

Water Quality Modeling Efforts in South Florida ^a

	Task Name	Project Name	Lead Organization	Basin Name	Water Body	Simulated Environment	Model Code	Pollutants of Interest	Original Schedule		Estimated Cost	Modeling Purpose	Status of Model in August 2002	Description	Present Status of Modeling September, 2004
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1	Fate / Transport Modeling of Wastewater Pollutants	Wastewater Reuse - West	USACE SFWMD	Lower East Coast (LEC)	Bird Drive Basin	Wetlands, surface / subsurface Fate transport	Not selected yet	Nutrients, metals	Jan. 04	Dec. 07	\$ 400,000	CERP	Planned for future	There are two modeling efforts in this task. The first is the simulation of fate/transport of wastewater pollutants in a treatment wetland. The second is the simulation of trace pollutants discharged to the canal network and groundwater.	Wastewater reuse project postponed until 2010
2	Fate / Transport Modeling of Wastewater Pollutants	Wastewater Reuse - South	USACE SFWMD	LEC	L-31E / Biscayne Bay	Wetlands, Canal	Not selected yet	Nutrients, trace metals				CERP, Permit Support	Planned for future	A WQ model will be used to predict the impact of WW discharges on L-31E and coastal wetlands of Biscayne Bay	Project postponed
3	Pollutant Load Assessment	Biscayne Bay Coastal Wetlands	USACE SFWMD	LEC	Biscayne Bay	STA, Watershed	Not selected yet	Nutrients, metals	Mar. 03	Feb. 04	\$ 120,000	CERP, Permit Support	Planned for future	The objective of the project is to rehydrate wetlands and reduce point source discharge to Biscayne Bay. The Phase II WQ modeling effort will look at nutrients, seagrasses, light, turbidity, pathogens, and toxics. Model may be 3-D.	WQ modeling is scheduled to commence in FY05. PDT has preliminarily identified SWMM Transport and DMSTA as the models of choice.
4	Berry Reservoir WQ modeling	C-43 Basin Storage Reservoir(s)	USACE SFWMD	Southwest Florida	Caloosahatchee River	STA, River	Not selected yet	Nutrients	Dec. 02	Mar. 03	\$ 160,000	CERP, Permit Support	Planned for future	The overall objective of the project is to capture C-43 Basin runoff and releases from Lake Okeechobee; enhance water quality benefits to reduce salinity and nutrient impacts of runoff to the estuary. A WQ model will be created to predict effluent quality for Berry Reservoir. A second model will be used to predict project impacts to C-43.	WQ modeling is underway as of Summer 04. Modeling tools include: MIKE Ecolab, WamView, WQ regression relationships in estuary, and Habitat Suitability Indices models for a minimum of three species
5	Lake Okeechobee Ecosystems Modeling	Regional ASR Study	USACE SFWMD	Lake O. Watershed	Lake O	Lake, Sediment flux	WASP, EFDC	nutrients, DOC, Ca, CaCO3, SO4, pH	Mar. 05	Mar. 07	\$125,000	CERP, SWIM, Research Study	Currently under development	The overall objective of the project is to provide additional regional storage; increase the Lake's water storage capability; manage a portion of regulatory releases from the Lake; reduce harmful regulatory discharges; etc. This effort includes simulation modeling of dilution, dispersion, transport and chemical transformation of nutrients as well as DOC, Ca, CaCO3, SO4, and pH.	
6	Ecological Methylmercury Modeling	Regional ASR Study	USACE SFWMD	Lake O. Watershed, Everglades	Lake O, Everglades	Bioaccumulation	WASP	Hg, methylmercury, SO4, DOC, OrthoP	Mar. 07	Mar. 09	\$190,000	CERP	Planned for future	Evaluate potential effects of the full-scale CERP ASR Program; address regional ASR issues. Methylmercury bioaccumulation will be simulated spatially as well as in higher trophic levels using an improved version of the Everglades Mercury Cycling Model.	Work not started yet.
7	Greater Everglades Basin WQ Modeling	Regional ASR Study	USACE SFWMD	Everglades	EPA	Wetlands	Probably ELM	nutrients, chloride, sulfate, trace metals	Feb. 07	Feb. 08	\$100,000	CERP	Planned for future	The ELM or some other model will be used to simulate changes in concentration of nutrients and possibly chloride and sulfate that result from large-scale ASR operation.	Work not started yet.
