

Modeling & Scientific Support

Success Indicator:	1) Compliance with industry standards and best practices
Definition:	<p>Results of internal Quality Audit and/or external appraisal against the Capability Maturity Model Integration (CMMI) Level II process requirements.</p> <p>Compliance evaluation of Hydrologic and Environmental Systems Modeling (HESM) Department project management, software engineering, and model development processes and practices against industry standards and best practices, which have been customized using the CMMI framework.</p>
Data Source(s):	CMMI Level II processes, customized for HESM, and available on the District's internal HESM portal page
Reporting Period:	Fiscal Year (FY) (October 1–September 30)
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Continuously identify opportunities to improve modeling processes and practices
Why Success Indicator is important:	The 2003 Strategic Modeling Plan identified deficiencies in modeling processes and standards that are essential for developing, managing, delivering, and maintaining quality computer models and software in support of key South Florida Water Management District programs and projects
Example:	Internal quality audit reveals a 90% compliance with CMMI Level II Project Planning process requirements
Target(s):	CMMI Level II rating by FY2010 and beyond
Target definition source:	HESM process and procedure documentation
Subject matter expert(s):	Steve Traver

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Success Indicator:	2) Successful application of state-of-the-art modeling tools
Definition:	<p>Percent of responses to the HESM Department's customer satisfaction survey that are "satisfied" compared to the sum of those "satisfied" and "dissatisfied" (not including "neutral" responses).</p> <p>This survey solicits responses regarding success in applying modeling tools to meet the District's needs, and includes maintaining existing model functionality and developing appropriate new tools and functionality</p>
Data Source(s):	Customer satisfaction surveys
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Successfully develop, maintain, and apply a suite of modeling tools to address water resource planning and operational issues
Why Success Indicator is important:	<p>The HESM Department provides modeling support for the agency's water resource programs, including operational decision making, emergency management, and Everglades restoration design. To provide the highest quality modeling, this success indicator will help ensure that modeling tools are continuously maintained and enhanced, and to monitor customer satisfaction.</p> <p>The HESM Department will:</p> <ul style="list-style-type: none"> • Maintain and improve existing model functionality • Develop appropriate new tools • Apply toolbox to District priority areas • Expand the regional simulation model coverage • Conduct peer review of model applications • Measure positive client satisfaction (survey responses)
Example:	<p>FY2008 survey question responses: Satisfied = 62 Dissatisfied = 3 Customer satisfaction = $62/(62+3) = 95\%$</p>
Target(s):	95% customer satisfaction
Target definition source:	Internal District modeling customers and clients
Subject matter expert(s):	Jayantha Obeysekera, Rob Earle, Suelynn Dignard

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Success Indicator:	3) Compliance with all legally-mandated and permit-required water quality monitoring and reporting obligations
Definition:	Numerous legal mandates and operating permits contain specific water quality monitoring and reporting requirements that the District must adhere to in order to ensure resource protection as well as to avoid large fines and costly legal challenges
Data Source(s):	<ul style="list-style-type: none"> • Annual South Florida Environmental Report (includes most legally mandated and permit-required water quality data and reports) • Annual Seminole Agreement Report • Quarterly Everglades TOC Report • Quarterly Pesticide Report • Compliance Monitoring Tracking System
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	<ul style="list-style-type: none"> • Track all required monitoring and reporting with the Compliance Monitoring Tracking System • Develop and implement the Water Quality Monitoring Strategic and Reengineering Plan • Maintain National Environmental Laboratory Accreditation Program certification, and operate sampling, laboratory, and reporting infrastructure according to standards
Why Success Indicator is important:	The District must adhere to the water quality monitoring and reporting requirements in legal mandates and permits in order to demonstrate there is no harm to the resource as a result of ecosystem restoration projects, and to avoid large fines and costly legal challenges.
Example:	Non-compliance with an National Pollution Discharge Elimination System (NPDES permit may entail a fine of \$25,000 per day
Target(s):	Specified in each permit and mandate
Target definition source:	Federal Settlement Agreement; Everglades Forever Act (EFA) Everglades Construction Permits (ECP) for the operations of Stormwater Treatment Areas (STAs) and EFA Non-Everglades Construction (Non-ECP) Permit; National Pollution Discharge Elimination System (NPDES); Comprehensive Everglades Restoration Plan Regulatory Act (CERPRA; Lake Okeechobee Protection Act and the associated Lake Okeechobee Operating Permit; Northern Everglades and Estuaries Protection Program; Everglades Agricultural Area Rule
Subject matter expert(s):	Linda Crean, David Struve, Julianne LaRock

