



**River Science, LLC**  
**Hydrologic & Hydraulic Engineering**

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P.O. Box 353 • Ridgeland, MS 39158  
Fax/voice 601.898.5550

March 24, 2007

Board of Directors  
North Brandon Shores Homeowners' Assn.  
P.O. Box 2165  
Brandon, MS 39043

Gentlemen:

REFERENCE: NORTH BRANDON SHORES LAKE MS 03428  
EMERGENCY ACTION PLAN

The attached is your copy of the Emergency Action Plan (EAP) for North Brandon Shores Lake. Please acknowledge receipt of the EAP by executing the signature line on the enclosed List of EAP Holders, and return to us in the enclosed SASE.

We will provide your office with a completed List of EAP Holders upon receipt. If you have any questions or comments please call me at 601-613-5262. We appreciate the opportunity to work with you. Thank you.

Sincerely,

RIVER SCIENCE LLC

Jill S. Butler, P.E., CFM

RECEIVED

JAN 18 2007

BY: OLWR

LIST OF EAP HOLDERS

DATE: \_\_\_\_\_

COPY NUMBER	EAP HOLDER	SIGNATURE
1. EAP Coordinator (see list in Appendix B)	_____	
2. Richard Wilson, Rankin County EMA	_____	
3. Gaylan McGregor, MDEQ	_____	<i>Gaylan McGregor</i> 1/23/07
4. Rankin County Sheriff	_____	
5. River Science, LLC	_____	
6. Rankin County 911 Call Center	_____	

**EMERGENCY ACTION PLAN**  
**FOR**  
**NORTH BRANDON SHORES LAKE**  
**STATE ID MS03428**  
**RANKIN COUNTY, MISSISSIPPI**