8	Caloosahatchee River Basin WQ Modeling	Regional ASR Study	USACE SFWMD	Lower West Coast	Caloosahatchee River / Estuary	River	Not selected yet	nutrients, chloride, sulfate, trace metal	Aug. 06	Aug. 07	\$100,000	CERP	Planned for future	This modeling effort is intended to incorporate and expand upon previous WQ modeling done in the Caloosahatchee Basin.	Work not started yet.
9	St. Lucie Basin WQ modeling	Regional ASR Study	USACE SFWMD	Upper East Coast	St. Lucie River / Estuary	River	Not selected yet	nutrients, chloride, sulfate, trace metal	Aug. 06	Aug. 07	\$100,000	CERP	Planned for future	The intent is to use/adapt a pre-existing WQ model of the St. Lucie River/Estuary.	Work not started yet.
10	C-51 Basin WQ Modeling	Regional ASR Study	USACE SFWMD	Northern Palm Beach County	C-51 Canal	Canals	Not selected yet	nutrients, chloride, sulfate, trace metal	Aug. 06	Aug. 07	\$100,000	CERP	Planned for future	The intent is to use/adapt a pre-existing WQ model of this system.	Work not started yet.
11	Hillsboro Basin WQ Modeling	Regional ASR Study	USACE SFWMD	Northern Palm Beach County	Hillsboro Canal	Canals	Not selected yet	nutrients, chloride, sulfate, trace metal	Jun. 06	Jun. 07	\$100,000	CERP	Planned for future	The intent is to use/adapt a pre-existing WQ model of this system.	Work not started yet.

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12	Mass Balance Study	Regional ASR Study	USACE SFWMD	Lake Okeechobee, Everglades	Lake Okeechobee, Everglades	Canals	Not selected yet	chloride, sulfate	Feb. 07	Feb. 08	\$90,000	CERP	Planned for future	This task is intended to be performed using SFWMM2X2 flows and spreadsheet tracking of conservative pollutants.	Preliminary effort underway to assess conservative pollutants in Lake O as impacted by ASR.
13	Assessment of Dissolved Ions in Recovered Water	Regional ASR Study	USACE SFWMD	Lake Okeechobee		Eco-toxicity	Probably GRI-FW-STR	K, Na, Ca, Mg, Cl, SO4	Aug. 06	Aug. 07	\$68,000	CERP	Planned for future	Discharge of recovered water from ASR wells is expected to increase the concentration of common ions such as sodium, potassium, calcium, magnesium, etc. Related toxicity in fresh and marine systems will be investigated.	Work not started yet.
14	Geochemical Reaction Modeling - Phase I	Regional ASR Study	USACE SFWMD	Lake Okeechobee, Everglades		Geochemical WQ	Unknown	trace metals, nutrients, Alk., Hardness,	Mar. 03	Sep. 03	\$55,000	CERP	Planned for future	Rock / water chemistry will be simulated for different mixtures of native and injected ASR water.	The modeling work is in progress. The task was initiated in April 2004. Funding will end in September 2004.
15	Geochemical Reaction Modeling - Phase II	Regional ASR Study	USACE SFWMD	Lake Okeechobee, Everglades		Geochemical WQ	Unknown	trace metals, nutrients, Alk., Hardness,	Jun. 07	Dec. 07	\$55,000	CERP	Planned for future	Rock / water chemistry will be simulated for different mixtures of native and injected ASR water.	Phase II modeling has not yet started. It will not start until FY 2006.
16	WQ Analysis	Acme Basin B	USACE SFWMD	Northern Palm Beach County	L-40 Canal	STA, Watershed	Not selected yet	Nutrients, pesticides, metals	Jul. 02	Nov. 02	\$87,000	CERP, Permit Support	Currently under development	The overall objective of the project is to provide surface water to the Basin. DMSTA, a statistical/empirical WQ model will be used to simulate WQ in an STA. WAMVIEW, a GIS-Based Watershed Hydrology/WQ model will be used to simulate basin loads	Water Quality modeling was done by Burns and McDonnell under the Basin Specific Feasibility Study. DMSTA model was used to simulate TP associated with excellent water from Acme Basin B to STAs.
