

2013 Turkey Creek Lake Vegetation Control Plan LDWF, Inland Fisheries

1. Waterbody type – Impounded stream
2. Age and condition of control structure – Constructed in 1953; has several leaks in concrete spillway
3. Type of control structure – 48 inch culvert with slide gate control (Figures 1 and 2)

Figure 1. Turkey Creek Lake water control structure



Figure 2. Operating mechanism of Turkey Creek Lake water control structure.



Water level range (MSL) – The pool stage is set at 44.0' by the spillway (Figure 3) located at the southern end of the lake. The concrete spillway has a low crest width of 250 feet and a maximum discharge of 23,700 CFS

Figure 3. Turkey Creek Lake spillway.



4. Surface area - 3,845 acres at pool stage
5. Average depth – 6 feet
6. Watershed ratio – 27:1, watershed = 163 sq. mi.
7. Drawdown potential of structure – 9 feet
8. Waterbody Board or Lake Commission – The Turkey Creek Game and Fish Commission was abolished as a result of Louisiana RS 36: 610 and authority to manage fisheries was given to the Secretary of the Department of Wildlife and Fisheries. Franklin Parish Police Jury (FPPJ)
 - a. Creation / Nomination – Franklin Parish Police Jury see Appendix D
 - b. Primary contact information – Sam Wiggins, office ph. # 318-439-1380 (FPPJ Treasurer)
 - c. Procedure for spillway openings – must be agreed upon by both LDWF and FPPJ; request is then made to LA DOTD, who will supervise the operation of the gate. see Appendix C

DRAWDOWN HISTORY				
Date Opened	Date Closed	Purpose	Results	Issues
5/15/2010	1/2011	Primary-control G. salvinia Secondary-spillway repair and stump removal	-Effective in reducing total G. salvinia coverage but did not eliminate it from the system -several cracks were patched on the spillway -stumps were pounded into lake bottom south of Hwy. # 562 bridge for safer boating	Duck hunter access; numerous swampy areas holding G. Salvinia, fish kill

Significant Stakeholders

- Agricultural irrigation
- Homeowners
- Recreational users
- Franklin Parish Police Jury

Needs and Concerns of Stakeholders

- Agricultural – maintain sufficient water level during spring and summer for crop irrigation
- Homeowners – maintain water level near pool stage throughout year, localized irrigation, and treatment of nuisance aquatic vegetation
- Recreational users-maintain water level to allow access and treatment of nuisance aquatic vegetation
- F.P.P.J. – operate lakeside park and campground on south end of lake

Controversial Issues

-Drawdown of 2010: The drawdown was originally planned to reach 5 ft. below pool stage, but ultimately reached a level of 9 ft. below pool. An extensive fish kill occurred during the summer while the lake was at its lowest level. Verbal agreements were made between LDWF, DOTD, and FPPJ personnel to continue lowering the lake for the following reasons, respectively: further dewatering of the upper end of lake for drying and removal of salvinia, inspection and repairs to the water control structure, and stump removal near the parish park. The agreements were not documented or publicized sufficiently, causing some local residents

and anglers to question the decision, especially in 2011 when fishing was reported to be poor.

Aquatic Vegetation Status:

Coverage and Status of Plant Species as of Feb. 2013

- Water Hyacinth - 100 acres; scattered in clumps throughout both upper arms of the lake
- Giant Salvinia -300 acres; abundant in Big Brake area of eastern arm, with denser mats forming amongst other vegetation in northern end of arm. There is a small amount in the Little Brake area of the eastern arm. Approximately 95% of the total coverage is located north of both containment booms.
- Alligator weed– 50 acres, mostly shoreline fringe, scattered throughout the lake
- Pennywort.-75 acres; scattered in clumps throughout both upper arms of the lake
- Duckweed - 100 acres; located in both upper arms, mixed in with giant salvinia and water hyacinth
- Hydrilla *Hydrilla verticillata* – less than 10 acres, scattered, mostly on south end of lake
- Coontail – common but not abundant, less than 50 acres throughout lake in depths to 3 ft.