**March 2007**

**Prepared by:**



**River Science, LLC**  
*Hydrologic & Hydraulic Engineering*  
P.O. Box 353  
Ridgeland, MS 39158

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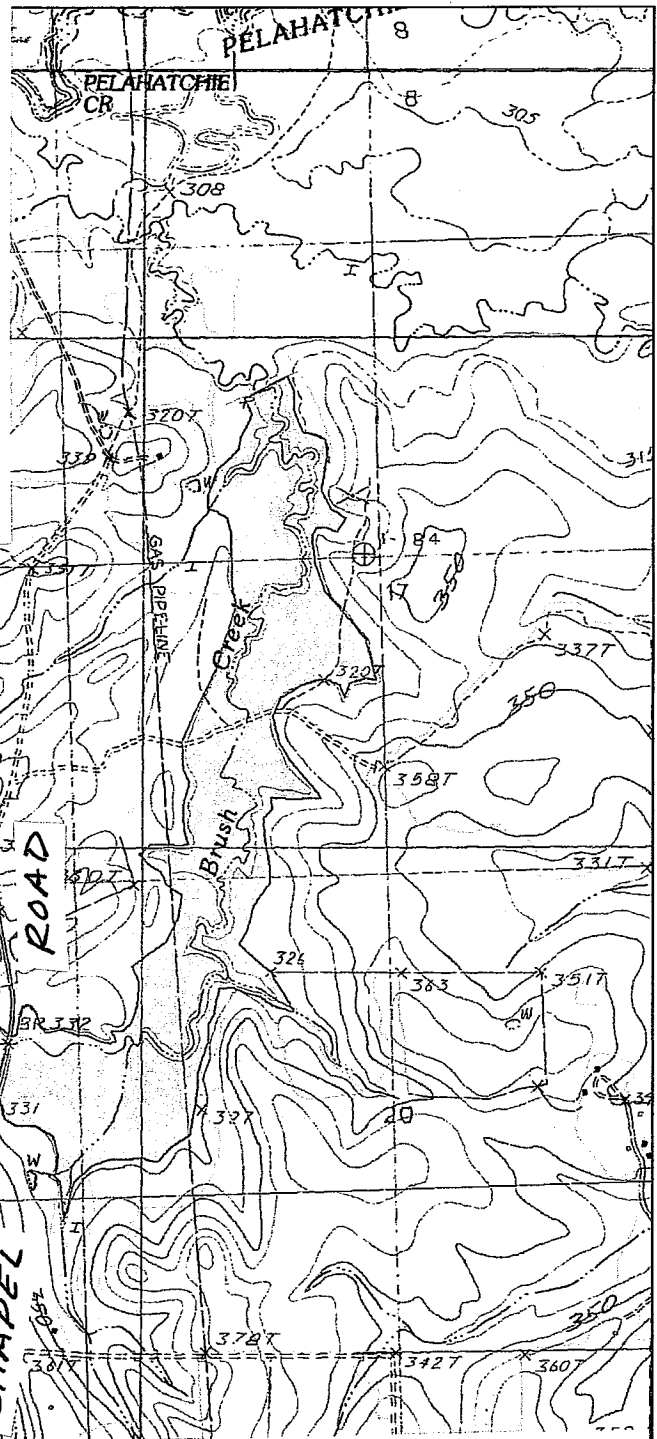
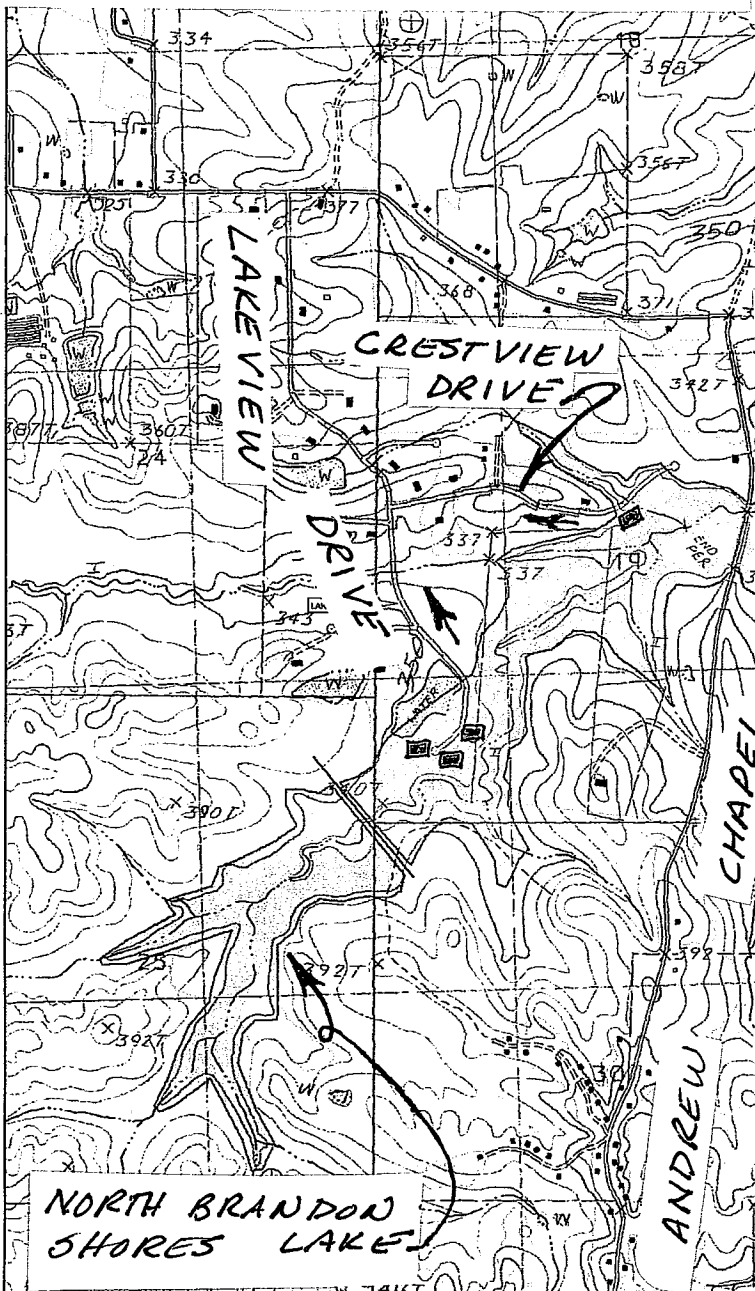
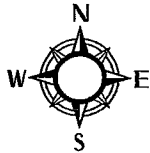
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# NORTH BRANDON SHORES LAKE DAM BREACH ANALYSIS INUNDATION MAP

RANKIN COUNTY, MISSISSIPPI

SCALE: 1" = 2000'



## LEGEND

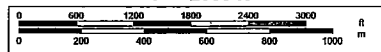
- INUNDATED AREA:
- EVACUATION ROUTE:
- HOMES TO BE EVACUATED:

NORTH BRANDON  
SHORES LAKE

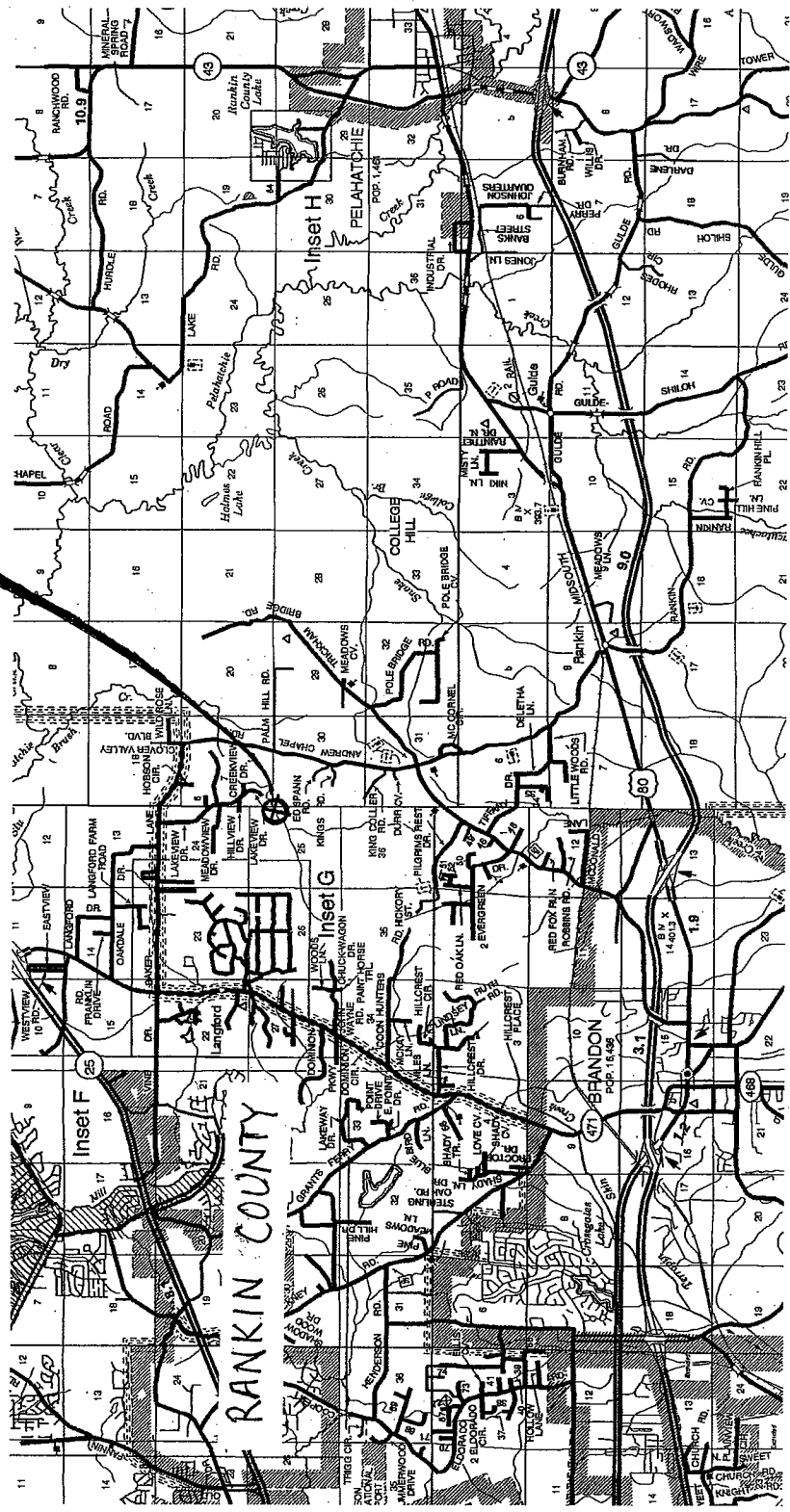


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www.delorme.com

Scale 1 : 24,000  
1" = 2000 ft



# NORTH BRANDON SHORES LAKE



VICINITY MAP

NORTH BRANDON SHORES LAKE

NORTH BRANDON SHORES  
RESIDENTS' LAKE  
RESIDENT NOTIFICATION INFORMATION

Peters, Alicia and Ken  
102 Crestview Dr  
Brandon, MS 39047-9212  
(601) 829-3766