17	Water Quality Assessment	EAA Storage Reservoirs - Phase 1	USACE SFWMD	Everglades Agricultural Area	Miami Canal, N. New River Canal, Hillsboro Canal	STA, Watershed	Not selected yet	Nutrients, Hg, pesticides	Aug. 02	Dec. 02	\$64,000	CERP, Permit Support	Currently under development	The overall objective of the project is to improve timing of deliveries to the Water Conservation Areas and reduce Lake Okeechobee regulatory releases to estuaries; increase flood protection within the Everglades Agricultural Area; etc. DMSTA, a statistical/empirical WQ model will be used to simulate WQ in an STA. WAMVIEW, a GIS-Based Watershed Hydrology/WQ model will be used to simulate basin loads	The project is on-going as part of PIR/EIS and Water Quality Assessment (WQA) contract with Water and Air Resources, Inc. Modeling will be done by Wetland Solutions Inc. and University of Florida Environmental Engineering Sciences Department. Preliminary draft WQA to be completed by end of FY04; final WQA report to be submitted in FY06.
18	WQ Analysis	Indian River Lagoon North Restoration Feasibility Study	USACE, SJRWMD	Upper East Coast	Indian River Lagoon	Hydrodynamic / WQ	CH3D-ICM linked to WQ model	TSS, nutrients		Jul. 02			Operational, Continued Development	The Corps of Engineers, CH3D-ICM Hydrodynamic model was used to simulate salinity and nutrient conditions. Results are available in final report. See IRL web-site.	Mark White is not currently involved with this project.
19	WQ Analysis	Indian River Lagoon - South	USACE SFWMD	Upper East Coast	St. Lucie River / Estuary	STA, and Optimization Model	Walker STA model, Linear Optimization Model	TSS, nutrients, agri-chemicals, metals		Oct. 01			Operational, Continued Development	Several hydrologic / hydrodynamic, and optimization models were used in the IRL Feasibility Study. See IRL web-site for complete description. The objective is to improve water quality; reduce loadings of nutrients, pesticides, and other pollutants.	Planning level modeling was conducted for the sizing of the reservoirs and STA systems. Optimization modeling was performed to determine storage required to achieve the desired salinity regime in the Saint Lucie Estuary/IRL-South. Walker and K-C* models were used (along with SFWMM-derived H&H results) as bases to predict levels of key parameters. No modeling is taking place at this time. Preliminary scope and cost estimate for related monitoring plan has been submitted.
20	WQ Analysis	Lake Okeechobee Watershed	USACE SFWMD	Lake Okeechobee	Taylor Creek, Nubben Slough, Kissimmee River (Pool D, Pool E), Fisheating Creek	Watershed, STA	WAM-VIEW with DMSTA	Phosphorus	May. 02				Currently under development	DMSTA, a statistical/empirical WQ model will be used to simulate WQ in an STA. WAMVIEW, a GIS-Based Watershed Hydrology/WQ model will be used to simulate basin loads. To generate a more efficient design of the components of the Lake Okeechobee Watershed Project: North of Lake Okeechobee Storage Reservoir, Taylor Creek/Nubbin Slough Storage and Treatment Area, Lake Okeechobee Watershed Water Quality Treatment Facilities, and Lake Okeechobee Tributary Sediment Dredging.	Continued modeling to be conducted by SWET under contract with HDR. SWET intends to incorporate DMSTA and any other necessary WQ models into its WAMVIEW H&H modeling platform. H&H modeling for existing condition is complete. Currently the model is set up for comparison of preferred planning areas and for proposed alternatives.

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21	WQ Analysis	S-169 / Nine Mile Creek	USACE SFWMD	Lake Okeechobee	Nine Mile Creek	Watershed, Canal	Not selected yet	Nutrients, Agri-chemicals				CERP	Planned for future	Planning not complete	Yet to be determined if WQ modeling will be required to secure a WQ certification for this project. Primary issue is whether project will result in violation of Lake Okeechobee TMDL rules (i.e. primarily phosphorus limits). A simple model may be required to simulate net effect.
22	Water Retention Area (WRA) WQ (Planning Level) Modeling	Big Cypress Seminole Indian Reservation Western Water Conservation Project	USACE Seminole Tribe	Everglades	L-28 Canal	STA	Walker STA model	Phosphorus	Aug. 02	Sep. 02		Permit Support	Currently under development		Walker's STA spreadsheet model was applied. The WRA was found too small based on the requirement for Phosphorus to be less than 50 ppb. The design was later adjusted.