Coverage and Status of Plant Species as of 06/6/2011

- Water Hyacinth *Eichhornia crassipes* - 75 acres; scattered in clumps throughout both upper arms of the lake
- Giant Salvinia *Salvinia molesta*-10 acres; widely scattered, confined primarily in Big Brake area of eastern arm, with denser mats forming amongst other vegetation in northern end of arm. There is a small amount in the Little Brake area of the eastern arm.
- Alligator weed *Alternanthera philoxeroides* – minimal shoreline fringe, scattered throughout the lake
- Pennywort *Hydrocotyle sp.*-50 acres; scattered in clumps throughout both upper arms of the lake
- Duckweed *Lemna minor*-75 acres; located in both upper arms
- Coontail *Ceratophyllum demersum* – 20 acres, scattered clumps near shoreline in upper arms

-Primrose *Ludwigia sp.* – 5 acres, minimal shoreline fringe scattered throughout the lake, in amounts and locations considered to have a beneficial effect on fisheries by providing shallow water cover

Limitations:

- Factors that may limit the effectiveness of chemical, mechanical, or biological control methods for the aquatic plant problems found in the waterbody.
- The periodic flooding of the lake prevents the use of grass carp for aquatic weed control.
- Dense standing timber, stumps, and shallow water limit boat spraying activity in the upper end of the lake.
- Heavy flow in the upper ends of the lake following a major rain event makes using in-water systemic herbicide applications susceptible to dilution. These are the areas where these herbicides would most likely be applied.
- Regulatory or public factors or anything else that may limit the ability of LDWF to control aquatic plant problems in the waterbody.
- The use of 2, 4-D herbicide, which is commonly used to control water hyacinth, is restricted by Louisiana Department of Agriculture and Forestry (LDAF) in Franklin Parish from March 15 - Sept. 15.

Past Control Measures

-Historically - conventional herbicides have been applied by LDWF boat spray crews to control nuisance aquatic weeds (mostly water hyacinth).

-2007 - Giant Salvinia was discovered in both arms of Turkey Creek Lake and treated intensively with conventional herbicides (4qts.diquat dibromide per acre and/or 1qt.diquat dibromide mixed with 3 qts. glyphosate per acre),and appropriate surfactants.

-2008 - (July 17th and 20th) Galleon SC (penoxsulam) was used to treat giant salvinia and water hyacinth in the Big Break and Little Brake areas of the lake. Approximately 1,000 acres were treated with a target concentration of 10 to 15 ppb. The herbicide persisted in the system for a period of approximately 70 days before being diluted by 20 inches of rain deposited by Hurricane Gustav. The herbicide did however persist in the system long enough to allow a significant reduction in nuisance weeds. Following this application, spray crews were able to access the problem areas using conventional spray equipment and apply foliar herbicides such as 2,4-D, glyphosate, and diquat dibromide. One spray crew was assigned specifically to Turkey Creek in August of 2008. Additional

spray crews performed applications as needed.

-2009 - Conventional control by boat spraying was continued throughout the following growing season. By the end of August 2009, giant salvinia continued to expand and a “surge” of several LDWF crews was conducted. The “surge” consisted of 7 crews from numerous LDWF districts joining and focusing their efforts on giant salvinia control for a period of 5 days.

-Winter of 2009-2010 - Several prolonged freezes occurred and severely damaged giant salvinia plants. Severe flooding also occurred during this time and stranded or removed many plants from the lake. As a result, salvinia was not found in the lake until late spring. At that time, it was only found in the Big Brake area of the eastern arm of the lake.

-2010 - Following the rediscovery of giant salvinia, a drawdown was implemented in an attempt to strand it on dry ground, allowing it to desiccate. The control structure was opened May 15, 2010 and the maximum drawdown potential of 9 feet was reached by mid-summer. The structure was closed in January 2011. Due to the swampy nature of the lake, there were many areas that remained moist, which allowed some salvinia to survive. These areas were treated with backpack sprayers and spray rigs mounted on all terrain vehicles (ATV's). The area received another period of prolonged freezing temperatures during winter of 2010-2011, which helped to again reduce the total coverage of salvinia. On September 8, 2010, a floating boom was placed across the Big Brake arm in an attempt to prevent the salvinia from spreading throughout the lake after refilling.