Mills, Edie  
103 Crestview Dr  
Brandon, MS 39047-9207  
(601) 829-1613

Millwood, J C Jr  
110 Crestview Dr  
Brandon, MS 39047-9212  
(601) 829-1108

McDill, Phillip W  
111 Crestview Dr  
Brandon, MS 39047-9207  
(601) 829-9263

Davis, Charles W  
112 Crestview Dr  
Brandon, MS 39047-9212  
(601) 829-1032

Causey, Mark  
113 Crestview Dr  
Brandon, MS 39047-9207  
(601) 829-1125

McCorkle, William & Gald  
117 Crestview Dr  
Brandon, MS 39047-9207  
(601) 829-9037

LAKEVIEW DRIVE

Williams, Alex & Kim  
160 Lakeview Rd  
Brandon, MS 39047  
(601) 829-0510

Turner, J  
155 Lakeview Rd  
Brandon, MS 39047  
(601) 829-4031

Darby, Mike & Brenda  
156 Lakeview

Hales, James & Marilyn  
152 Lakeview

NORTH BRANDON SHORES  
RESIDENTS' LAKE  
RESIDENT NOTIFICATION INFORMATION

Valle, Ricardo  
153 Lakeview  
Brandon, MS 39047  
601-829-2090

ANDREW CHAPEL ROAD

Fletcher, Donell & Marian  
1116 Andrew Chapel Rd  
Brandon, MS 39047-9239  
(601) 829-4473

Turner, Charles  
1105 Andrew Chapel Rd  
Brandon, MS 39047-9217  
(601) 829-1272

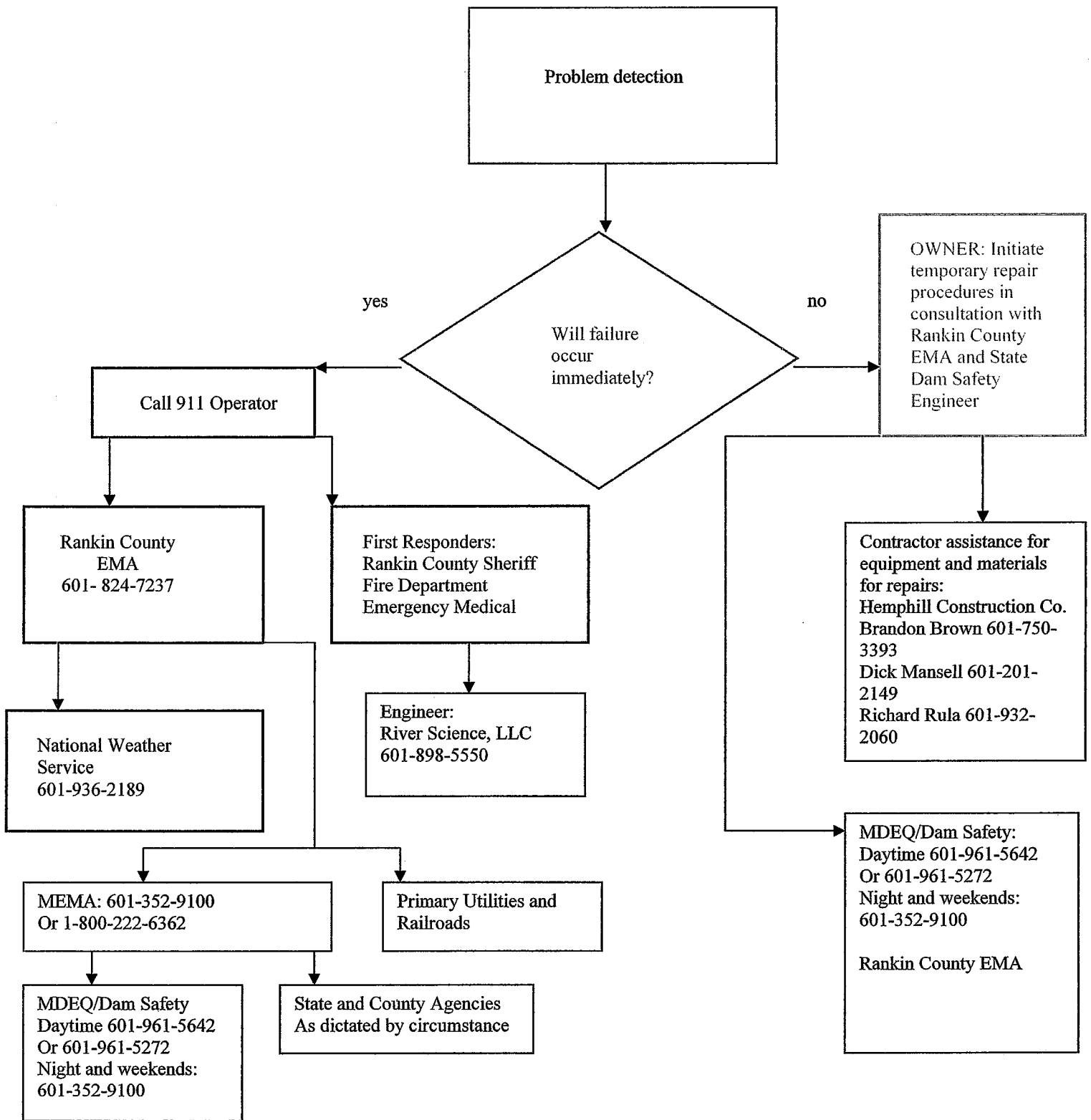
Fletcher, Henry  
1100 Andrew Chapel Road

