by the Science Sub-Group, including the Ligous Tree Snail and White-Crowned Pigeon, will benefit directly as a result of this project through habitat restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys Nutrient Feasibility Study																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Preparation & implement																
Project																
USFWS		(TBD)	(TBD)	(TBD)												$190
Subtotal																**$190**

TITLE: Big Pine and No Name Keys Multi- Species Habitat Conservation Plan			
SUBREGION : 6	***PROJECT ID:*** FK32	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Habitat Protection	DCA $100,000 DOT $100,000 Monroe Co. $100,000 ***TOTAL:*** $300,000	
PROJECT PLAN MANAGER: Rowena Garcia 305/289-2402	***BASIS:*** 1,2	***APPROPRIATED TO DATE:***	
LEAD ORGANIZATION(S): FDCA, DOT, Monroe County			
SUPPORTING ORGANIZATION(S): Monroe County, USFWS		TOTAL: $0	
COUNTY(S): Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:** TS19, FK14		***TOTAL:*** $300,000	
START: FY99	***END:*** FY00	***APPROVED:*** 11/97	***LAST REVISION:*** 2/98

DESCRIPTION: This project will synthesize the existing information on the endangered and threatened species in Big Pine and No Name Keys, focusing on the Key deer and develop a Habitat Conservation Plan which will be used to recover imperiled species and guide growth and development. Much of the data necessary for development of this HCP is in existence, but requires careful collection and assemblage in the light of the public to derive a meaningful plan which will settle issues related to the needs of wildlife and humans co-existing in Big Pine and No Name Keys. Funding is required to complete this important project.

RESTORATION BENEFITS: The HCP will address the recovery needs of not only the well-known endangered Key deer, but protection and preservation of two globally endangered plant communities in which they live and a host of other imperiled species which also depend upon these same habitats, including the white-crowned pigeon, liguus tree snail, Keys tree cactus, and Garber's spurge. These recovery benefits will directly contribute to the objectives and goals of the Multi-Species Recovery Strategy and bear upon the Florida Keys Carrying Capacity Study.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys Multi- Species Habitat Conservation Plan

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Develop Plan																
Project																
DCA DOT Monroe			100 100 100													300
Subtotal			300													**$300**

TITLE: Team OCEAN			
SUBREGION : 6	***PROJECT ID:*** FK42	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Public Information & Education	***BUDGET CATEGORY:*** Habitat Protection & Natural Resource Management	NOAA: (NOS)	$680,000
		State:	
PROJECT PLAN MANAGER: Mary Tagliareni (305)852-7717	***BASIS:*** 3	***TOTAL:***	$680,000
LEAD ORGANIZATION(S): NOAA (Florida Keys National Marine Sanctuary)		***APPROPRIATED TO DATE:*** $40,000	
SUPPORTING ORGANIZATION(S):		***TOTAL:*** $40,000	
COUNTY(S): Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $640,000	
START: 1997	***END:*** 9/30/2001	***APPROVED:***	***LAST REVISION:*** 8/98

DESCRIPTION: Team OCEAN (Ocean Conservation Education Action Network) is a new program being implemented by the Florida Keys National Marine Sanctuary (FKNMS). This outreach program is designed to provide on-water and dockside education to boaters, divers, snorkelors, and other sanctuary users about practical ways to protect the marine ecosystem and minimize physical impacts from boating activities in the Florida Keys. The first element of this new program has focussed on utilizing teams of qualified and trained volunteers who use sanctuary vessels to visit the most heavily utilized reefs throughout the Keys. Brochures, applicable regulations, boating tips, and other information is distributed to boaters by Team Ocean interpreters. Team OCEAN interpreters have also prevented numerous groundings through direct intervention on the water, significantly reducing potential injury to living coral. This result, along with the hundreds of personal contacts made with boaters by this team and the feedback received, indicate the success already being made in educating boaters on the water, and in significantly reducing physical impacts to the living resources in the sanctuary. This new program has expanded for wider coverage throughout the Keys as South Florida restoration funds have become available. The continuation of this program, including the implementation of additional phases required for full development of Team OCEAN, is entirely dependent upon South Florida restoration funds, as this program is not funded by FKNMS program funds.