-2011 - After the lake reached pool stage in mid-March 2011, small amounts of giant salvinia were again found in the Big Brake arm. LDWF crews have continued to treat nuisance vegetation using conventional boat spray rigs and herbicides. The boom has been effective in limiting the spread of giant salvinia and has been left in place.

-2011 – Feb. 2013 - Entering fall/winter of 2011-2012, nuisance species common to Turkey Creek Lake were not at problematic levels, with total coverage considered acceptable, considering its physical nature and recent events. A very mild winter did not reduce coverage or suppress growth and led to rapid expansion during early spring, 2012. A spray crew has been dedicated primarily to Turkey Creek to control expansion of giant salvinia, though growth became too great and coverage reached approximately 500 acres by summer of 2012. Other District 2 spray crews were sent to Turkey Creek when available to assist with control. In August 2012, crews from Dist. 3 were sent to Turkey Creek for three days to assist. Hurricane Isaac moved through the area and flushed salvinia from the upper reaches of the lake and across the booms. By September, salvinia coverage had not been significantly reduced and a request to use contract sprayers was made. A map showing the coverage of giant salvinia at this time is shown in Appendix E. They did not become available until Nov. 5, and completed the contract on Nov. 14. A total of 409 acres of giant salvinia were treated with a mixture of glyphosate (0.75 gal/acre) and diquat dibromide (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) surfactants. As of February 2013, giant salvinia persists in the

upper arms, with total coverage estimated to be 250 acres. Water hyacinth and duckweed are also abundant, but found in the same general areas as the giant salvinia and are treated at the same time, though herbicide efforts are generally targeted at salvinia. Table 1 below shows the acres sprayed for the most problematic species.

Table 1. Total acres of vegetation treated with herbicide for various species on Turkey Creek Lake in 2012.

SPECIES	Alligator weed	Giant Salvinia	Water Hyacinth	Pennywort
ACRES	80	3,581*	1,479	103

*includes 409 acres treated by contract spray crews

Aquatic Vegetation Prediction for 2013

The winter of 2012-2013 did not reduce coverage or greatly suppress the growth of the most problematic species. Coverage of giant salvinia, water hyacinth, and duckweed is expected to reach problematic levels by spring, though most of this should be north of the containment booms, where there is little summer recreational use. Coverage of submerged species is expected to remain minimal as frequent water level fluctuations and turbid conditions continue to suppress SAV growth.

Recommendations:

Chemical Control

-LDWF crews will continue to treat salvinia and other nuisance aquatic vegetation with conventional boat spraying equipment. Diquat dibromide will be applied at 4qts. per acre, glyphosate at 3-4 qts per acre and 2,4-D (primarily for pennywort and water hyacinth) at 2-4 qts. per acre. One LDWF spray crew will remain primarily dedicated to Turkey Creek. Giant salvinia will be treated with a mixture of glyphosate (0.75 gal/acre) and diquat dibromide (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) surfactants from April 1 to October 31. Outside of that time frame, diquat (0.75 gal/acre) and a non-ionic surfactant will be used. Other District 2 spray crews will periodically assist the designated Turkey Creek crew as needed.

-An evaluation will be made in mid-March to determine the need for salvinia control by contract spray crews. If the coverage exceeds an amount that can be controlled by the dedicated spray crew (500 acres), a contract will be requested for a spring application, with evaluations for additional contracts occurring monthly.

-The removal or thinning of buttonbush *Cephalanthus occidentalis* should be investigated. These areas in the upper reaches of the lake harbor salvinia, duckweed, and water hyacinth, and make herbicide treatments by boat very difficult. Opening these areas would also allow wind action and currents to periodically remove severe infestations.

Biological Control

The giant salvinia weevil stockings have proved promising thus far. The plants in the area

that has been heavily stocked appears to be stressed, with salvinia being browner in coloration than surrounding plants. Assessments of weevil survival at the site in Big Brake have shown to be very good. Weevil introductions will continue, and additional sites for stocking in Little Brake are being considered.