Fletcher, Fredrick  
1098 Andrew Chapel Road

Fletcher, B  
1120 Andrew Chapel Road  
Brandon, MS 39047  
601-829-3864



I. DECISION AND NOTIFICATION FLOWCHART



## II. STATEMENT OF PURPOSE

This plan defines responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger North Brandon Shores Lake Dam and to notify the appropriate emergency management officials of possible, impending, or actual failure of the dam. The plan may also be used to provide notification when flood releases will create major flooding.

## III. PROJECT DESCRIPTION

North Brandon Shores Lake is located in Rankin County, Mississippi. The dam owner is North Brandon Shores Lake, Homeowners' Association (hereafter referred to as "the owner"). The primary function of the lake is as a stormwater detention and recreation facility. The dam was constructed in 1999 as a part of North Brandon Shores Subdivision. The dam was designed by Aqua Engineering Services, Ltd.. The top of the dam is approximately elevation 358 and the emergency spillway is approximately 374, with an estimated storage of 168 acre-feet at the normal pool of 349.

The principal spillway is an 8-ft by 8-ft reinforced concrete box culvert with a 16-ft by 22-ft reinforced concrete riser. The dam also has an emergency (overflow) spillway, which has a 200-ft bottom width, 10:1 side slopes on the fill side and 3:1 side slopes on the cut side. Water leaving the outlet flows through a tributary of Brush Creek. Lakeview Drive, Crestview Drive, and Andrew Chapel Road will be affected by failure of North Brandon Shores Lake Dam or by flooding as a result of large operational releases. Their location is shown on the inundation map on Page ii.

## IV. EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION

### A. Inspection/Monitoring Plan & Procedures:

The dam is visually inspected by the EAP Coordinator. This position will be filled on a rotating basis by the Board of Directors. A listing can be found in Appendix B, Owner Contacts. An inspection form is included in Appendix A.

### B. Emergency Classifications:

Two dam failure emergency classifications have been identified for North Brandon Shores Lake Dam:

Condition A: Failure is imminent or has occurred

Condition B: Potential failure situation is developing

The definition of these conditions follows:

Condition A: Failure is imminent or has occurred

Generally, this situation should convey the impression that "time has run out" with respect to the failure of the dam. This is a situation where a failure has

occurred, is occurring, or obviously is just about to occur. The question is often asked, "how much time is available when failure is considered to be imminent?" It is impossible to determine how long it will take for a failure to occur or for a complete breach to occur once failure begins. However, the time to breach for North Brandon Shores Lake Dam has been estimated to be less than one hour. **Therefore, once the owner determines that there is no longer any time available to attempt corrective measures to prevent failure, the "failure is imminent or has occurred" warning should be issued.** Emergency management agencies, for evacuation purposes, should conservatively interpret the phrase "failure is imminent" to mean that the dam is failing, i.e., it should not be assumed that there is some time lag between "failure is imminent" and a "failure has occurred." Therefore, "failure is imminent" and "failure has occurred" should conservatively be interpreted as essentially the same condition for evacuation purposes.

**Common warning signs of imminent failure are:**

- a. whirlpool developing in the lake near the dam,
- b. a major slide of material in either face of the dam which reaches the top of the slope or extends into the crest of the dam,
- c. overtopping.