23	Updated WQ Assessment	Ten Mile Creek Water Preserve Area	USACE SFWMD	Upper East Coast	Ten Mile Creek	STA	DMSTA	Phosphorus	Dec. 01	Jun. 02	\$65,000	CERP, Permit Support	Operational	Results available in Ten-mile Creek Design Report.	WQ modeling using various K-C* combinations and draft DMSTA was completed by Robert Knight of WSI and reported in the final Ten Mile Creek WQA report. The project is now under preparation for commencement of monitoring in FY06.
24	WQ Assessment	Winsberg Farm Wetlands Restoration Project	USACE SFWMD	Upper East Coast	L-30 Canal	STA	Walker STA model	Nutrients, metals				CERP, Permit Support	Planned for future	To construct an additional 175 acres of wetlands on the Winsberg property; recycle and preserve additional water for future use, link the Wakodahatchee and Winsberg Farms facilities; and provide additional green space in area currently under heavy development. WQ modeling will be used to provide effluent projections to determine the suitability of system discharges for indirect reuse and/or release to surface waters (L-30).	Used Walker STA (DMSTA?) spreadsheet model to predict the size of STA that would be required to achieve justifiable nutrient removal. Determined that 60 to 80 percent of available property would be required for proper STA function. The team decided that lesser treatment would not be worth additional expenditure for a smaller STA facility.
25	Caloosahatchee WQ Model	Caloosahatchee Basin WQ Assessment	FDEP USEPA	Southwest Florida	Caloosahatchee	Watershed, river	WAM-VIEW	Nutrients	Mar. 02	Dec. 02	\$150,000	SWIM	Currently under development	Under contract to Tetra-Tech, Inc.	Project completed. WQ land use assessment completed for C43 basin. WQ land use model prepared for C43 Basin. This model is being adapted for C43 Basin Storage Reservoir project.
26	Fl. Bay Seagrass Modeling	Florida Bay / Florida Keys Feasibility Study	USACE SFWMD	Everglades	Florida Bay	Bay	Unit Model based on the solution of simultaneous differential equations	TSS, Light Penetration				CERP, SWIM	Currently under development	Model will be used to develop management alternatives for improving the Florida Bay Seagrass Community. Model will include sediment and water column nutrient dynamics, and effects of freshwater inputs.	Modeling work is in progress. Should be completed by December 2004 (?).
27	Florida Bay Salinity Modeling	Florida Bay / Florida Keys Feasibility Study	USACE SFWMD	Everglades	Florida Bay	Bay, Hydrodynamic	Not selected yet	Salinity				CERP, SWIM	Currently under development	Model will be used to predict salinity structure and flow fields in Florida Bay under a range of freshwater flow regimes. The model will use multiple grids (northeastern grid, Bay/Keys grid).	The model development work is in progress. Several grids were investigated for developing the model. The grid resolutions were investigated and reviewed by IMC. Based on the available information, the simulations for salinity in Florida Bay is in progress.
28	Everglades Landscape Modeling	Everglades Ecological Modeling	SFWMD	Greater Everglades	EPA	Wetlands, soil / water	Everglades Landscape Model	nutrients (soil, water), periphyton biomass, community type					Operational, Continued Development	The ELM is a regional scale ecological model designed to predict the landscape response to different water management scenarios in South Florida. It simulates changes to the hydrology, soil water nutrients, periphyton biomass & community type, and vegetation biomass & community type.	The model has been upgraded to include evapotranspiration, water control structure flows and concentrations, multi-scale sensitivity analysis, post-processing for graphical and statistical forms, etc. ELM version 3.0 will be released for peer review in October 2004.
29	Everglades Agricultural Model (EAAMOD)	Everglades Agricultural Area Model	SFWMD	EAA	EAA	Watershed	EAAMOD linked to WAM	nutrients		1998		BMP simulator	Operational	The model simulates the effectiveness of Best Management Practices to control Phosphorus runoff in the EAA.	The EAAMOD has been linked to the Watershed Assessment Model (WAM) by Soil and Water Engineering Technology, Inc.
