Lake Okeechobee

Success Indicator:	1) Meet the Total Maximum Daily Load target of 140 metric tons phosphorus load by 2015
Definition:	The Total Maximum Daily Load (TMDL) is a long-term (five-year) rolling average of 140 metric tons (mt) of total phosphorus (TP) developed by the Florida Department of Environmental Protection (FDEP) and state-mandated to be met by 2015
Data Source(s):	Annual South Florida Environmental Report (SFER)
Reporting Period:	Water Year (May 1–April 30)
Reporting Frequency:	Annually on March 1
Aligned Strategy:	Implement the source control programs under the Northern Everglades and Estuaries Protection legislation and regulatory programs for Environmental Resource Permit and Works of the District
Why Success Indicator Is Important:	The South Florida Water Management District (SFWMD or District) is mandated by the 2000 Lake Okeechobee Protection Act and the 2007 Northern Everglades and Estuaries Protection Program legislation to achieve the TMDL for Lake Okeechobee. The Lake Okeechobee Works of the District Regulatory Program is an ongoing, performance-based phosphorus source control program that supports the Lake Okeechobee Protection Plan. Achieving targets at the source in the Lake Okeechobee Watershed is critical to optimizing downstream water quality and the overall success of achieving the lake's TMDL. A watershed-based, phased, comprehensive, and innovative protection program has been designed to reduce TP loads and implement long-term solutions based on the lake's TMDL.
Examples:	**Water Year** **Load (mt)*** 2004 555 2005 967 2006 819 2007 202 2008 246 * includes atmospheric deposition of 35 mt
Target(s):	TMDL to Lake Okeechobee of 140 mt TP load by 2015
Target definition source:	Lake Okeechobee Protection Plan [Section 373.4595, Florida Statutes (F.S.)], Northern Everglades Technical Plan, Chapter 40E-61, Florida Administrative Code
Subject matter expert(s):	Susan Gray, Pam Wade Sievers, Mark Long

Lake Okeechobee

Success Indicator:	2) Construct additional water storage within Lake Okeechobee Watershed ranging between 900,000 and 1.3 million acre feet.
Definition:	Cumulative volume in acre-feet (ac-ft) of additional water storage within the Lake Okeechobee Watershed as of the end of the Fiscal Year (FY) (October 1–September 30), created through multiagency and program efforts.
Data Source(s):	Lake Okeechobee Watershed Construction Project Phase II Technical Plan (LOP2TP)
Reporting Period:	Fiscal Year (FY) (October 1–September 30)
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Achieve through a phased implementation of the storage and water quality treatments features as identified in the Phase II Lake Okeechobee Watershed Protection Plan.
Why Success Indicator Is Important:	Additional water storage will provide for a healthier and well-balanced Lake Okeechobee ecosystem by moderating lake levels and reducing damaging discharges to its downstream coastal estuaries, the Caloosahatchee River and St. Lucie River estuaries. Recent state legislation (Section 373.4595, F.S.) requires the SFWMD in collaboration with the coordinating agencies, to develop and implement the LOP2TP, as part of the Northern Everglades initiative. In order to protect and restore surface water resources, the comprehensive program addresses reducing pollutant loadings, restoring natural hydrology, and complying with applicable state water quality standards. Lake Okeechobee Watershed Construction Project Phase II Technical Plan was completed and submitted to the Florida legislature on February 1, 2008. The plan identifies construction projects, along with agricultural and urban practices, needed to achieve water quality targets for the lake. In addition, it includes other projects for increasing water storage north of Lake Okeechobee to achieve healthier lake levels and reduce harmful discharges to the Caloosahatchee and St Lucie estuaries.
Example:	39,203 cumulative ac-ft of water storage capacity were made available through the end of FY2009
Target(s):	Total additional water storage of between 900,000 and 1.3 million ac-ft
Target definition source:	LOP2TP
Subject matter expert(s):	Temperince Morgan, Armando Ramirez

