

# **LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES**



## **OFFICE OF FISHERIES INLAND FISHERIES SECTION**

### **PART VI -A WATERBODY MANAGEMENT PLAN SERIES**

#### **VERNON LAKE**

#### **LAKE HISTORY & MANAGEMENT ISSUES**

# **CHRONOLOGY**

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# LAKE HISTORY

## GENERAL INFORMATION

### Parish/ location:

Vernon Lake is located 5 miles west of Leesville, in western Vernon Parish, situated in west-central Louisiana. The dam and spillway are located 5 miles north of LA Hwy 8 in Sections 1 & 2, T2N-R10W.

### Date Lake formed:

Vernon Lake was formed in 1963 as a result of Act 277 of the 1948 Legislature which established the Anacoco Prairie Game and Fish Preserve and setting aside some 5,379 acres for the construction of recreational waters and lands.

### Impoundment:

Vernon Lake was created by the impounding of Anacoco Creek with an earthen dam some 4,911 feet in length with a 16' crown at elevation 257.0 mean sea level (MSL). The embankment is constructed of a homogenous earth fill with stone rip-rap shore protection. Maximum embank height is approximately 43 feet with landside slopes of 3:1 and 30:1. Tributaries include the east and west forks of Anacoco Creek. Purpose: water supply.

### Ownership:

The State of Louisiana owns the water bottom and the LA Department of Wildlife & Fisheries manages the fish and wildlife resources. The Department of Transportation and Development (DOTD) have authority and maintenance over the levees and associated structures as per Act 270 (see below).

### Size (surface acres):

4,200 acres (56,700 acre feet storage); maximum capacity: 99,473 acre-feet.

### Watershed:

The watershed comprises 112 square miles (71,680 acres) of area. The watershed to lake/ratio is 17:1. Watershed characteristics: Commercial pineland forest, upland hardwood, and pasture. Soils are acidic, well drained, infertile sandy loams and clays. Lake waters are generally soft as alkalinity and total hardness are low (mean = 14 mg/l) and pH is slightly acidic (mean 6.4). The watershed is an eastern tributary of the Sabine River basin, boundary waters shared with the State of Texas.

### Pool stage:

245.0 MSL at spillway crest; Tailwater elevation 206.0 MSL

### Drawdown (outlet) structure description:

Under ideal conditions, the Lake can be drawn down about 4" per day with the gates opened to maximum height.

Gate size – 6 foot x 6 foot

Number of gates – 2; dual gates placed in line, one in front of the other

Construction – reinforced concrete control structure

Condition – Good – refurbished in 2009  
Flow rate – draw down 4”/day under ideal conditions

**Spillway:**

Spillway location – the spillway is located on the eastern end of Vernon dam at the spillway park.

Spillway crest length – 300’ at 245.0’ MSL

Condition – Good to fair – refurbished joint compound in 2009

Flow rate – present spillway design flood – 29,100 cubic feet per second

Who controls:

Louisiana Department of Transportation and Development is responsible for the maintenance and operation of 19 reservoir embankments, including Vernon Lake, to maintain their integrity and to prevent any breach or damage to the existing facilities as per Act 270 of 1984. DOTD is not responsible for lake management. Any request for opening a lake must be directed to DOTD in writing from the Secretary of the Department of Wildlife and Fisheries. Verbal request are not to be accepted. The letter from Wildlife and Fisheries is to indicate the date for gate opening and the rate of drawdown desired for wildlife or lake management purposes.

**LAKE AUTHORITY**

Act 858 of the 1981 Legislature abolished some 19 special game and fish commissions including the Anacoco Prairie Game and Fish Commission which governed Vernon Lake. Authorities for lakes & structures were transferred to the Louisiana Department of Wildlife & Fisheries. However, parish government under state law can select/appoint a panel of interested/concerned citizens to serve on committees in an advisory capacity to the jury. This process was utilized and the Vernon Parish Game & Fish Commission was created to fill that role with respect to fish & wildlife issues in the Parish.

Vernon Parish Game and Fish Commission

Vernon Parish Game and Fish Commission

Jason Nolde, Chairman

C/O Vernon Parish Police Jury

P.O. Box 1548

Leesville, LA 71446

Authorization

Eleven members are selected by the Police Jury to serve at the leisure of the Police Jury in an advisory capacity only; current civilian members include Arno Arpke, Sam Fertitta Jr., Jason Nolde, Mark Koury, Jody Patterson (Secretary), Randy Bennett, Paul Kayama, Tim Goodwin, Scotty Goins, and Jury members Mike Kay, and Melvin Haymon.

## **ACCESS**

### Boat Ramps

There are eight boat ramps available for public use on Vernon Lake. Five are publicly owned and maintained by parish authorities. Two are privately owned and require launch fees. One is privately owned and requires annual membership for ramp privileges. (Appendix I - Lake Map with boat launches and piers).

### Boat Lanes/Channels

There are currently more than 12 miles of improved, marked boat lanes on Vernon Lake (Appendix I).