30	Everglade Mercury Cycling Model.	Everglades Mercury Modelling	USEPA	Greater Everglades	Everglades		WASP	Methylated Hg				Research Study	Operational	Simulates the mercury cycle in the Everglades.	

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31	Aquatic Cycling of Mercury in the Everglades	Aquatic Cycling of Mercury in the Everglades	USGS	Lake O. Watershed, Everglades	Everglades	Wetlands, chemical reactions, bioaccumulation	Everglades Mercury Cycling Model (EMCM)	Methylmercury, mercury, sulfate	2000	2004		TMDL, research	Operational, Continued Development	The model was formulated based on the fundamental conceptual model put forward by the ACME researchers, including the primary cycling processes, reaction rates, and bioaccumulation pathways. Presently the model is undergoing further development to enhance the code to provide direct linkages between sulfur cycling and mercury cycling which is known to be the most important methylation process in nature.	This is a multi-agency project supported by USGS and Florida DEP. The project is completed. But, the research on cycling of Hg due to the changes in the distribution of water resources under CERP will continue.
32	Okeechobee Grazing Lands BMP Modelling	Okeechobee Grazing Lands BMP Modelling	USDA-NRCS	Lake Okeechobee	Priority Watersheds (TCNS, S-65D, S-65E, S-154)	Watershed, STA	WAM-VIEW	Phosphorus	Feb. 02			PL-566	Currently under development	WAMVIEW, a GIS-Based Watershed Hydrology/WQ model will be used to simulate basin loads. The intent of the model is to determine the effectiveness of BMPs on pasturelands.	The modeling study is completed.
33	USDA-ARS, Everglades Agro-hydrology project	Structural Instability, Multiple Stable States, and Hysteresis in Periphyton Driven by Phosphorus Enrichment in the Everglades	USDA-ARS	Ag Areas in S. Dade or EAA	None	All the processes in the Ag areas	FORTTRAN	Ag-Chemicals (Nutrients & Pesticides)	1998	2002	\$250,000	TMDL, research, CERP project	Planned for future, Currently under development	A decision support tool for sustainable agriculture during CERP implementation and beyond (Fate and Transport of Ag-Chemicals)	The model has been developed to be used as a tool for simulating pollutant loadings from agricultural areas. (?)
34	Dynamics of Phosphorus and Periphyton Interactions		NPS / SERC	Everglades				MSH	Phosphorus		Jan. 02		Research Study		The model examines the interactions between periphyton and P dynamics in slough areas. The model is not a water quality model per se. The model analyses suggested multiple steady states and hysteresis that was not suggested before, that are supported by field data and that has significant implications in phosphorus management issues.
35	LWL Hydrodynamic Salinity Modeling	Salinity Distribution and Flow Management for Lake Worth Lagoon	SFWMD	Coastal Lake Worth Lagoon	Lake Worth Lagoon/Lake Worth Creek: Jupiter-Ocean Ridge	Lagoon/freshwater discharge structures	EFDC	Salinity	Feb. 02	Nov. 02	\$160,000	Research Study	Currently under development	The model examines the circulation and simulated salinity distribution using existing and proposed freshwater discharge scenarios.	A salinity distribution model was developed. Currently, modeling is undergoing to evaluate alternatives for LWL restoration.
36	Florida Bay and Southwest Coastal Salinity model development	Tides and Inflows to Mangrove Ecotone (TIME) model development	USGS	Everglades	Florida Bay and Southwest Gulf Coast	Hydrology and estuarine salinity within ENP		Salinity				Research Study	Currently under development	This model simulates water level, flow and salinity within ENP, including southwest Gulf Coast estuaries.	
37	Florida Bay Water Quality Modeling	Florida Bay / Florida Keys Feasibility Study	USACE SFWMD	Everglades	Florida Bay	Water Quality in Florida Bay and the Keys	Not selected yet	Nutrients and toxins				CERP Project, Research Study	Currently under development	The model will predict nutrient status in Florida Bay and adjacent marine waters and will use output from proposed Florida Bay hydrodynamic model. The current WES Florida Bay WQ Model uses RMA10 hydrodynamic model output (Carl.F.Cerco@usace.army.mil or Mark.S.Dortch@usace.army.mil)	
38	Florida Bay Mangrove Model	Florida Bay / Florida Keys Feasibility Study	USACE SFWMD	Everglades	Florida Bay	Mangrove Transition Zone Groundwater and Water Quality	Not selected yet	Flows, Nutrients, and Toxins				CERP Project, Research Study	Planned for future	The model will predict groundwater input and nutrient patterns and processes in mangrove transition zone affecting Florida Bay and the Keys.	