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Success Indicator:	4) Water quality monitoring networks and operations effectively support District's mission, strategic efforts and legal obligations efficiently and cost effectively
Definition:	<p>Completion level toward 21 major products (three major products for seven monitoring networks) in order to complete the review cycle by 2014.</p> <p>The complete reengineering consists of seven networks:</p> <ol style="list-style-type: none"> 1) Water Conservation Area 1 2) Water Conservation Area 2A 3) Water Conservation Area 3A 4) Everglades Agricultural Area 5) Lake Okeechobee and Watershed 6) Northern Estuaries 7) Southern Coastal <p>Three major products for each network are:</p> <ol style="list-style-type: none"> 1) Completed network reviews with stakeholder participation 2) Completed and documented recommendations with public review 3) Implemented plans with associated interagency activities
Data Source(s):	Reports and plans on District networks, South Florida Environmental Report and publications on technical issues associated with the re-engineering.
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, at end of fiscal year; annual reengineering progress reported in the annual South Florida Environmental Report; technical publications will document progress and studies supporting the reengineering process, as needed
Aligned Strategy:	<ul style="list-style-type: none"> • Develop and implement the Water Quality Monitoring Strategic and Re-engineering Plan • Investigate and incorporate new monitoring technologies, techniques, and process improvements
Why Success Indicator is important:	Water quality networks need to be reviewed and reconfigured, as necessary, to ensure that monitoring is properly and timely conducted to collect needed information in a cost-effective manner. Demand for monitoring continues to increase, while resources and funding continue to decrease. A paradigm shift on designing and operating water quality networks is required to keep costs contained and monitoring sustainable information value. Additionally, there needs to be an effort to limit monitoring to only that which is absolutely necessary for the District to carry out its mission, address key management questions, and meet legal and permit requirements.
Example:	For FY2009: four of 21 reengineering products to be completed (reengineering cycle has seven networks with three steps/products each); all three major products to be completed for WCA-2A as well as first major product for Southern Coastal.
Target(s):	Fully reengineered network (seven networks with three products each, resulting in 21 products) by 2014 — reviewed and approved by regulatory agencies and stakeholders
Target definition source:	<ul style="list-style-type: none"> • South Florida Environmental Report • Peer-reviewed technical reports for policies and procedures • Documented reviews and recommendations
Subject matter expert(s):	Garth Redfield; Peter Rawlik; Linda Crean; David Struve; Julianne

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Success Indicator:	5) Water quality data meet or exceed state and national standards for quality
Definition:	Data generated by the District's water quality monitoring efforts meet or exceed the quality standards set by the state and National Environmental Laboratory Accreditation Program, and are such that they will stand up to scientific and legal scrutiny.
Data Source(s):	<ul style="list-style-type: none"> ▪ NELAC certification, and results from state, national and international performance tests ▪ Results of field and laboratory quality assurance audits show adherence to quality control requirements and standard operating procedures. ▪ Conformance with Quality Management Plan
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	<ul style="list-style-type: none"> • Update and implement quality management plans annually • Participate in state laboratory round robin studies and state, national, and international performance and proficiency tests • Maintain National Environmental Laboratory Accreditation Program certification and operate sampling, laboratory, and reporting infrastructure according to standards
Why Success Indicator is important:	If water quality data do not meet state and national standards, then the data (1) would not stand up to technical and legal scrutiny if projects were to be challenged, (2) would not be compliant with permits or mandate, and (3) could not be used for measuring project or ecosystem performance
Example:	Everglades Settlement Agreement — District would not be able to demonstrate compliance with the limits and levels of phosphorus set forth in the Consent Decree; data of unsatisfactory quality would put the agency in non-compliance
Target(s):	State and National Environmental Laboratory Accreditation Program (NELAP standards)
Target definition source:	Florida Department of Environmental Protection Quality Assurance Rule – Chapter 62-160, Florida Administrative Code
Subject matter expert(s):	Linda Crean, David Struve, Ming Chen