Lake Okeechobee

Success Indicator:	3) Increase public, private and tribal water storage to 450,000 acre-feet by 2013
Definition:	Cumulative water storage volume in acre-feet since the initiation of the Lake Okeechobee and Estuary Recovery Program in FY2006. Alternative Water Storage efforts have been incorporated into Northern Everglades and Estuary Protection Program. Storage and disposal of storm water on public, private, and tribal lands through multiagency and program efforts to decrease the harmful high lake stages and associated regulatory releases to coastal estuaries
Data Source(s):	Lake Okeechobee Protection Plan, Caloosahatchee River Watershed Protection Plan, St. Lucie River Watershed Protection Plan, and LOP2TP.
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Continue to evaluate and implement the most cost-effective alternate water storage projects on public and private lands
Why Success Indicator Is Important:	Regional plans provide strategies to increase the amount of storm water on the landscape, thereby decreasing high lake levels and nutrient loading to natural systems. Alternate water storage/disposal on public, private, and tribal lands is one component of these implementation strategies, and water storage is accomplished in a manner compatible with the existing landscape. New potential projects are continuing to be assessed to develop cost-effective agreements. Projects are being implemented according to planned schedules and budgets.
Example:	Approximately 127,000 cumulative ac-ft of storage capacity were made available through the end of FY2009
Target(s):	Total of 450,000 ac-ft by 2013 (plan is to extend original target of 2013 to 2015)
Target definition source:	Caloosahatchee River Watershed Protection Plan, St. Lucie River Watershed Protection Plan, , and LOP2TP
Subject matter expert(s):	Benita Whalen, Kelly Cranford, Gary Ritter

Lake Okeechobee

Success Indicator:	4) Maintain Lake Okeechobee level in the desired range of 12.5 to 15.5 feet (NGVD)
Definition:	Maintain Lake Okeechobee surface elevation between 12.5 and 15.5 feet (ft) National Geodetic Vertical Datum (NGVD), based on the new interim regulation schedule, LORS2008, This stage envelope has been selected based on public health and safety considerations associated with the integrity of the Herbert Hoover Dike, and to best balance and meet the many resource needs served by Lake Okeechobee
Data Source(s):	LOWPP
Reporting Period:	Fiscal Year
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Strive for optimal lake levels in conjunction with U.S. Army Corps of Engineers during the weekly manager's operational meetings.
Why Success Indicator Is Important:	Lake Okeechobee surface elevations within the prescribed range provide for a healthier, well-balanced Lake Okeechobee ecosystem by moderating lake levels. High lake levels tend to benefit water supply, but may increase the risk to public health and safety, and can harm the ecological health of the lake and may adversely affect estuarine systems receiving lake discharges. Lower lake schedules may reduce water supply potential. The timing and magnitude of water releases is important for preserving flood protection of the region, and also for protecting the natural habitats of the downstream estuaries. The current interim Lake Okeechobee Regulation Schedule (LORS) represents the best operational compromise for public health and safety as it pertains to the Lake Okeechobee Regulation Schedule and the Herbert Hoover Dike. The U.S. Army Corps of Engineers (USACE) expects to operate under LORS until the earlier of (1) implementation of a new LORS as a component of the system-side operating plan to accommodate the CERP and the expedited projects, or (2) completion of Herbert Hoover Dike seepage berm construction or equivalent dike repairs for reaches 1, 2, and 3. In balancing the multiple project purposes, the USACE will shift from the interim LORS to a new schedule with the intent to complete any necessary modifications or deviations concurrent with the completion of (1) or (2) above.
Example:	Lake Okeechobee surface elevation ranges for FY2008 were from 9.5 ft to approximately 15 ft, with 330 days of the year below the desired range because of continuing drought conditions.
Target(s):	Lake Okeechobee surface elevation in the desired range of 12.5 to 15.5 ft (NGVD)
Target definition source:	LOWPP; Lake Okeechobee Regulation Schedule
Subject matter expert(s):	Kim O'Dell