39	Taylor Slough/C-111 Hydrologic Model	Southern Inlands and Coastal System (SICS) model	USGS	Everglades	Florida Bay	Hydrology and salinity of Taylor Slough/C-111 Basin-simulates flow to FL Bay	SICS	Salinity				CERP Project, Research Study	Currently under development	This model simulates water level, flow and salinity within part of the Taylor Slough/C-111 basin and in northeastern Florida Bay.	A combined surface water-groundwater model has been developed for simulating flow and transport of salinity. The model is based on the code SICS, an integrated model consisting of SWIFT2D and SEAWAT. The model is used to simulate for the period 1996-2002.

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40	Florida Bay Salinity Model	FATHOM and possibly FL Bay FL Keys Feasibility Study	ENP and possibly USACE SFWMD	Everglades	Florida Bay	Basins in Florida Bay		Salinity				CERP Project, Research Study, Explore sensitivity to climate	Currently under development	This mass balance box model predicts salinity in 47 sub-basins within Florida Bay	
41	Water Quality Modeling using DMSTA and others	ECP & ESP Basin Wide Feasibility Study	SFWMD	ECP-EAA and Everglades Stormwater Program	n/a	PC	Visual Basic	Total Phosphorus	Jan. 01	Aug. 02	not available	Research Study, Other	Operational	The models will be used to predict nutrient removal efficiency in STAs planned for the Everglades Agricultural Area.	The modeling was done mainly in the EAA STA 1W, STA 5, STA 6, and STA 2. Burns & McDonnell used DMSTA to support basin wide feasibility study. The work was completed in 2002.
42	Estuarine fish community structure-pattern of stability, changes and succession in relation to C-111 hydrology modification	South Florida Ecosystem	USGS		Barnes Sound, Florida Bay				Jul. 98	Sept. 01		Research Study		The overall objective is to provide a basis for predicting the direction of fish community change in response to restoration actions relative to the South Florida Restoration Program.	
43	Chemical stressors/contaminants and wildlife	Chemical Exposure and Ecological Risk in South Florida	USGS									Research Study		Results of this study are expected to determine evidence of wildlife exposures to chemical stressors/contaminants in south Florida. Effects characterization will focus on non-lethal effects such as decreased health status, altered reproductive success, and endocrine disruption.	
44	Transport of dissolved and suspended materials in surface waters NR147	South Florida Ecosystem	USGS				Model development		Oct. 89			Research Study		Development/validation of multidimensional, computational models describing the transport of dissolved and suspended materials in surface waters	
45	Reaction-transport phenomena in hydrogeologic settings NR153	South Florida Ecosystem Program	USGS						Oct. 91			Research Study		The objective of this project will be to understand the interaction of ground-water transport and geochemical reactions in hydrogeologic settings. Including interactions between geochemical reactions and heat transport, variable density flow in natural systems.	This project is not specific to South Florida. But, the research can be used to support projects on water quality in South Florida. This is a continuing research project in USGS.
46	Vegetative resistance to flow in the Everglades NR163	South Florida Ecosystem Program	USGS		Flume experiments to define model coefficients			Nutrients	Oct. 94	Sept. 99		Research Study		The project will quantify vegetative resistance to flow in the Everglades and the effect of wind on flows in water with emergent vegetation typical of the Everglades.	
47	Open-channel and wetland flow/transport interaction NR165	South Florida Ecosystem Program	USGS				Development of new model	Nutrients	Oct. 94	Sept. 99		Research Study		The objective of this project will be to simulate canal and wetland flow and transport interactions. Driving forces, nutrient sources and cycling patterns can be quantified, and investigated.	
48	Hydrologic interactions between surface and ground water	South Florida Ecosystem Program	USGS						Oct. 97			Research Study		The objective is to improved field modeling methods to characterize hydrologic fluxes and chemical reactions in coupled surface and shallow sub-surface flow systems. Quantify enhanced rates of chemical reactions and isolate the contributing roles of physical and chemical factors	
49	Restoration Ecology Branch		USGS		Everglades, Big Cypress, Florida Bay, Biscayne Bay							Research Study		The Branch is developing a digital library capability to ensure that all of its information, data, metadata and ecological modeling tools are widely available to resource managers, other scientists and the general public.	