### Boat docks/wharves:

There are currently 4 boat docks associated with public boat ramps (Appendix I); one on the east side (Spillway Park landing) and three on the west side of the lake (Hickory Ridge and Bivens landings). There are numerous private docks surrounding the shoreline.

### Piers:

There are two public fishing piers located on the east side of Vernon Lake where it is crossed by US Hwy 171 at the east fork of Anacoco Creek. The north and south spans of the old US Hwy 171 Bridge were left standing and serve as excellent public fishing piers. In 2009, a fishing pier was constructed on the shoreline of Spillway Park north of the boat ramp. There are also numerous private piers and boathouses around the lake.

### State/Federal facilities:

There are currently no state or federally owned facilities on Vernon Lake.

### Reefs:

There are currently no state-owned/operated artificial reefs on Vernon Lake.

## **SHORELINE DEVELOPMENT**

### State/National Parks:

There are currently no state or federally owned parks on Vernon Lake.

### Shoreline Development by Landowners:

Approximately 40% of the shoreline is developed with homes and camps.

## **PHYSICAL DESCRIPTION**

### Shoreline length:

There are 49 miles of shoreline around Vernon Lake.

Timber type:

Forests surrounding Vernon Lake consist primarily of commercial pine plantation and mixed upland pine/hardwood communities.

Average depth:

23 feet

Maximum depth:

53 feet

Natural seasonal water fluctuation:

0.5 – 2.0 feet

## **EVENTS / PROBLEMS**

The Construction of Vernon Lake:

With the construction of Vernon Lake in 1963, eight miles upstream of Anacoco Lake, the potential fertility of Anacoco was reduced substantially. When several Lakes are serially placed on a stream, the downstream Lakes suffer a reduction in biological communities as nutrients are assimilated in upstream Lakes (Yeager, 1993). While the Vernon Lake watershed is roughly half that of the Anacoco watershed, water levels within Vernon Lake are much more stable and productive leading to increased fisheries production.

The Construction of Vernon Lake Spillway Channel Stabilization Wall:

Vernon Lake was drawn down in 1985 to construct a retaining wall along the east side of the spillway channel to eliminate the bank cave-ins and scouring that was occurring to the berm area of the park and boat ramp. This modification has functioned as intended since installation.

Designation of Vernon Lake as a Quality Largemouth Bass Lake:

April 1, 1991 - Largemouth bass slot limit implemented as corrective measure to direct harvest to an abundant population of small fish (14-17" protected slot, 8 fish creel, 4 fish over slot allowed). Additionally, the Lake would receive Florida bass stockings on an annual basis to increase the likelihood an angler could catch a larger bass.

Wallop-Breaux Boat Lane Project:

A Department funded Wallop-Breaux project was awarded to the Vernon Parish Police Jury for the clearing and marking of 7.5 miles of boat lanes in Vernon Lake during 1995 (Appendix I).

Spillway Degradation 2008-2009:

Concrete joints on the spillway had degraded. The joints had begun to fail and spillway movement/damage was beginning to occur. To prevent washouts and additional damage, LA DOTD initiated a drawdown to conduct repairs.



### Removal of Quality Largemouth Bass Lake Designation

April 20, 2014: The 14 – 17 inch protective slot limit for bass was removed. From that date forward, statewide harvest regulations for black bass (10 per day creel and no minimum length limit) are in effect for Vernon Lake.

## MANAGEMENT ISSUES

### AQUATIC VEGETATION

In the early years of impoundment, Vernon Lake had light to moderate densities of submersed aquatic vegetation due to water clarity and depth. Coontail (*Ceratophyllum demersum*), fanwort (*Cabomba caroliniana*), *Egeria spp.*, *Potamogeton spp.*, and muskgrass (*Chara*) infestations were prevalent in the western and northern sections of the lake. The last drawdown to correct a vegetation infestation occurred in 1980 (Table 2). In 2013, in conjunction with the Anacoco Lake plant restoration effort, 3,000 eel grass (*Vallisneria americana*) rhizomes were planted in coves on the southern end of the lake (Appendix II). No plantings were made in the middle or upper portions of the lake as beneficial aquatic vegetation has increased naturally in those areas over the past six years. Monitoring of these plantings is ongoing through 2016.

#### Type map:

Vegetation type mapping is conducted on Vernon Lake in late summer/early fall on an annual basis. The 2013 type map documented no significant vegetation problems on the lake. Beneficial vegetation such as banana lily (*Nymphoides aquatica*), coontail (*Ceratophyllum demersum*), and variable leaf pondweed (*Potamogeton diversifolius*) were observed in greater abundance.

SEE APPENDIX III for recent type map and PART C for historical type map reports.

#### Biomass:

No vegetation biomass sampling has been conducted.

#### Treatment history by year available:

#### ***Biological:***

No biological control agents used to date in Vernon Lake.

**Chemical:**

Vernon Lake does not have a history of problematic vegetation. Chemical treatments are concentrated in shallow coves, often associated with home sites. Primary target species are primrose and alligator weed (Table1).

Table 1. Vernon Lake herbicide treatment history 2006-2015.