RESTORATION BENEFITS: Significant reduction of injury to coral and other living resources due to the unintentional impacts from boating activities in the Florida Keys. A fully implemented Team OCEAN program will heighten the awareness of boaters as to the importance of proper boating practices in shallow local waters for protecting the fragile reefs in the Keys. This is especially important because of the rapidly growing numbers of both resident and visiting boaters. The Team OCEAN program is important to overall ecosystem restoration as a demonstrated means of preventing the continued physical destruction of coral reefs from boating impacts, and to help ensure the sustainability of this critical component of the South Florida ecosystem into the long-term future.

Time Line and Fiscal Year Budget (in thousands of dollars) for Team OCEAN																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NOAA (NOS)	40	160	160	160	160											
Subtotal	40	160	160	160	160											**$680**

TITLE: Coral Reef Classroom			
SUBREGION : 6	***PROJECT ID:*** FK43	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Public Information & Education	***BUDGET CATEGORY:*** Habitat Protection & Natural Resource Management	NOAA: (NOS) $110,320 State:	
PROJECT PLAN MANAGER: Ivy Kelley (305)852-7717x36	***BASIS:*** 3	***TOTAL:*** $110,320	
LEAD ORGANIZATION(S): NOAA (Florida Keys National Marine Sanctuary)/FDEP		***APPROPRIATED TO DATE:*** NOAA/FKNMS $20,515	
SUPPORTING ORGANIZATION(S):		***TOTAL:*** $20,515	
COUNTY(S): Monroe		***REMAINING FINANCIAL REQUIREMENT:***	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $89,805	
START: 1997	***END:*** 9/30/2001	***APPROVED:*** 11/97	***LAST REVISION:*** 7/98

DESCRIPTION: Coral Reef Classroom (CRC) is a hands-on educational program conducted by the Florida Keys National Marine Sanctuary (FKNMS) to 8th grade students throughout the Florida Keys. which couples the scientific method with field observations in order to instill a personal sense of responsibility for environmental stewardship. The objectives of CRC are to teach basic coral reef ecology and biology; present concepts of habitat interdependence; engage in water quality sampling and evaluation; encourage analytical thinking and problem solving; demonstrate the role management plays in protecting natural resources; and inform students about careers in environmental science.

Each CRC cycle consists of two elements: a one-hour classroom presentation by FKNMS staff; and a five-hour boat/snorkeling excursion to the reef. Students experience their first hands-on practice with a Niskon bottle, Secchi disk, refractometer and dissolved oxygen sampling kit during the classroom session, along with a discussion about coral reef ecology. During the field trip, students have an opportunity to use these instruments and taught how to collect and record oceanographic data. A plankton tow along the shallow reef site completes the sampling component as students collect, observe and identify plankton. The remainder of the trip is spent snorkeling on the reef, where FKNMS staff and volunteers offer guidance on reef ecology and marine diversity.

RESTORATION BENEFITS: Educating students about coral reef ecology and south Florida environmental issues, along with increasing their awareness of the direct and indirect impacts on the ecosystem, will help toward building a long-term environmental ethic among young people. These students will inherit and become responsible for maintaining a sustainable environment in the future.