Physical Control

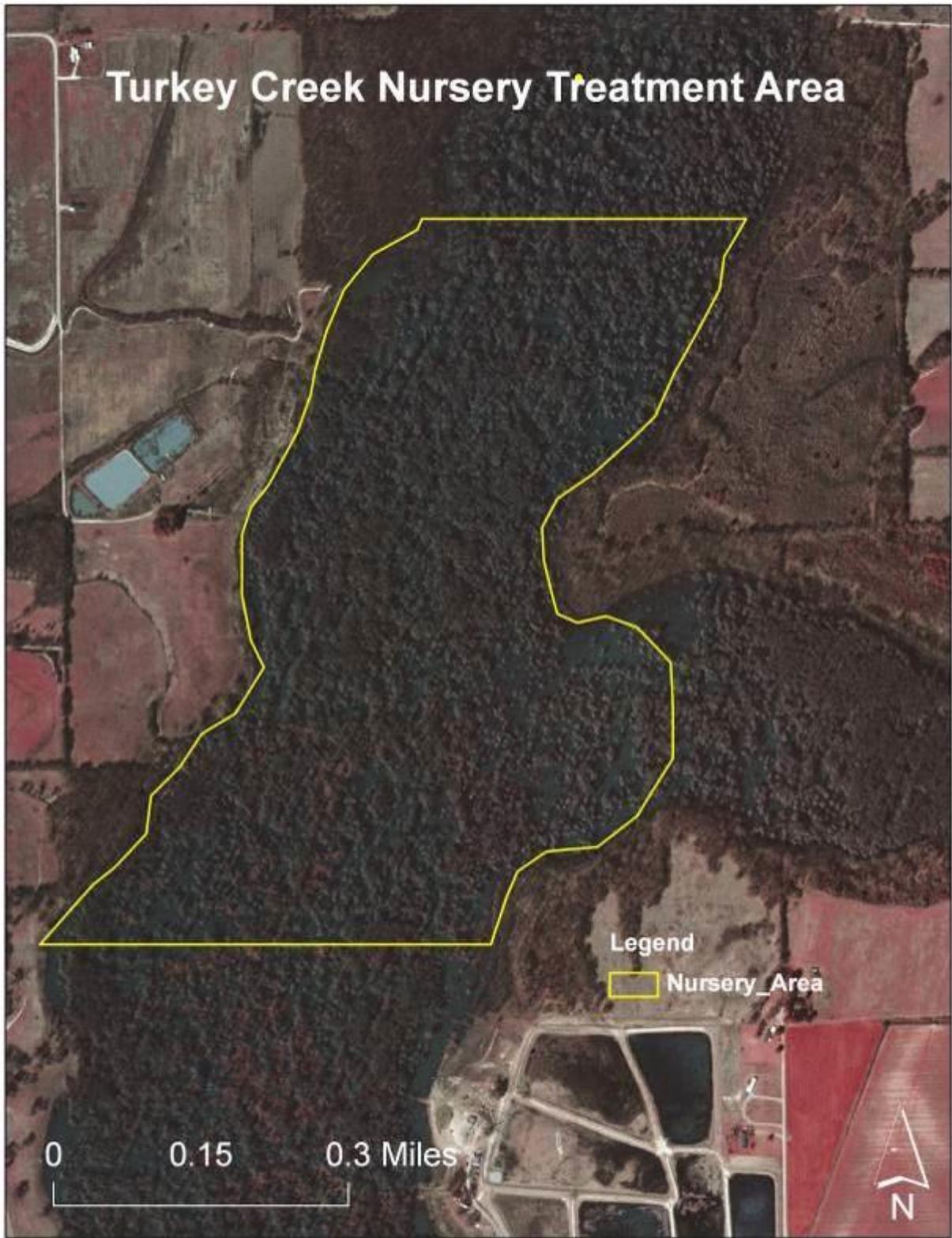
-Containment boom will remain in place in order to prevent salvinia from spreading into other areas of the lake. Additional boom may also be used to exclude boat ramps from infestation. Movement of the booms northward should be investigated. This would provide for a smaller treatment area if infestations do not develop south of the booms.

