



ENGINEER'S REPORT
LAKE DeTURK CONSERVANCY DISTRICT
MAINTENANCE & REPAIR COST
MORGAN CIRCUIT COURT
CAUSE NUMBER 55C01-1106-MI-1254; (NRC Admin. Cause No. 11-138C)

This report is prepared pursuant Indiana Conservancy Act (IC 14-33) and will address Items Number 2a and 2b of the "Petition For the Creation of The Lake DeTurk Conservancy District" as filed with the Morgan Circuit Court under the above cited cause number.

This report incorporates by reference the Lake DeTurk Dam Inspection Report prepared for Mr. Ralph Foley and dated November 1, 2007. Also, Exhibit "A" has been prepared and attached to this report to show the locations of the various areas of proposed maintenance and repairs within the conservancy district.

DAM REPAIRS:

The 2007 Dam Inspection report cited several deficiencies mainly excessive growth of weeds and brush on the dam slopes together with evidence of animal burrows. In recent months these concerns have been addressed, however maintenance of the dam slopes must continue on a regular basis but not less than twice yearly.

Of more concern was the deterioration of the principal spillway discharge. Recent repairs have been made to the intake side but the discharge end needs immediate repairs. Also, there is seepage approximately 1/3 up slope from the toe at what is believed to be a drawdown valve vault. Cause of this seepage must be investigated repairs performed to stop the seepage. It is recommended that the principal spillway system be video inspected so that a plan of repair and or replacement can be formulated.

An auxiliary spillway is located on the north side of the dam. This spillway is an earthen channel approximately 60 feet wide however its capacity has been drastically diminished by fill placed for the roadbed of Balliere Drive. While the spillway performed adequately during the intense rainfall event of 2008 it is doubtful that it would pass a larger event without damage to the spillway or dam. An alternative method for accommodating the roadway and increasing the capacity of the spillway should be investigated.

Minimum cost for rehabilitation of the principal spillway is estimated at \$200,000. However, if the spillway had to be replaced, which may be likely due to the deteriorated condition of the discharge pipes and seepage, the cost could be as much as \$400,000.

In addition to the cost of rehabilitation/replacement of the spillway it is estimated that the annual maintenance cost for mowing, debris removal and lake treatment will be \$20,000.

LAKE DREDGING:

The lake was permitted by IDNR after the fact in 1985; however the lake was built many years prior. To the best of anyone's knowledge the lake has never been dredged nor has there been a program of sediment removal. Two areas show the greatest impairment by sediment: a major arm that runs north and a second smaller arm in the area of the beach both on the west end of the lake. While the exact depth of sedimentation is unknown based on the steepness of the slopes of the adjacent banks the depth could reasonable exceed ten feet.

For aquatic life and recreational uses a recommended water depth is fifteen feet with a minimum depth of ten feet. Sedimentation in Lake DeTurk is so extensive that in the extreme western end the original lake has completely fill and much of the area of finger areas are less than two feet deep.

While it is not practical or cost effective to remove all the sedimentation from the lake there are two areas totaling approximately five acres where sediment removal would be economical. Removal of the sediment to a depth that would provide ten feet of water would have three positive impacts: one aquatic habitat would improve; two recreation uses would improve and third there would be a larger volume of water available for use offsite.

Based on industry standards for dredging a cost of \$10 per cubic yard is reasonable assuming that there is an area near the dredging site for dewatering and disposal of the removed material. Ten feet of sediment removed from the entire five acres, or an equivalent volume, is approximately 10,000 cubic yards. This yields a dredging cost of \$900,000.

RECREATION AREA:

In addition to the lake proper there are three areas for recreation within the boundaries of the proposed Lake DeTurk conservancy district. One area is accessed off of Bailliere Drive on the west side of Shireman Estates and includes limited playground equipment and a beach area. The beach is in very poor condition and unsafe as is the playground equipment.

Second location is in the southwest quadrant of the intersection of Goodnight Road and Grassyfork Lane. Recreation facilities here include a tennis court and ball field. The tennis court and ball field have been neglected and are unusable.

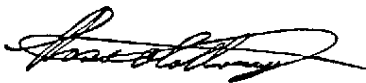
In the northeast quadrant of Massey Road and Byram Blvd. is the third area. Playground equipment is at this location along with a picnic area. Playground equipment is old and in poor condition as is the picnic area.