Time Line and Fiscal Year Budget (in thousands of dollars) for Coral Reef Classroom																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NOAA (NOS)	20.5	20.5	21.3	24.5	23.6											
Subtotal	20.5	20.5	21.3	24.5	23.6											**$110.32**

TITLE: Biscayne Aquifer Groundwater Investigation			
SUBREGION : 6	***PROJECT ID:*** FK46	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Science	***BUDGET CATEGORY:*** Research		
PROJECT PLAN MANAGER: **Scott (904) 488-9380**	***BASIS:*** **3**	***TOTAL:*** $27,450	
LEAD ORGANIZATION(S): USGS, FDEP		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): SFWMD			
COUNTY(S): Dade, Monroe		***TOTAL:*** $27,450	
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:*** $0	
START: 3/1997	***END:*** 09/97	***APPROVED:*** 5/97	***LAST REVISION:*** 12/96

DESCRIPTION: Investigate strata of Biscayne Aquifer and groundwater flow from the aquifer into Biscayne Bay.

RESTORATION BENEFITS: Improve understanding of geological and hydrological relationships between the Biscayne Aquifer and Biscayne Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Biscayne Aquifer Groundwater Investigation																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Drilling, Lithography, Lab Analysis																
Project																
State	27.45															
Federal	0															
Subtotal	27.45															$27.45

TITLE: Florida Keys National Marine Sanctuary: Zone Monitoring Program			
SUBREGION : 6	***PROJECT ID:*** FK57	***FINANCIAL REQUIREMENT:***	
PROGRAM CATEGORY: Management	***BUDGET CATEGORY:*** Monitoring	NOAA	$2,730,000
PROJECT PLAN MANAGER: **Haskell (305) 743-2437**	***BASIS:*** **2**	***TOTAL:***	$2,730,000
LEAD ORGANIZATION(S): NOAA		***APPROPRIATED TO DATE:***	
SUPPORTING ORGANIZATION(S): Florida DEP/FMRI, EPA, USGS			
COUNTY(S): Monroe		***TOTAL:***	$1,040,000
		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: **Dependent on:** **Critical to:** **Associated with:**		***TOTAL:***	$1,690,000
START: 1997	***END:*** 9/30/02	***APPROVED:***	***LAST REVISION:***

DESCRIPTION: On July 1, 1997 NOAA and the State of Florida implemented the Nation's first large-scale marine zoning plan. Marine zoning is being implemented in the Florida Keys National Marine Sanctuary (FKNMS) to protect the biological diversity and integrity of the marine environment in the Keys. Results of the monitoring program will be used in 5 years (year 2002) by Sanctuary managers to evaluate the zones' effectiveness in protecting marine biodiversity and, who will, based in part on that evaluation, determine the future use of zoning as a management tool. The effect of the zones will be determined by monitoring changes inside and outside of the no-take areas.

The primary purpose of the monitoring in the first five years will be to test the following hypotheses: 1) The abundance and average size of most exploited fish species will change significantly as a result of the no-take zones; 2) the abundance, average size, and size range of spiny lobster will change significantly as a result of the no-take zones; 3) the abundance of some mobile and sessile invertebrates, other than coral, will change significantly as a result of the no-take zones; and 4) users' attitudes/perceptions towards resource quality and management will change significantly as a result of the no-take zones.

A hierarchical monitoring approach will be used consisting of the following three levels: Level I will focus on changes in ecosystem structure and function in the two largest zones and one research-only area where diving is prohibited, Level II will focus on changes in ecosystem structure (species abundances) and on changes in human activities and attitudes in the smaller no-take zones, and Level III will focus on changes in overall ecosystem health using volunteers in all of the zones.

RESTORATION BENEFITS: The Florida Keys National Marine Sanctuary represents the final downstream component of the South Florida ecoystem. As such it is essential to monitor biological and socioeconomic changes in the Sanctuary now while changes to the delivery of water quality and quantity are being made upstream. The Sanctuary's zone monitoring program will: 1) Provide monitoring of indicators of restoration effects, 2) contribute to a better understanding of the dynamics of the coastal ecosystem (region 6), and 3) provide information for a report card on the health of the South Florida ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Keys National Marine Sanctuary: Zone Monitoring Program

Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
	410	530	530	530	530	200										2,730
Subtotal																$2,730