-If salvinia coverage expands at a rate greater than can be controlled with the above recommendations, a drawdown will be recommended. The drawdown will be initiated when total giant salvinia coverage is expanding at a rate such that the total coverage is believed to exceed 500 acres in a particular growing season. Assessments will be performed bi-monthly to document the expansion of coverage. The target water level for drawdown would be 6 feet below spillway crest height to sufficiently dewater most of the inaccessible areas. The lake would remain in a drawdown state for a minimum of 90 days once the target reduction of 6 feet is reached. Success will largely be dependent on environmental conditions during the drawdown period. Minimally, there should be a significant reduction in the total coverage of giant salvinia. The gates should be closed no later than January 31 of the following year unless immediate conditions dictate otherwise.

Appendix A. Map of Turkey Creek Lake.



Appendix B. Map of 2012 fluridone herbicide treatment area.



Appendix C. Drawdown Procedures.



Robert G. Graves
Secretary

Department of Transportation and Development

P. O. BOX 44245 CAPITOL STATION
BATON ROUGE, LA. 70804

June 26, 1985

CC: Billy
Bill

TURKEY
CREEK DAM



Edwin W. Edwards
Governor

MEMORANDUM

TO: DISTRICT ADMINISTRATORS

FROM: Arthur R. Theis
Deputy Chief Engineer

SUBJECT: Operation and Maintenance of Certain
Reservoir Embankments and Control Structures

Act 270 of 1984 authorized the Department of Transportation and Development to assume responsibility for the operation and maintenance of some 19 reservoir embankments and control structures throughout Louisiana. A copy of this bill is attached for your reference. We have developed inspections of these reservoirs to determine the amount of improvements required to place them in a position where they can be maintained by DOTD maintenance crews. I have discussed this with Mr. Verdi Adam in the past and determined that additional manpower and equipment will be required to place this program in effect. A Capital Outlay Request has been submitted this year for money in the FY 85-86 budget to purchase equipment, hire personnel and fund the necessary rehabilitation improvements.

The responsibilities of DOTD are for the maintenance and operation of these embankments to maintain their integrity and to prevent any breach or damage to the existing facilities. DOTD is not responsible for lake management. Any request for opening a lake must be directed to this Department in writing from the Director of the Department of Wildlife and Fisheries. Verbal requests are not to be accepted. The letter from the Wildlife and Fisheries will have to indicate the date on which they require opening and the rate of drawdown that they will desire for wildlife or lake management purposes. We will, upon receipt of these requests, inform our appropriate District Office in order that they may open the facility at the appropriate time.

If you have any questions concerning the implementation of this responsibility please do not hesitate to contact me.

ART:s1
xc: Mr. Robert G. Graves
Mr. Dempsey White
Mr. Verdi Adam

Appendix D. Legislative Act 270.

Regular Session, 1984
SENATE BILL NO. 905
BY MR. KELLY

ACT 270 ENROLLED

AN ACT

To amend and reenact R.S. 38:21, and to enact R.S. 38:26(C), relative to dams and related matters; to provide for the operation and maintenance of the man-made impoundment structure and the attendant water-control devices of certain specified dams by the Department of Transportation and Development, office of public works; and to provide for related matters.

Be it enacted by the Legislature of Louisiana:

Section 1. R.S. 38:21 is hereby amended and reenacted and R.S. 38:26(C) is hereby enacted to read as follows:

§21. Intent

It is the responsibility of the state to provide a means for the inspection, regulation, and supervision of all present or future dams within the state and the operation and maintenance of those as specified in this Chapter, both federal and nonfederal but excluding the Toledo Bend Dam, in order to prevent and correct potential hazards to downstream life and property in the event of failure of any dam.

* * *

§26. Violations; orders of chief engineer; remedial measures; emergency situations; designated operation and maintenance

* * *

C. The commission or political subdivision under whose authority the following dams are established:

(1) Bundick Creek in Beauregard Parish; (2) Kepler Creek Dam in Bienville Parish; (3) Ivan Lake Dam in Bossier Parish; (4) Lake Bistineau in Bossier Parish; (5) Black Lake Dam in Caddo Parish; (6) Lake Claiborne Dam in Claiborne Parish; (7) Smithport Dam in DeSoto Parish; (8) Chicot Lake Dam in Evangeline Parish; (9) Turkey Creek Dam in Franklin Parish; (10) Jatt

APPENDIX E. Coverage of giant salvinia prior to contract spraying in November, 2012.