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Success Indicator:	6) Responsive and sound technical analyses to meet legal challenges and make informed management decisions
Definition:	Environmental Resource Assessment (ERA) Department staff provides substantial scientific consultations and data analyses to the agency's Office of Counsel and Executive Office on various water quality and environmental issues to assist with complex environmental litigation and to support important policy and operational decisions. This success indicator is a summation of results of a client survey to assess customer satisfaction with technical analyses provided.
Data Source(s):	Annual client survey
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	<ul style="list-style-type: none"> • Stay abreast of emerging water quality and environmental issues • Continually maintain critical datasets for quality and accessibility
Why Success Indicator is important:	If the Office of Counsel and Executive Office did not have this support, they could not adequately represent the agency in complex legal proceedings and interagency forums on policy matters. The District could be defeated in court without world-class technical support and, consequently, could be subjected to costly and technically infeasible mandates and permit requirements with unrealistic deadlines.
Example:	<p>Summed numerical score of answers to client survey:</p> <ul style="list-style-type: none"> • ERA technical staff demonstrated good technical knowledge and expertise. Average response = 4.57 • ERA technical staff provided a timely and complete response to your request. Average response = 4.75 • ERA staff provided excellent customer service and responded with enthusiasm to your request. Average response = 4.75 <p>Where: 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree</p>
Target(s):	Minimum of an average score of 4.0 in client survey responses
Target definition source:	Executive Office, Program Manager, Office of Counsel
Subject matter expert(s):	Garth Redfield, Julianne LaRock

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Success Indicator:	7) District-wide implementation of Enterprise Scientific Data Management Policy and Procedures
Definition:	<p>The District has adopted an Enterprise Scientific Data Management Policy and will adopt related procedures in the future. Policy development includes the political and procedural framework that will be used to manage and coordinate scientific data throughout the agency, facilitate integration of stand-alone databases into one integrated data management system, coordinate with external agencies on data sharing, and formalize accountabilities.</p> <p>The proportion of specific accountabilities fulfilled compared to the number that have been identified, e.g., out of 560 specific accountabilities that are identified, 453 are fulfilled.</p> <p>The three dimensions are:</p> <ol style="list-style-type: none"> 1) Scientific discipline (water quality, hydrology, biology, etc.) 2) District organizational unit (department, division, section, etc.) 3) Database management system - the District's Hydrometeorological database (DBHYDRO), Ecological Data Management System (EDMS), Everglades Research Database – Production (ERDP, etc.)
Data Source(s):	Enterprise Scientific Data Management Policy and Procedures Annual Report
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Complete development and implementation of Scientific Data Management Procedures and establish data governance system.
Why Success Indicator is important:	<p>This indicator tracks progress of consistent implementation of Enterprise Scientific Data Management Policy and Procedures to increase scientific data credibility, efficiency or resource utilization, data accessibility, ease of use and increased potential for secondary usage.</p> <p>The concept of an Enterprise Scientific Data Management Program has been endorsed by the District's Data Management Sponsors Group to set data policy, standard processes and procedures, coordinate activities of data stewards, and work with the District's Information Technology Department and user departments to map out comprehensive data management strategic and tactical plans. This will ensure a consistent treatment of scientific data across the agency to improve data quality, accountability, and accessibility. The District's Governing Board adopted the Scientific Data Management Policy in October 2007.</p>
Example:	Out of 560 specific accountabilities that were identified as of end of FY08, 453 are fulfilled
Target(s):	All Enterprise Scientific Data Management Procedures are adopted and implemented agency-wide by 2010
Target definition source:	District Policies and Procedures
Subject matter expert(s):	Brian Turcotte