The tennis court is beyond repair and should be removed as should off of the existing playground equipment has exceeded its useful life and does not meet modern standards. To re-establish the beach area, restore either the ball field or replace it with a multiuse field and provided a limited quantity of new playground equipment is estimated to cost \$150,000. Further the recreation areas will have to be mowed and maintained from May through October at an estimated cost of \$5,000.

SUMMARY:

Total cost for repair and rehabilitation of the dam, lake and recreation areas is estimated to be \$1,450,000. Maintenance of the lake and recreation facilities is estimated to be \$20,000 annually for the lake with an additional \$5000 for maintenance of the recreation areas. In addition it is recommended that a cumulative capital fund be established to replace equipment and make major repairs and improvements.

Report submitted this 17th day of October 2011.



Ross O. Holloway, PE, PLS
Indiana Professional Engineer
Number 9400249



Cc: Peter Foley, Attorney
file

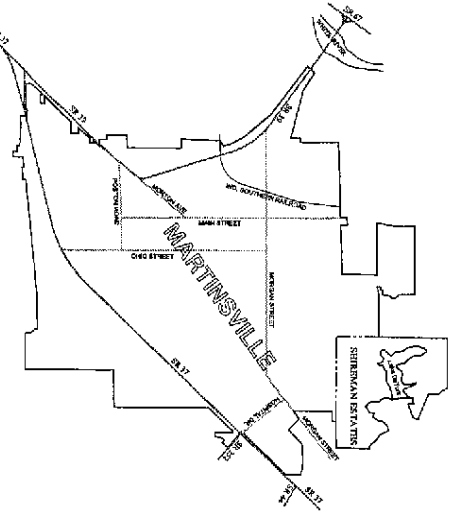
**Boundary of Lake Deturk Proposed Conservancy District
for Sherman Estates**

Described as follows:
 District One (1) consists of Lots 1, 4 and 10-15 of Sherman Estate Section One (1), recorded as Deed Record 229 Page 134, 136, 138, 140, 142, 144, 146, 148, 150, 152 and 154.
 District Two (2) consists of Lots 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 and 101 of Sherman Estate Section Two (2), recorded as Deed Record 229 Page 134.
 District Three (3) consists of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 and 101 of Sherman Estate Section Three (3), recorded as Deed Record 229 Page 134.
 District Four (4) consists of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 and 101 of Sherman Estate Section Four (4), recorded as Deed Record 229 Page 134.

SECTION 1: APPROVED BY THE BOARD OF SUPERVISORS OF THE COUNTY OF COVINGTON APRIL 2, 1911 AND RECORDED AS DE. 210 PG. 138 / PLD. 444
SECTION 2: APPROVED BY THE BOARD OF SUPERVISORS OF THE COUNTY OF COVINGTON APRIL 2, 1911 AND RECORDED AS DE. 210 PG. 138 / PLD. 444
SECTION 3: APPROVED BY THE BOARD OF SUPERVISORS OF THE COUNTY OF COVINGTON APRIL 2, 1911 AND RECORDED AS DE. 210 PG. 138 / PLD. 444
SECTION 4: APPROVED BY THE BOARD OF SUPERVISORS OF THE COUNTY OF COVINGTON APRIL 2, 1911 AND RECORDED AS DE. 210 PG. 138 / PLD. 444