Year	Number of Treatments*	Acres Treated	Primary Vegetation Treated
2006	2	5.4	Common Salvinia
2010	1	10	Primrose, Alligator Weed, Knotweed
2011	1	22	Primrose, Water lily, Knotweed
2012	2	62	Primrose, Common Salvinia, Alligator Weed, Water Lily, Knotweed
2013	3	41	Primrose, Water Hyacinth, Alligator Weed
2014	2	66	Primrose, Alligator Weed
2015	5	195	Primrose, Alligator Weed

\*For reporting purposes, a treatment is defined as one crew working for one day.

**Physical:**

The most recent draw down conducted on Vernon Lake was in 2009 for spillway and dam maintenance. See Table 2 for full drawdown history.

## HISTORY OF REGULATIONS

Recreational:

The following statewide regulations were applied to Vernon Lake at impoundment in 1963.

Black Bass (Largemouth, spotted): 15 daily of any size

Buffalo Fish or their hybrids: No daily limit, no size restriction

Freshwater Drum (Gaspergou): No daily limit, no size restriction

Bowfin (Choupique, Grinnell): No daily limit, no size restriction

Channel Catfish: 11 inch min. total length limit (see Catfish below for possession limit)

Blue Catfish: 12 inch min. total length limit (see Catfish below for limit)

Flathead Catfish: 14 inch min. total length limit (see Catfish below for limit)

Catfish (Blue, Channel and Flathead): the possession limit for catfish caught on a recreational license shall be 100. The 100 fish may be a single species, or a combination of blue, channel or flathead catfish. In addition, an angler may possess a maximum of 25 undersize catfish or a single or combination of all 3 species.

Crappie: 50 daily per person

Yellow Bass: 50 daily per person

April 1, 1991 - Largemouth bass slot limit implemented as corrective measure to direct

harvest to an abundant population of small fish (14-17" protected slot, 8 fish creel, 4 fish over slot allowed)

April 20, 2014—Largemouth bass slot limit removed, and statewide 10 fish daily creel with no length restrictions implemented.

**Current Regulations:**

Statewide regulations are in effect for all fish species.

Recreational fishing regulations may be viewed at the link:

<http://www.wlf.louisiana.gov/fishing/regulations>

**Commercial:**

The use of gill nets, trammel nets, and hoop nets have been prohibited in Vernon Lake (as per Title 76 below) since 1978. Trotlines and slat traps are not prohibited and may be used to take legal commercial species within Anacoco Lake, Vernon Lake and Anacoco Creek between the two Lakes.

The statewide commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

**TITLE 76  
WILDLIFE AND FISHERIES  
PART VII. FISH AND OTHER AQUATIC LIFE**

**Chapter 1. Freshwater Sports and Commercial Fishing**

**103. Anacoco Lake, Lake Vernon and Anacoco Bayou**

A. Whereas, the chairman of the Anacoco-Prairie State Fish and Game Commission has requested commercial nets be prohibited in Lake Vernon, Anacoco Lake, and that portion of Anacoco Bayou between the lakes, all in Vernon Parish, and

Whereas, fish population samples taken by the district fisheries biologist indicate a very low population of commercial fish, and

Whereas, it is evident that there are no viable commercial fisheries due to the scarcity of these commercial species.

B. Therefore, be it resolved, the Louisiana Wildlife and Fisheries Commission hereby prohibits the use of fish nets (gill nets, trammel nets, hoop nets, fish seines) in Anacoco Lake, Lake Vernon and that portion of Anacoco Bayou between the two lakes, Vernon Parish, LA.

AUTHORITY NOTE: Promulgated in accordance with R.S. 56:22.

HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 4:57 (February 1978), amended LR 7:356 (July 1981), LR 12:843 (December 1986).

## DRAWDOWN HISTORY

Table 2. Vernon Lake, LA drawdown details 1980 - 2015.

<b>Drawdown Date</b>	Summer/fall 2009 – June 1 to Oct. 31
<b>Purpose</b>	DOTD repairs to structure, dam and spillway
<b>Success</b>	Good, however some spillway repairs have already begun to degrade
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	8 - 12'
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	DOTD
<b>Any Fish Kills</b>	None reported
<b>Drawdown Date</b>	Fall/winter 2006 – Oct. 1 to Nov. 17
<b>Purpose</b>	Inspect boat lanes and re-mark post hurricane Rita
<b>Success</b>	Good
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	2 to 4'
<b>Estimated % Exposed</b>	20%
<b>Who Operated Structure</b>	DOTD
<b>Any Fish Kills</b>	None reported
<b>Drawdown Date</b>	Fall/winter 1998/1999 – Sept. 15 – Jan. 15
<b>Purpose</b>	Re-mark boat lanes, property owner repairs
<b>Success</b>	Good
<b>Fishing Closure</b>	No