Lake Okeechobee

Success Indicator:	5) Achieve an annual average of 40,000 acres of mixed submerged aquatic vegetation; at least 20,000 acres should be higher plants
Definition:	**Submerged aquatic vegetation (SAV):** Plants that grow below the surface of the water. **Emergent aquatic vegetation (EAV):** Plants that grow in water and extend their shoots at or above the surface of the water. **Acres of submerged/emergent aquatic vegetation:** Number of acres where SAV and EAV is found. **Mapping Survey:** Boat crews annually visit the midpoint of a 1 x 1 kilometer (km) grid of the area in Lake Okeechobee where SAV and EAV may be found. Three samples from a total of a 1 square meter (m^2) area of sediment are raked, and vegetation is visually inspected and recorded. The average of these three values is applied to the 1 x 1 km grid cell. Using Geographic Information Systems, the values for each 1 x 1 km grid cell are used to create a vegetation map of Lake Okeechobee.
Data Source(s):	Yearly mapping survey provided by District personnel
Reporting Period:	Annually, August–September
Reporting Frequency:	Annually, end of fiscal year
Aligned Strategy:	Assess Lake Okeechobee's ecological condition and program progress on an annual basis
Why Success Indicator Is Important:	SAV and EAV provide habitat and spawning grounds for fish. Aquatic vegetation also creates areas of low turbidity, good water quality, and habitat for waterfowl. In years with large SAV coverage, algal blooms are less frequent and fish recruitment is higher.
Example:	In the late 1990s, SAV coverage was low and fish recruitment was also low due to very high water levels in Lake Okeechobee. Following the 2000–2001 drought, SAV recovered and fish recruitment was much higher in 2002 and 2003.
Target(s):	40,000 acres of SAV and 20,000 acres of emergent vegetation
Target definition source:	CERP Lake Okeechobee Vegetation Mosaic Performance Measure
Subject matter expert(s):	Therese East, Andy Rodusky, Paul McCormick

Lake Okeechobee

Success Indicator:	6) Control exotic species to maintenance levels or greater
Definition:	Maintenance level is less than 10,000 acres of coverage by exotic emergent vegetation species of Lake Okeechobee's 100,000 acre marsh
Data Source(s):	Prepared applicator field report and vegetation distribution maps
Reporting Period:	Calendar Year
Reporting Frequency:	Annually, end of Calendar Year
Aligned Strategy:	Control exotic species to maintenance levels
Why Success Indicator Is Important:	Annual treatment of exotic species is needed to protect native habitat and allow desirable vegetation to establish in previously impacted areas. The loss of desirable native habitat negatively affects wading birds, fish, and other wildlife. Prior to active vegetation management, melaleuca (*Melaleuca quinquenervia*) and torpedograss (*Panicum repens*) each previously had displaced more than 20,000 acres of native vegetation in the marsh. Following years of vegetation management work, melaleuca has been brought under maintenance control and torpedograss now covers less than 12,000 acres. Native SAV, spikerush (*Eleocharis* spp.), and other desirable emergent vegetation have also been displaced by cattail (*Typha* spp.) in Moonshine Bay, South Bay, and the northwest region of the marsh. Therefore, cattail treatments are necessary to maintain open areas that can be utilized by fish, wading birds, waterfowl, and other wildlife.
Example:	Exotic species level at end of FY2008 = 12,035 acres Total area of Lake Okeechobee marsh = 107,000 acres Exotic species coverage = 11%
Target(s):	Less than 10,000 acres of exotic emergent vegetation coverage in Lake Okeechobee's 100,000-acre marsh.
Target definition source:	Lake Okeechobee Vegetation Map
Subject matter expert(s):	Chuck Hanlon, Francois Laroche, Mike Bodle