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Success Indicator:	8) All data gaps identified in Sulfur Action Plan filled and Sulfur White Paper management questions addressed
Definition:	<p>Assuring all data sampling events are executed and all hypotheses are addressed for each Sulfur Action Plan project</p> <p>Data Gaps and Management Questions <u>STAWCA Internal Eutrophication Study</u> 1) Determine effects of elevated water column sulfate levels on microbial respiration and phosphorous release, using soils collected from un-impacted and impacted wetlands (with respect to both phosphorus and sulfur in South Florida 2) Evaluate plant toxicity and phosphorus cycling effects for various water, vegetation, and soil types 3) Assess spatial and temporal variations in sediment porewater phosphorus and sulfur chemistry, and effects on wetland vegetation</p> <p><u>Large-Scale Sulfur Mass Balance</u> 4) Determine the mass exchange of total sulfur between the four main land-use areas (Everglades Agricultural Area, Lake Okeechobee, Water Conservation Areas, the eastern shore urban area in South Florida) and how exchanges vary annually by dry and wet season 5) Determine the approximate percent sulfur loss/gain from physical and biogeochemical processes 6) Evaluate the sulfur retention/source characteristics of the STAs 7) Evaluate how exchanges vary over three separate years 2004 (a high precipitation year), 2007 (a low precipitation year), and 2006 (an intermediate scenario) 8) Investigate potential influence of all sulfur sources; for example, cattle grazing areas, suburban, and urban areas that practice fertilizer application, and areas with intense animal operations</p> <p><u>Mercury (Hg)/Sulfur Biogeochemistry Study</u> 9) Compare and assess potential differences in surface water and porewater analytes and biological community structure (flora and fauna characteristics) between areas that have high and low fish tissue total mercury levels in an effort to determine the cause of persistent mercury hot spots for fish 10) Provide investigation into the progressive increase (since the mid-1990s) of total mercury in largemouth bass in the Holey Land Wildlife Management Area by assessing historical trends in important surface water and porewater analytes</p> <p><u>Small-Scale Sulfur Mass Balance</u> 11) Determine water column-sediment sulfur fluxes 12) Determine reaction/process rates of sulfide production, sulfide oxidation, and plant uptake 13) Determine adsorption-desorption dynamics of sulfur species and what factors impact adsorption 14) Determine vertical transects levels of sulfur in sediment 15) Determine hydrogen sulfide air-water surface exchange</p>
Data Source(s):	Evaluations of data collected; technical reports; external evaluations at annual technical workshops
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year

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Aligned Strategy:	Coordinate and manage sulfur-related studies and data collection collaboratively with stakeholder groups
Why Success Indicator is important:	South Florida scientists and stakeholders have emphasized the need to investigate if elevated sulfur levels in the Environmental Protection Area are causing enhanced phosphorous liberation, mercury methylation, and plant toxicity impacts
Example:	Fifty percent of all data sampling events are executed and analytical results are available in the DBHYDRO database by the end of FY2009 for the Regional Sulfur Mass Balance Study
Target(s):	<ul style="list-style-type: none"> • Completion of 100% of all sample collection events for all projects under the Sulfur Action Plan by the end of FY2012 • Completion of technical papers documenting that management questions posed in the Sulfur Action Plan have been answered by the end of FY2014
Target definition source:	Sulfur White Paper (Sulfur as a Regional Water Quality Concern in South Florida in the 2008 South Florida Environmental Report – Volume I, Appendix 3B-2)
Subject matter expert(s):	Mark Gabriel, Garth Redfield, Julianne LaRock