<b>Depth Below Pool</b>	8 – 10'
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	DOTD
<b>Any Fish Kills</b>	None reported
<b>Drawdown Date</b>	Fall/winter 1995-96 - Sept. 15 to Jan. 15
<b>Purpose</b>	Wallop-Breaux Project – cutting & marking 7.5 miles of boat lanes
<b>Success</b>	Good
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	8 – 10'
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	DOTD
<b>Any Fish Kills</b>	None reported
<b>Drawdown Date</b>	Summer/fall 1991 – June 1 to Oct. 31
<b>Purpose</b>	spillway apron and spillway wall repairs
<b>Success</b>	Good
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	8 – 10'
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	DOTD
<b>Any Fish Kills</b>	None reported
<b>Drawdown Date</b>	Summer/fall 1985 – Sept. 15 – Jan. 15
<b>Purpose</b>	Replace spillway retainer wall – LDWF project to prevent erosion

<b>Success</b>	Good
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	8 – 10’
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	LDWF
<b>Any Fish Kills</b>	None reported

<b>Drawdown Date</b>	Fall/winter 1980-81 – Sept. 15 to Jan. 15
<b>Purpose</b>	To control nuisance aquatic vegetation
<b>Success</b>	Good
<b>Fishing Closure</b>	No
<b>Depth Below Pool</b>	8 – 10’
<b>Estimated % Exposed</b>	50%
<b>Who Operated Structure</b>	LDWF
<b>Any Fish Kills</b>	None reported

## **FISH KILLS / DISEASE HISTORY**

### LMBV

Largemouth bass were sampled in Vernon Lake in 2002 for the presence of Largemouth Bass Virus. Seven of eleven largemouth bass (60%) tested positive for the LMBV virus. There have been no largemouth bass die-offs attributed to LMBV.

### Fish Kills

There have been two crappie die-offs on Lake Vernon during the 1990’s; one in 1997 and again in 1998. Both occurred during the month of May and were attributed to post spawn stress and some specimens were carrying symptoms of “red sore” disease. There were scattered reports of dead fish following Hurricane Rita in September of 2005.

## CONTAMINANTS / POLLUTION

A fish consumption advisory was issued August 5, 1997 and revised May 29, 2003. The advisory is available at the following link:

<http://new.dhh.louisiana.gov/index.cfm/page/902>

The current advisory reads as: Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass, flathead catfish, redear or bluegill sunfish combined from the advisory area. Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass, flathead catfish, redear or bluegill sunfish combined from the advisory area. Unless the fish species is specifically addressed in the details of the advisory, please limit consumption of all species in an advisory area to FOUR MEALS PER MONTH.

### Water quality:

Vernon Lake has three designated uses as per LDEQ: primary contact recreation (swimming), secondary contact recreation (boating), and fish and wildlife propagation. The 2012 LDEQ Water Quality Integrated Report indicates the lake is fully supporting primary and secondary contact recreation; however fish and wildlife propagation is not fully supported due to mercury contamination in fish (see above).

The complete report can be viewed on LDEQ's website at:

<http://www.deq.louisiana.gov/portal/DIVISIONS/WaterPermits/WaterQualityStandardsAssessment/WaterQualityInventorySection305b/2012IntegratedReport.aspx>

### Water level fluctuation:

In typical years, the Vernon Lake water level may range from 0.5' to 2.0' above spillway crest height.

## BIOLOGICAL

### Fish Samples

Gear: In the years 1966 – 1990, biomass (rotenone) surveys were the preferred method of sampling fish populations in Vernon Lake. The standardized methodologies of electrofishing, gillnets, seines, lead nets, and creel surveys have been employed to assess fisheries population attributes from 1990 – 2014 (Table 3).

Rotenone (standing crop estimates) were conducted in: 1967, 1968, 1970, 1974 - 1976, 1982, 1984, 1988, 1990

Table 3 Historical and scheduled Inland Fisheries sampling of Vernon Lake, LA from 1989 – 2018.

HISTORICAL, RECENT & FUTURE SAMPLING RESULTS/PLANS	
1989	Electrofishing 4-15 minute samples (spring and fall) Creel Survey
1990	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 6 samples each, 2.5, 3.0, 3.5, & 4.0 Rotenone 4-one acre sets Shoreline seining – 5 hauls Water quality sampling
1991	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 6 samples each, 2.5, 3.0, 3.5, & 4.0 Shoreline seining – 5 hauls Water quality sampling
1992	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 6 samples each, 2.5, 3.0, 3.5, & 4.0 Shoreline seining – 5 hauls Water quality sampling
1993	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 6 samples each, 2.5, 3.0, 3.5, & 4.0 Shoreline seining – 5 hauls Water quality sampling
1994	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 6 samples each, 2.5, 3.0, 3.5, & 4.0 Shoreline seining – 5 hauls Water quality sampling



1995	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p> <p>Creel Survey</p>
1996	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p>
1997	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p>
1998	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p> <p>Creel Survey</p>
1999	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p>
2000	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p>

2001	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p>
2002	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p>
2003	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p>
2004	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p>
2005	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Creel Survey</p>
2006	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Water quality sampling</p>
2007	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Lead Nets – 6 stations</p> <p>Water quality sampling</p>