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50	Windermere Humic Aqueous Model (WHAM)	South Florida Ecosystem Program			WCA-2A	Surface water at site U3 in WCA-2A		Dissolved inorganic mercury species	1995	1999		Research Study	Operational	WHAM includes a sophisticated model of ion-binding to humic substances (Humic Ion Binding Model 6), a surface complexation model and a model for cation exchange on clay.	
51	TIME/SICS Modeling of surface water and interactions with ground water		USGS	Everglades	Everglades, Florida Bay	Wetlands and Florida Bay	SWIFT2D and SEAWAT	Nutrients			\$190,000	Research Study	Planned for future	The objective is to incorporate nutrient interactions and kinetics into the SICS model of coupled surface-water/groundwater. The goal is to develop the ability to determine the effects of different hydrologic control schemes on nutrient distributions and outflows.	The Tides and Inflows in the Mangrove Ecotone (TIME) project entails a study of the transition region using a coupled surface-water/groundwater model. The TIME Model is focused on further developing, extending and implementing the interaction between wetland sheet flows and dynamic forces including southern Everglades and its coastal embayments. The model development is in progress.
52	Across Trophic Level System Simulation (ATLSS)	South Florida Ecosystem Program	USGS		Everglades, Big Cypress Region	Everglades, Big Cypress Region	ATLSS		Jan. 95	Dec. 00		Research Study		ATLSS is an integrated set of computer simulation models representing the biotic community of the Everglades/Big Cypress region of south Florida and the biotic factors that affect this community.	An ongoing project for systemwide ecological simulation under CERP. Updated information are available in website atlss.org.
53	NW Wellfield Rockmine Setback Study		DERM	Biscayne Aquifer	Biscayne Surficial Aquifer	Surface water, Ground water, Production wells			Nov. 00	Jul. 01	\$96,500	Reassessment of the Miami-Dade's rockmine setback	Operational		
54	DMSTA (Dynamic model for stormwater treatment areas)		DOI (developed by contractor)	South Florida		Surface water in Stormwater Treatment Areas	Excel/Visual Basic	Phosphorus, Conservative substances	Jan. 01	ongoing		TMDL, CERP, SWIM, Permit, Research, Design STA for P removal	Operational	DMSTA simulates daily water & mass balances in a user-defined series of wetland treatment cells, each with specified morphometry, hydraulics, and phosphorus cycling parameters. Each cell is further divided into a series of continuous stirred tank reactors (CSTR's) to reflect residence time distribution	
55	Myakka TMDL		EPA		Myakka River & Estuary	Surface water	EFDC, WASP, WAMview	Phosphorus, Nitrogen, Pathogens, DO	Jun. 01	Dec. 01	\$100,000	TMDL	Operational	Development of TMDLs for nutrients and pathogens. 1-D, Non-steady state, hydrodynamic flow-transport model in freshwater wetlands and estuary. Will examine point versus non-point contributions and control strategies.	Tetrattech worked on this project for EPA and was completed.
56	C-43 Pollutant Loading Analysis		DEP	C-43	Entire C-43 Basin	Surface water	WAMview	Phosphorus, Nitrogen, TSS, Chlorophyll a	May. 02	ongoing	\$150,000	CERP, Water quality for FDEP	Currently under development	Comprehensive assessment of the C-43 WQ conditions includes development of a simulation model to predict nutrient concentrations and loads.	Model completes as part of DEP study. Model is scheduled to be refined for use in the C43 Basin Storage Project.
57	Florida Bay Salinity Analysis		SFWMD		Florida Bay and Gulf of Mexico		EFDC	salinity				CERP	Ongoing	Calibration of hydrodynamic modeling is complete. Water quality modeling for Phosphorus and Nitrogen cycling is in progress. Another year for the project to complete.	

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58	Lake Okeechobee Sediment Transport Model		SFWMD		Lake Okeechobee		EFDC	sediment				CERP	Completed		The development of sediment transport model using EFDC is complete.