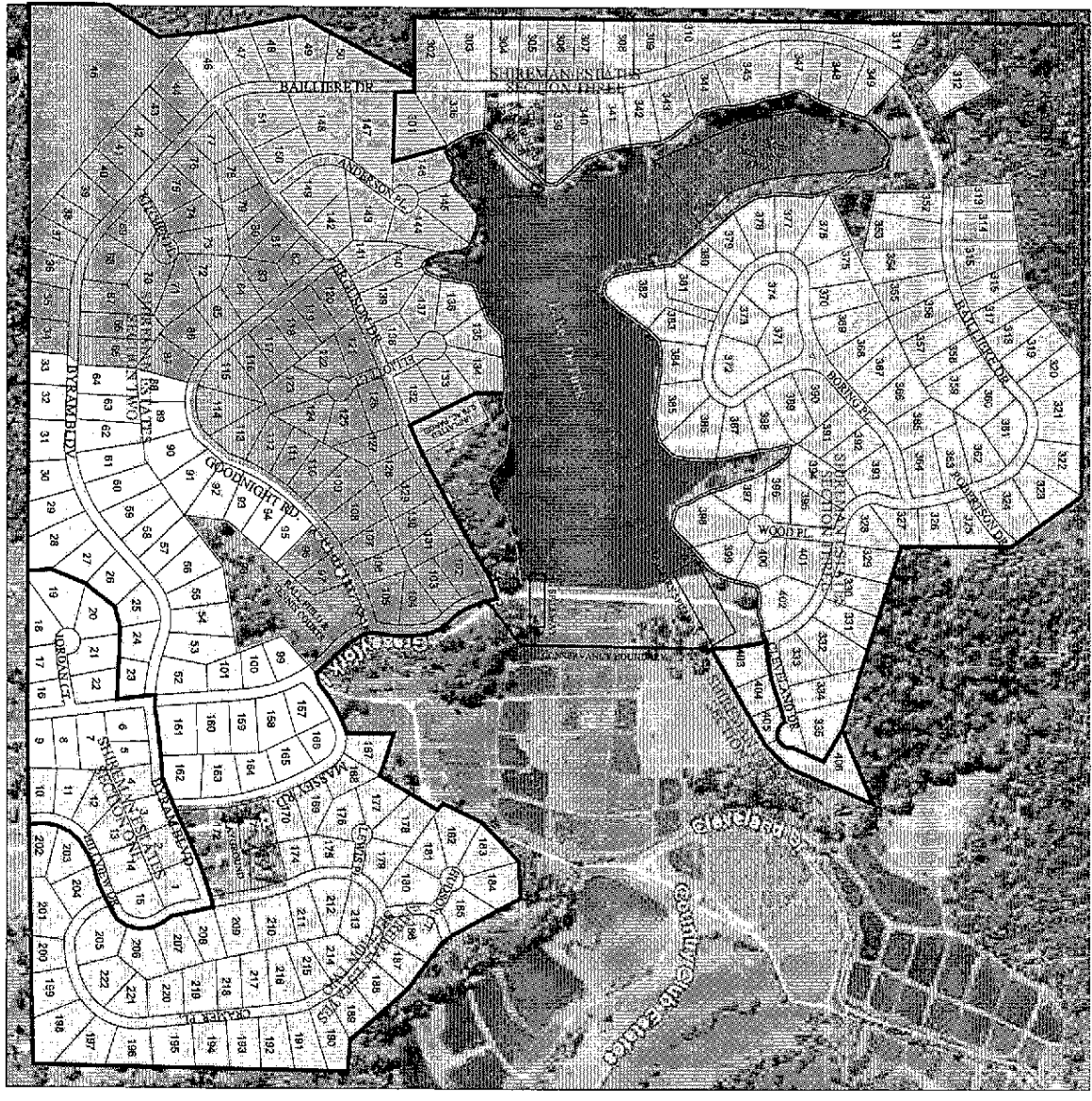
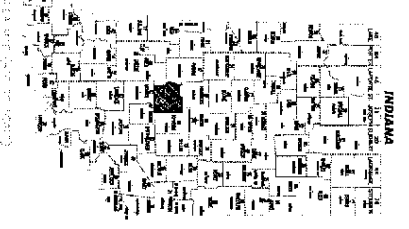
SECTION 1: APPROVED BY THE CITY OF MARTINSVILLE PLAN COMMISSION APRIL 2, 1993 AND RECORDED AS DR. 223 PG. 467 / R.D.R. 349
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ALL THE DOCUMENTS HEREON REFERRED TO ARE RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS AT MARTINSVILLE, TENNESSEE.



DISTRICT LEGEND

[Hatched Box]	DISTRICT 1
[White Box]	DISTRICT 2
[Diagonal Lines Box]	DISTRICT 3
[Cross-hatch Box]	DISTRICT 4
[Dotted Box]	DISTRICT 5



<p>LAKE DETURK PROPOSED CONSERVANCY DISTRICT</p> <hr/> <p>ENGINEER'S REPORT EXHIBIT 'A'</p>	<p>DATE: 10/20/2011</p> <p>PROJECT: LAKE DETURK PROPOSED CONSERVANCY DISTRICT</p>		
	<p>SCALE: 1 INCH = 200 FEET</p>		
	<p>PROJECT NUMBER: 10/20/2011</p>		