2008	<p>Aquatic Type Map</p> <p>Electrofishing 4-15 minute samples (spring and fall)</p> <p>Gill Nets - 6 samples each, 2.5, 3.0, 3.5, &amp; 4.0</p> <p>Shoreline seining – 5 hauls</p> <p>Lead Nets – 6 stations</p> <p>Water quality sampling</p>
2009	<p>Aquatic Type Map</p> <p>Electrofishing 6-15 minute samples (spring)</p> <p>Lead Nets – 6 stations</p> <p>Water quality sampling</p>
2010	<p>Aquatic Type Map</p> <p>Electrofishing 6-15 minute samples (spring and fall)</p> <p>Age &amp; Growth: standardized LMB Population Assessment project</p> <p>Shoreline seining – 5 hauls</p> <p>Lead Nets – 6 stations</p> <p>Water quality sampling</p> <p>Creel Survey</p>
2011	<p>Aquatic Type Map</p> <p>Electrofishing 6-15 minute samples (spring)</p> <p>Age &amp; Growth: standardized LMB Population Assessment project</p> <p>Lead Nets – 6 stations</p> <p>Water quality sampling</p>
2012	<p>Aquatic Type Map</p> <p>Electrofishing 6-15 minute samples (spring and fall)</p> <p>Age &amp; Growth: standardized LMB &amp; Crappie Population Assessment project</p> <p>Water quality sampling</p>
2013	<p>Aquatic Type Map</p> <p>Electrofishing 6-15 minute samples (spring and fall)</p> <p>Age &amp; Growth: standardized Crappie Population Assessment project</p> <p>Water quality sampling</p>

2014	Aquatic Type Map Electrofishing 6-15 minute samples (spring and fall) Age & Growth: standardized Crappie Population Assessment project Water quality sampling Creel Survey
2015	Aquatic Type Map Electrofishing 6-15 minute samples (spring and fall) Water quality sampling
2016	Aquatic Type Map No Fisheries Sampling Scheduled
2017	Aquatic Type Map No Fisheries Sampling Scheduled
2018	Aquatic Type Map Electrofishing 6-15 minute samples (spring and fall) Begin 3 year Largemouth Bass Population Assessment Water quality sampling

### Age and Growth

Age and growth of largemouth bass was determined by otolith analysis on bass collected in 1989, 1990, 1995, 2004, 2007 and 2010 - 2012. From 1989-2007, growth was rapid and above the statewide average with little difference between years until age 5. Analyses of growth information in 2007 indicated that bass grew into the protected slot (reached 14" TL) at age 3 and out of the protected slot (exceeded 17") by age 5. While a few bass were determined to be age 7 and 8, most were ages 2 to 5. From 2010 through 2012, age and growth collections were made as part of the statewide regulation assessment program, see Part B for analysis.

### Genetic Analysis

Genetic analyses have been conducted on largemouth bass over the years to determine the percentage of Florida genome present in Vernon Lake. In a 30 bass sample collected in the spring of 1989, two Florida bass and five Florida X Northern hybrids were found. This was the first such analysis on Vernon Lake, and the Department had not stocked the Florida strain into the lake. Largemouth bass were again genetically analyzed in 1995. A sample of 33 bass showed 88% native (or northern), nine percent hybrids and three percent were found to be the pure Florida Bass strain. In 2004 after the introduction of some 2,117,223 fingerlings and adults into Vernon Lake, Florida genome influence had risen to 47% and many large bass were being reported by anglers. While only eight bass were tested in 2005, the Florida

genome was expressed in 50% of the sample. This sample consisted of larger fish collected with gill nets, and is not representative of the entire population. The most recent genetic analysis (2012) showed a 33.9% total FLMB influence in the population (Table 4).

Table 4. Genetic analysis for Vernon Lake, LA largemouth bass populations 2008 – 2012.

VERNON LAKE GENETICS					
Year	Number	Northern	Florida	Hybrid	Florida Influence
2008	34	82%	0%	18%	18%
2010	95	74%	3%	23%	26%
2011	118	62%	13.5%	24.5%	38%
2012	124	66.1%	11.3%	22.6%	33.9%

#### Largemouth Bass Feeding Habits

Stomach analyses of 92 bass collected in the spring of 1990 indicated that over 52% contained no food items. Of the 48% that had food contents, half (24%) contained unidentified fish remains. Stomachs were also found to contain an assortment of small fishes, insects and arthropods.

#### Creel Survey

Recreational angler surveys were conducted over a 12-month period in 1989, 1995, 1998, 2005, 2010, and 2014 to determine angler effort and catch rates. Roving surveys to count anglers were made at random during each scheduled interview period to allow expansion of data to estimate total angler attributes. The surveys included boat and shore anglers at major access points and did not assess camp owners unless they utilized the access points. The 2010 creel survey estimated a total of 4,118 anglers caught 4,213 largemouth bass, of which 586 (14%) were harvested and 3,627 (86%) were released. Detailed analyses of recreational angler surveys are discussed further in Part B of the management plan.