59	Lake Worth Salinity Analysis		Palm Beach County		Lake Worth		EFDC	salinity				CERP	Completed		John Hamrick (independent consultant) and Tomasello Consulting worked jointly for Palm Beach County and was completed in 1996.
60	Optimization of S. FL Stormwater Treatment Areas		SFWMD		6 S. FL STAs		EFDC	Phosphorus				CERP	Completed		Tetratech worked on this project and was completed.
61	Lake Okeechobee Temperture Model		SFWMD		Lake Okeechobee		EFDC	temperature, stratification				Research	Completed		John hamrick (independent consultant) worked on this project for SFWMD and was completed in 1996.
62	Hillsboro River Salinity Intrusion Model		Nestle Food Inc.		Hillsboro River (Tampa Bay)		EFDC	salinity				Permit Support	Completed		Tetratech performed this work for Geotrans and was completed.
63	Flow & Particulate Removal in Everglades Nutirent Removal Program		SFWMD		Everglades Nurtient Removal Project		EFDC	Phosphorus				CERP	Completed		John hamrick (independent consultant) worked on this project for SFWMD and was completed in 1994-95.
64	Flow & Transport in WCA-2A		SFWMD		WCA-2A		EFDC	Phosphorus				CERP	Completed		
65	Sedimentation in Rose Bay, Halifax River		Volusia County		Rose Bay, Halifax River		EFDC	sediment				Permit Support	Completed		John Hamrick (independent consultant) worked jointly with Frank Marshall for Volusia County and the project was completed in 1993.
66	Fenholloway River Hydrodynamic & Transport Model		EPA		Fenholloway River		EFDC	Color, nutrients, chlorophyll_a				TMDL	Ongoing		Tetratech worked on this project for EPA and was completed.
67	Impact of High Fresh Water Discharge in N. Inidan River		SJRWMD		N. Indian River		EFDC	salinity				SWIM	Completed		Tetratech performed this work with Gary Zarillo, FIT for Saint Johns River Water management District and was completed in 1994.
68	Vero Beach Breakwater Evaluation		Indian River County				EFDC	sediment				design evaluation	Completed		John Hamrick (independent consultant) worked jointly with Gary Zarillo on this project and was completed in 1993.
69	Florida Bay Hydrodynamic and water Quality Modeling		SFWMD		Florida Bay		EFDC								Tetratech is doing the hydrodynamic and water quality modelling. It is an ongoing project.
70	Saint Johns River TMDL		SJRWMD		Saint Johns River		EFDC and CE_QUAL_ICM	TMDL							Tetratech developed interface between EFDC and CE_QUAL_ICM models for TMDL simulation in Saiint Johns River.
71	WQ Modeling for Lakes park restoration	Lakes Park Restoration	Estero Bay	Lakes Park and Hendry Creek										To capture, store, treat, and release basin runoff. A water quality model will be used to predict the impact of habitat restoration on Lakes Park estuary and downstream.	PMP developed
72	Mapping and Modeling Circulation and water Quality	Mapping and Modeling Circulation and water Quality in Naples Bay	Big Cypress Basin, SFWMD	Naples Bay	Naples Bay	Water Quality of the Bay	Not yet selected	salinity, nutrients, and other water quality parameters.			\$500,000	Impact of freshwater on Naples Bay	SOW for the project has been developed.	To assess the potential impact of alternative water management and water quality management practices e.g. nutrient load reduction and gflow alteration. The model will be used to assess the impact of freshwater on the circulation and salinity of naples bay.	SOW has been developed.

	Task Name	Project Name	Lead Organization	Basin Name	Water Body	Simulated Environment	Model Code	Pollutants of Interest	Original Schedule		Estimated Cost	Modeling Purpose	Status of Model in August 2002	Description	Present Status of Modeling September, 2004
									Start	Finish					
73	Phase II, Biscayne Bay Hydrodynamic and WQ Model	Phase II, Biscayne Bay Hydrodynamic and WQ Model	USACE, Miami-Dade DERM	South Dade	Biscayne Bay	Estuary		Nutrients, Turbidity, Toxics, Seagrasses	Fall 04	Fall 07		Feasibility Study	Underway		Phase IIB: Detailed scope of work and field data assessment services for WQ model development have been awarded to Earth Tech

a. Originally compiled by Mark Shafer of USACE in August 2002. Updated by Shabbir Ahmed of USACE in September 2004.