**Condition B: Potential failure situation is developing**

This situation should convey the impression that "some amount of time" is still available for further analyses/decisions to be made before dam failure is considered to be a foregone conclusion. This a situation where a failure may eventually occur but pre-planned actions taken during certain events (such as major floods, earthquakes, evidence of piping) may moderate or alleviate failure. Even if failure is inevitable, more time is generally available than in a failure has occurred situation to issue warnings and/or take preparedness actions. Is the time frame for this situation in hours, days, or weeks? When a dam safety situation is observed that may lead to a failure if left unattended but there is no immediate danger, the owner will issue a warning that a "potential failure situation is developing." The owner will assess the situation and determine the urgency of the emergency situation. Based on the owner's assessment the authorities should be placed on alert and it is up to the authorities to determine the appropriate course of action. If it appears that a situation may take days or weeks before it could develop into a failure situation, the local authorities may decide on one course of action. Periodic status report updates from the owner are important because when it appears that the situation is continuing to worsen at the dam, in spite of the actions being taken to moderate or alleviate failure, the local authorities may decide to change their course of action. The evacuating agencies should consider the prudence of early evacuation, or heightened awareness, of residents in the inundation area until the emergency situation has passed.

**Common warning signs of potential failure are:**

- a. seepage found which increases in flow or new seepage points develop while situation is being monitored,
- b. sand boils (water exiting the ground surface with enough velocity to cause the soil/water mixture to appear to be boiling) which develop downstream of the dam. Note that a boil which steadily increases in diameter or appears to be boiling more vigorously because of rapidly increasing flow would move the situation from Potential Threat to Imminent Failure and should give rise to immediate activation of the EAP.
- c. piping (a concentrated flow of water with sufficient velocity to transport soil particles – generally indicated by an identifiable hole, or “pipe”, surrounded by a cone of soil). Note that an increase in the diameter of the “pipe” or rapidly increasing flow would move the situation from Potential Threat to Imminent Failure and should give rise to immediate activation of the EAP.
- d. slides of material which only affect the face of the dam and have not affected or progressed into the or under the crest of the dam, or gullies forming in the face of the dam (note that an actively eroding gully could move the situation from Potential Threat to Imminent Failure within a short period of time).
- e. sinkholes found in the dam.

**NOTE: Discovery of a sand boil or evidence of piping in the dam face or in the vicinity of the toe of the dam should cause the observer to immediately expand the area of surveillance to include all areas, particularly areas which area at a lower elevation than that of the observed problem, within 200 to 250 feet of the downstream toe of the dam.**

It should be remembered that it may be appropriate to immediately declare a Condition A. However, there should be smooth transition from Condition B to Condition A when using Condition B initially. To assist the evacuating agencies in selecting their appropriate course of action and to provide a proper transition from Condition B to Condition A, the owner should clearly communicate their assessment of the situation to the Public Safety Communication Center (911). The 911 operator should place first responders (law enforcement, fire department, & emergency medical services), the National Weather Service and the Rankin County EMA on an initial alert. Thereafter, the county EMA will provide periodic updates on the situation as it develops so that the local agencies can assess when they should implement their evacuation procedures. For example, the county EMA could issue an initial warning and periodic updates on the reservoir level as it rises during flood conditions and eventually overtops an embankment dam. During this time the National Weather Service would issue flash flood warnings or advisories. As the reservoir rises, a “potential failure situation is developing” warning should be implemented with periodic updates on how much time is

available before the embankment overtops. Immediately before the embankment overtops, a "failure is imminent or has occurred" warning should be issued.

V. GENERAL RESPONSIBILITIES UNDER THE PLAN

A. Dam Owner Responsibilities

Upon notification or discovery of the potential for an emergency situation, the dam owner will execute the Notification Flowchart by calling 911. The EAP Coordinator is filled on a rotating basis from the Board of Directors. Please see Appendix B, List of Owner Contacts.

B. Responsibility for Notification

The person authorized to make the 911 call is the owner or the EAP coordinator. Under Condition B, on-site personnel should seek advice and assistance from the EAP Coordinator. If, under Condition A, sufficient time is not available to notify the EAP Coordinator, the responsibility and authority for notification is delegated to onsite personnel or a local official. The accurate and timely dissemination of emergency public information is very important to the overall success of an EAP. The EAP Coordinator, in consultation with the county EMA, will keep the media contacts advised of continuing conditions at the dam during the emergency event. The EAP Coordinator should send out the news release. A sample news release is included in Appendix A.