#### Water Quality

Water quality parameters (pH, Temperature, dissolved oxygen, conductivity and transparency) are measured and recorded in conjunction with fisheries samples. All measured values were indicative of good water quality, with the exception of 2007 and 2008, where increases in turbidity were observed (27” and 20” respectively).

#### Stocking:

LDWF Office of Fisheries stocking policy was updated in 2013. LDWF now stocks larger FLMB fingerlings (>2”) at correspondingly lower rates (20/acre; LDWF Stocking Policy 2013). This change is reflected in the 2013 Vernon Lake stocking (Table 5).

Table 5. Vernon Lake, LA fish stocking from 1977 – 2015.

VERNON LAKE FISH STOCKING				
Year	FLMB	Channel Catfish	Blue Catfish	Golden Shiner
1977		55,700		
1982			7,500	
1984			16,528	
1991	106,000			
1992	339,108			
1993	337,273			
1994	132,500			300,000
1995	173,155			
1996	25,649	20,755		
1997	68,440			
1998	37,343			
1999	200,290			
2000	99,069			
2001	91,000			
2002	111,257			
2003	100,241			
2004	99,644			
2005	96,132			
2006	100,000			
2007	100,820			
2008	100,000			
2009	0			
2010	201,953			
2011	100,647			
2012	103,874			
2013	21,019			
2014	42,032			
2015	42,153			
<b>TOTAL</b>	<b>2,829,599</b>	<b>76,455</b>	<b>24,028</b>	<b>300,000</b>

Species profile

A checklist of fishes collected or historically known to occur in the Anacoco Creek drainage, Vernon Parish, Louisiana is found in Table 6 below. However, species composition has shifted from fishes adapted to a lotic environment to those better adapted to a lentic situation based upon standardized samples taken from 1990 to 2015.

Table 6. Family, scientific and common names of fishes collected or known to occur in the Anacoco Creek drainage, LA.

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Petromyzontidae - lampreys {2}  
*Ichthyomyzon castaneus* Girard, 1858 - chestnut lamprey  
*Ichthyomyzon gagei* Hubbs and Trautman, 1937 - southern brook lamprey

Polyodontidae - paddlefishes {1}  
*Polyodon spathula* (Walbaum, 1792) - paddlefish

Lepisosteidae - gars {2}  
*Lepisosteus oculatus* Winchell, 1864 - spotted gar  
*Lepisosteus osseus* (Linnaeus, 1758) - longnose gar

Amiidae - bowfin {1}  
*Amia calva* Linnaeus, 1766 - bowfin

Clupeidae - herrings {2}  
*Dorosoma cepedianum* (Lesueur, 1818) - gizzard shad  
*Dorosoma petenense* (Günther, 1867) - threadfin shad

Cyprinidae - carps and minnows {15}  
*Cyprinus carpio* Linnaeus, 1758 - common carp [Introduced]  
*Cyprinella lutrensis* (Baird and Girard, 1853) - red shiner  
*Cyprinella venusta* Girard, 1856 - blacktail shiner  
*Hybognathus hayi* Jordan, 1885 - cypress minnow\*  
*Hybognathus nuchalis* Agassiz, 1855 - Mississippi silvery shiner  
*Hybopsis amnis* (Hubbs, and Greene, 1951) - pallid shiner  
*Lythrurus fumeus* (Evermann, 1892) - ribbon shiner  
*Lythrurus umbratilis* (Girard, 1856) - redfin shiner  
*Notemigonus crysoleucas* (Mitchill, 1814) - golden shiner  
*Notropis atrocaudalis* Evermann, 1892 - blackspot shiner\*  
*Notropis sabiniae* Jordan and Gilbert, 1886 - Sabine shiner  
*Notropis texanus* (Girard, 1856) - weed shiner  
*Notropis volucellus* (Cope, 1865) - mimic shiner  
*Opsopoeodus emiliae* Hay, 1881 - pugnose minnow  
*Pimephales vigilax* (Baird and Girard, 1853) bullhead minnow  
*Phenacobius mirabilis* (Girard, 1856) suckermouth minnow

Catostomidae - suckers {5}  
*Erimyzon claviformis* (Girard, 1856) - western creek chubsucker\*  
[See Bailey *et al.* 2005]  
*Erimyzon sucetta* (Lacépède, 1803) - lake chubsucker\*  
*Ictiobus bubalus* (Rafinesque, 1818) - smallmouth buffalo  
*Minytrema melanops* (Rafinesque, 1820) - spotted sucker  
*Moxostoma poecilurum* Jordan, 1877 - blacktail redhorse

Ictaluridae - North American catfishes {7}  
*Ameiurus melas* (Rafinesque, 1820) - black bullhead  
*Ameiurus natalis* (Lesueur, 1819) - yellow bullhead  
*Ictalurus furcatus* (Lesueur, 1840) - blue catfish  
*Ictalurus punctatus* (Rafinesque, 1818) - channel catfish