C. Responsibility for Evacuation

Warning and evacuation planning are the responsibilities of local authorities who have the statutory obligation. Under the EAP, the dam owner is responsible for notifying the Public Safety Communication Center (911) when flooding is anticipated, or a failure is imminent or has occurred. Law enforcement and fire department personnel will be dispatched to the area of potential inundation to establish traffic control points to facilitate evacuation and limit access to the area. Dam owners should not assume, or usurp, the responsibility of government entities for evacuation of people. However, there may be situations in which routine notification and evacuation will not suffice, as in the case of a resident located just downstream of the dam. In this case, the dam owner should arrange to notify that person directly. This procedure should be coordinated with the appropriate public officials before an emergency situation develops. Included on page iii are the known names and telephone numbers of residents downstream who could possibly be affected by North Brandon Shores Lake Dam's failure.

D. Responsibility for Duration, Security, Termination, and Follow-Up

The county EMA will perform on-site monitoring of the situation at the dam and keep local authorities informed of developing conditions at the dam from the time that he or she arrives on site until the emergency has been terminated. The State Dam Safety Engineer, in consultation with the county EMA, is responsible for declaring that the emergency at the dam is terminated. Following that declaration, the county EMA is responsible for termination of the disaster response activities. A follow-up evaluation after an emergency by all participants is required. The results of the evaluation should be documented in a written report.

E. EAP Coordinator Responsibility

The designated EAP Coordinator will be responsible for EAP-related activities, including (but not limited to) preparing revisions to the EAP, establishing training seminars, and coordinating EAP exercises. This position will be filled on a rotating basis from the Board of Directors. If any involved parties have questions about the plan, they should contact the EAP Coordinator.

F. Exercising and Review of the EAP

A review of the adequacy of the North Brandon Shores Lake EAP should be conducted annually. Any comments from the evaluation will be used to update the EAP. The EAP should be updated promptly after each change in involved personnel or their telephone numbers, or after completion of a scheduled exercise. The EAP should be exercised annually.

VI. PREPAREDNESS

Preparedness actions are taken to prevent a dam failure incident or to help reduce the effects of a dam failure or operational spillway release and facilitate response to emergencies. Preparedness actions taken by the owners of North Brandon Shores Lake dam include the following:

A. Surveillance

As stated above, the EAP Coordinator conducts a visual inspection of the dam on an annual basis. When flood conditions or signs of serious structural distress have been identified, an observer will be stationed at the dam.

B. Response During Periods of Darkness

The following contractor may be contacted to provide illumination for observation of distressed areas of the dam during periods of darkness:

Hemphill Construction Company  
P.O. Drawer 879  
Florence, MS 39703-0879  
601-932-2060

Contacts: Brandon Brown 601-750-3393 or Dick Mansell 601-201-2149

C. Access to the Site

Primary access to the site is by Easterly or Westerly Drive. The dam may also be reached by foot from Crestview Drive. Easterly and Westerly Drives are not susceptible to inundation in the event of North Brandon Shores Lake dam failure.

D. Response During Weekends and Holidays

Procedures for emergency response during weekends and holidays are the same as those of weekday response.

E. Response During Periods of Adverse Weather

Procedures for emergency response during adverse weather are the same as those of weekday response.

F. Emergency Supplies and Information

The following contractor shall be contacted for materials, equipment, and personnel needed for emergency repair:

Hemphill Construction Company  
P.O. Drawer 879  
Florence, MS 39703-0879  
601-932-2060

Contacts: Brandon Brown 601-750-3393 or Dick Mansell 601-201-2149

Stockpiling Materials and Equipment:

Stockpiling of materials and equipment at the dam site is not applicable to North Brandon Shores Lake dam.

Coordination of Information: The National Weather Service **will** be notified by the Rankin County Emergency Management Agency (EMA) so that they may monitor flood waves resulting from a dam break. If possible, a rapid draw-down of the

reservoir will be attempted. Actions to be taken to lower the reservoir are limited to pumping, siphoning, or use of mechanized hoes. Contact consulting engineer or State Dam Safety and (if needed) the above listed contractor for rapid drawdown of the reservoir.

## VII. DAM BREACH ANALYSIS

For the dam breach analysis, the Corps of Engineers' computer model HEC-RAS was used. This program simulates a breach, its resulting flood peak, and uses unsteady flow principles to route the flood through the downstream valley.

The normal pool elevation was used for the water-surface elevation at the beginning of the dam breach ("sunny-day" failure).