*Noturus gyrinus* (Mitchill, 1817) - tadpole madtom  
*Noturus nocturnus* Jordan and Gilbert, 1886 - freckled madtom  
*Pylodictis olivaris* (Rafinesque, 1818) - flathead catfish  
 Esocidae - pikes {1}  
     *Esox americanus* Gmelin, 1788 - grass pickerel  
 Aphredoderidae - pirate perch {1}  
     *Aphredoderus sayanus* (Gilliams, 1824) - pirate perch  
 Atherinopsidae - New World silversides {1}  
     *Labidesthes sicculus* (Cope, 1865) - brook silverside  
 Fundulidae - topminnows {2}  
     *Fundulus notatus* (Rafinesque, 1820) - blackstripe topminnow  
     *Fundulus olivaceus* (Storer, 1845) - blackspotted topminnow  
 Poeciliidae - livebearers {3}  
     *Gambusia affinis* (Baird and Girard, 1853) - western mosquitofish  
     *Heterandria formosa* Agassiz, 1855 - least killifish\* [Introduced?]  
     *Poecilia latipinna* (Lesueur, 1821) - sailfin molly  
 Cyprinodontidae - pupfishes {1}  
     *Cyprinodon variegatus* Lacépède, 1803 - sheepshead minnow  
 Moronidae - temperate basses {1}  
     *Morone mississippiensis* Jordan and Evermann, 1887 - yellow bass  
 Centrarchidae - sunfishes {13}  
     *Centrarchus macropterus* (Lacépède, 1801) - flier  
     *Lepomis cyanellus* Rafinesque, 1819 - green sunfish  
     *Lepomis gulosus* (Cuvier, 1829) - warmouth  
     *Lepomis humilis* (Girard, 1858) - orangespotted sunfish  
     *Lepomis macrochirus* Rafinesque, 1819 - bluegill  
     *Lepomis marginatus* (Holbrook, 1855) - dollar sunfish  
     *Lepomis megalotis* (Rafinesque, 1820) - longear sunfish  
     *Lepomis microlophus* (Gunther, 1859) - redear sunfish  
     *Lepomis miniatus* Jordan, 1877 - redspotted sunfish  
     *Lepomis symmetricus* Forbes, 1883 - bantam sunfish  
     *Micropterus salmoides* (Lacépède, 1802) - largemouth bass  
     *Micropterus punctulatus* (Rafinesque, 1819) - spotted bass  
     *Pomoxis annularis* Rafinesque, 1818 - white crappie  
     *Pomoxis nigromaculatus* (Lesueur, 1829) - black crappie  
 Percidae - perches {9}  
     *Ammocrypta vivax* Hay, 1882 - scaly sand darter  
     *Etheostoma chlorosomum* (Hay, 1880) - bluntnose darter  
     *Etheostoma collettei* Birdsong and Knapp, 1969 - creole darter  
     *Etheostoma gracile* (Girard, 1859) - slough darter  
     *Etheostoma histrio* Jordan and Gilbert, 1887 - harlequin darter  
     *Etheostoma proeliare* (Hay, 1880) - cypress darter  
     *Percina macrolepida* Stevenson, 1971 - bigscale logperch  
     *Percina maculata* (Girard, 1859) - blackside darter  
     *Percina sciera* (Swain, 1883) - dusky darter  
 Sciaenidae - drums and croakers {1}



*Aplodinotus grunniens* Rafinesque – Freshwater drum  
Elassomatidae - pygmy sunfish {1}  
*Elassoma zonatum* Jordan, 1877 - banded pygmy sunfish

Nomenclature and phylogenetic order follows Nelson, *et al.* 2004. Common and Scientific Names of Fishes from the United States, Canada, and Mexico, 6<sup>th</sup> Edition. American Fisheries Society Special Publication 29. 386 pp. Exceptions are noted.

Threatened/endangered/exotic species:

Bald eagles have been known to nest in the vicinity of Vernon Lake.

## **WATER USE**

Hunting:

There are approximately two dozen duck blinds scattered around Vernon Lake. These are by permit only through the Vernon Parish Police Jury.

Skiing:

Because of the many stumps in Vernon Lake, very little water skiing occurs on the lake.

Scuba Diving:

Very little diving occurs on Vernon Lake.

Swimming:

There is a public swimming area at the Spillway Park. The area is swim at your own risk with no life guards on duty.

Fishing & boat riding:

Both are very popular on Vernon Lake.

Irrigation:

There are no agricultural or municipal water withdrawals for the purpose of irrigation. Several private property owners have personal irrigation systems designed for yard and garden watering only.

### Literature Cited

Louisiana Department of Wildlife and Fisheries. 2013. Resource Enhancement Through Stocking, Office of Fisheries, LDWF, Baton Rouge, LA.