The results of the downstream flood routing were used to establish the limits and plot the inundated areas for emergency conditions associated with the dam breach discharge. The map shown on page ii depicts the area which is expected to be flooded should the hypothetical emergency occur.

The following is a list of the inputs and boundary conditions used for the computer model:

Geometry: Creek cross sections are a combination of on-the-ground survey data and USGS topographic quadrangle map data.

Upstream boundary condition: a hydrograph consisting of 400 ordinates for a time period of over 6 hours was used, with a flow value of 100 cfs for each data point.

Downstream boundary condition: a normal depth calculation was used, with a friction slope of 0.003 ft/ft.

Breach data:

Bottom width of breach = 96 ft

Side slopes of breach = 2:1

Formation time = 0.46 hr

Piping coefficient = 0.8

Water-surface elevation at failure = 333.8

Peak breach flow = 5,333 cfs

Volume of breach flow = 189 acre-feet



**APPENDIX A**  
**FORMS**

## NEWS RELEASE

**\*\*\* URGENT:** The owners of North Brandon Shores Lake Dam have announced that it is in imminent danger of failure. The dam is located between Burt Loop Road and Harmony Road in Rankin County. Streets within the area which will be affected are Lakeview Road, Crossview Drive and Andrew Chapel Road.

Residents along these streets should evacuate to high ground immediately. If the dam fails, radio and TV stations will be notified. Additional information will be released as soon as possible.

### News media list:

#### Television Stations:

WLBT (NBC)	948-3333	fax: 355-7830
WAPT (ABC)	922-1607	fax: 922-1663
WDBD (FOX)	922-0268	
WMAA (ETV)	432-6565	
WJTV (CBS)	372-6311	fax: 371-8256

#### Radio Stations:

Clear Channel Radio fax: 362-8270

105.9 fax: 957-1797

PRM 432-6800

National Weather Service 936-2189

## OWNER'S INSPECTION CHECKLIST

North Brandon Shores Lake Dam

Date of Inspection: \_\_\_\_\_

Your Name: \_\_\_\_\_

	<u>NO</u>	<u>YES</u>	<u>IF YES:</u>
Surface Cracks?	___	___	Contact DEQ or engineer
Slumping or cracking on the dam?	___	___	Contact DEQ or engineer
Erosion from runoff, wave action or traffic?	___	___	Repair and stabilize
Embankment/spillway seepage? Water muddy?	___	___	Contact DEQ or engineer
Top of the dam settled?	___	___	Contact DEQ or engineer
Loss of riprap?	___	___	Contact DEQ or engineer
Tress, brush or burrows on embankment?	___	___	Contact DEQ or engineer
Spillways blocked?	___	___	Clear spillway immediately
Exposed metal rusty?	___	___	Clean and paint
Concrete deterioration or cracks?	___	___	Contact DEQ or engineer
Uneven settlement of outlet?	___	___	Contact DEQ or engineer
Scour?	___	___	Contact DEQ or engineer
Pipe joint separation, or sinkholes in embankment over pipe?	___	___	Contact DEQ or engineer
Trash racks blocked?	___	___	Clear out debris
Piping at outfall structure?	___	___	Contact DEQ or engineer

**APPENDIX B**  
**LIST OF OWNER CONTACTS**

## CONTACT LIST

### Owner:

North Brandon Shores  
Homeowners Association  
P.O. Box 2165  
Brandon, MS 39043

### Engineer:

River Science, LLC  
P.O. Box 353  
Ridgeland, MS 39158  
601-898-5550

### Contractor:

Hemphill Construction Co.  
P.O. Drawer 879  
Florence, MS 39073  
601-932-2060

### EAP Coordinator:

This position is filled on a rotating  
basis by the Board of Directors:

Ance Barber 601-824-3040  
Mel Coxwell 601-591-5560  
Brian Davidson 601-824-3004  
Russell McCollough 601-825-4197  
Glen Reed 601-948-3071  
Mike Runner 601-825-3286  
Rick Sumrall 601-825-0774  
Harvey Dallas 601-968-9354

### Outside Agencies:

Rankin County  
Emergency Management Agency  
(EMA)  
Richard Wilson  
825-1499  
24-hr line 824-7237

Department of Environmental  
Quality (DEQ)  
Office of Land and Water Resources  
Dam Safety Coordinator  
Mike Meadows  
601-961-5272

MEMA  
601-352-9100  
1-800-222-6362

**APPENDIX D**  
**LIST OF EAP HOLDERS**