Yeager, B. L. 1993. Dams. Pages 57-113. *In* C. F. Bryan and D. A. Rutherford, editors. Impacts on warmwater streams: Guidelines for evaluation. Southern Division, American Fisheries Society, Little Rock, Arkansas

**APPENDIX I - LAKE MAP W/BOAT LAUNCHES, BOAT LANES, AND PIERS**



----- BOAT LANES; ▲ Public Piers; ▲ Boat Ramps

Ramp Name – counter clockwise from lower left	Coordinates	Ramp	Parking
Hickory Ridge Landing	31.175974 N -93.370693 W	Concrete	Dirt – 4 trailers
Spillway Park	31.178382 N -93.348227 W	Concrete	Asphalt – 25 trailers
Lake View Landing*	31.189036 N -93.346183 W	Concrete	Gravel – 10 trailers
Vernon Lake Park	31.194077 N -93.340764 W	Concrete	Dirt – 4 trailers
Thaxtons’ Landing**	31.222602 N -93.338816 W	Concrete	Dirt – 10 trailers
Twin Bridges Café**	31.239100 N -93.379300 W	Sand	Dirt-- 10 trailers
Bivens’ Landing	31.215955 N -93.371236 W	Concrete	Dirt – 10 trailers
Biven’s West	31.215955 N -93.371777 W	Gravel	Dirt – 6 trailers

\*Lakeview Lodge membership required for use of launch facilities

\*\*Privately owned, launch fee required

## APPENDIX II – RESTORATION PLAN FOR NATIVE PLANTS IN VERNON LAKE

### Restoration Plan for Native Aquatic Plants in Vernon Reservoir

The objective of these plantings will be to establish/restore beneficial, native, aquatic plants in both Anacoco and **Vernon Lakes**. This will consist of a multi-tiered approach with different plants combining effects and benefits to provide overall enhancement to fisheries habitat within the lakes. Plants will be divided between Anacoco and Vernon Lakes based on need, with the bulk of the plantings occurring on Anacoco Lake as per the 2012 LDWF drawdown plan.

<b>Plant</b>	<b>Quantity</b>	<b>Benefits</b>
Bullwhip ( <i>Scirpus californicus</i> )	3000	Shoreline protection, fisheries habitat
Fragrant water lily ( <i>Nymphaea odorata</i> )	7500	Break up wind action, bottom stabilization, fisheries habitat
Eel grass ( <i>Vallisneria americana</i> )	15000	Complex cover for fish (habitat), bottom stabilization
<b>Total:</b>	28500	

The Vernon Parish Police Jury will provide funds through the Vernon Parish Game and Fish Commission to purchase plants. Labor and installation will be provided jointly by Vernon Parish and LDWF.

#### Schedule:

Fall 2012: Prior to conclusion of 2012 drawdown, plant bullwhips around margins of the lake (accomplished).

Spring 2013: Purchase water lily and eel grass from Wildlife Nurseries Inc. Disperse pre-weighted plants into designated target areas (accomplished). Exclosures will be constructed on some plots to test for herbivory.

Summer 2013 through winter 2014: Plant establishment will be assessed quarterly.

## APPENDIX III – VEGETATIVE TYPE MAP

VERNON LAKE  
September 2013  
Robby Maxwell

Vernon Lake, in Vernon Parish, was surveyed for the presence of aquatic vegetation on September 17 and 18, 2013. On the first day of the survey, water clarity was 84 cm as measured by Secchi disk on the northeastern fork of the lake. On the second day of the survey, water clarity was 132 cm as measured by Secchi disk in Empire Cove on the southwestern end of the lake. Both readings were lower than last year's Secchi reading of 162 cm. Water levels were 1' below pool level at 244' MSL.

Mapped plant densities were designated as "Low," "Medium," or "High." Heaviest infestations were on the flats in the upper parts of the two northern forks of the lake, and in large northwestern coves. Coves in the southern half of the lake were generally only sparsely vegetated with aquatics. The most common species of concern in the lake were primrose (*Ludwigia* spp.) and American lotus (*Nelumbo lutea*), which were highest in the northern flats and northwestern coves. A species of concern that occurred more sporadically was common salvinia (*Salvinia minima*) in a cove and canal on the northwestern fork.

Other emergent species that were noted in varying densities, but are not considered to be of great concern, included banana lily (*Nymphoides aquatic*) found on shorelines throughout the lake, *Hydrolea* sp. found in shallow areas and shorelines throughout the lake, spatterdock (*Nuphar luteum*) and white water lily (*Nymphaea odorata*) on the central-western shoreline, and bulrush (*Schoenoplectus californicus*) and cattails (*Typha* spp.) were found sporadically throughout the southeastern shore.

Submerged aquatic vegetation was observed throughout the lake up to the 4' contour. Species observed include coontail (*Ceratophyllum demersum*) in the northern flats and a northwestern cove, variable leaf pondweed (*Potamogeton diversifolius*) noted in a northern and southwestern cove but likely found in other locations, and *Nitella* spp. and *Chara* spp. found throughout the lake with the highest densities in the northern flats and shallow coves throughout the lake.

Problem areas generally consist of shallow flats and coves that are filling in. A cove on the northwestern fork has perennial infestations of primrose (made worse by extremely shallow water) now has common salvinia in it. The large central-western cove is also extremely shallow, and has a large stand of American lotus and other emergent plants in it. We will also address these areas as conditions and water levels allow. At only 1' below pool, access to these areas is extremely limited.

Overall, the majority of the lake is relatively clear of nuisance vegetation, and we will focus efforts on the few areas that are an issue.

