DANE COUNTY DEPARTMENT of PUBLIC WORKS, HIGHWAY and TRANSPORTATION

County Executive
Kathleen M. Falk

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Phone: (608) 266-4018 ◆ Fax: (608) 267-1533

Commissioner / Director
Gerald J. Mandli

MONDAY, MARCH 17, 2008

ATTENTION ALL REQUEST FOR PROPOSAL (RFP) HOLDERS

RFP NO. 108040 - ADDENDUM NO. 1

ENGINEERING SERVICES FOR BABCOCK & TENNEY DAM FAILURE ANALYSIS, STABILITY ANALYSIS, PERMANENT BENCHMARKS AND AN EMERGENCY ACTION PLAN

BIDS DUE: THURSDAY, MARCH 20, 2008, 2:00 PM. DUE DATE AND TIME ARE NOT CHANGED BY THIS ADDENDUM.

This Addendum is issued to modify, explain or clarify the original Request for Proposal (RFP) and is hereby made a part of the RFP. Please attach this Addendum to the RFP.

PLEASE MAKE THE FOLLOWING CHANGES:

1. Additional Information

A. Lake Mendota Dam refers to Tenney Locks, and Lake Waubesa Dam refers to Babcock Locks.

B. Additional site plans, "as-builts", past Inspection, Maintenance, and Failure Analysis Reports, and digital contour data will be available to the successful consultant at no charge.

C. Add additional DNR Inspection Report information, which is attached to this addendum, to RFP packet.

D. Add additional DNR letter, dated January 2, 2008, which is attached to this addendum, to RFP packet.

E. The scope of the Engineering services is only to meet DNR Inspection Report Requirements.

F. Engineering Budget for Phase I & II is not to exceed $25,000.00.

2. Scope of Work

Phase I, Item 5:

Change: "Stability Analysis (Babcock Dam ONLY)", to: "Stability Analysis (Both Dams)"

Phase I:

Add: "Item 6. The Dam Failure Analysis and Stability Analysis should be based on NR 333 and

NR 116 and will need to be analyzed under normal pool, normal pool with ice, and design flow. It should be looked at for sliding and overturning. Also recommended is the use of Design of Small Dams (from US Dept. of the Interior) as a reference."

If any additional information about this Addendum is needed, please call John Schraufnagel at 608/266-4798.

Enclosed: Additional DNR Inspection Report information - 71 pages
Additional DNR letter, dated January 2, 2008 - 1 page

Lake Mendota Dam FF # 13.06 September 21, 2007

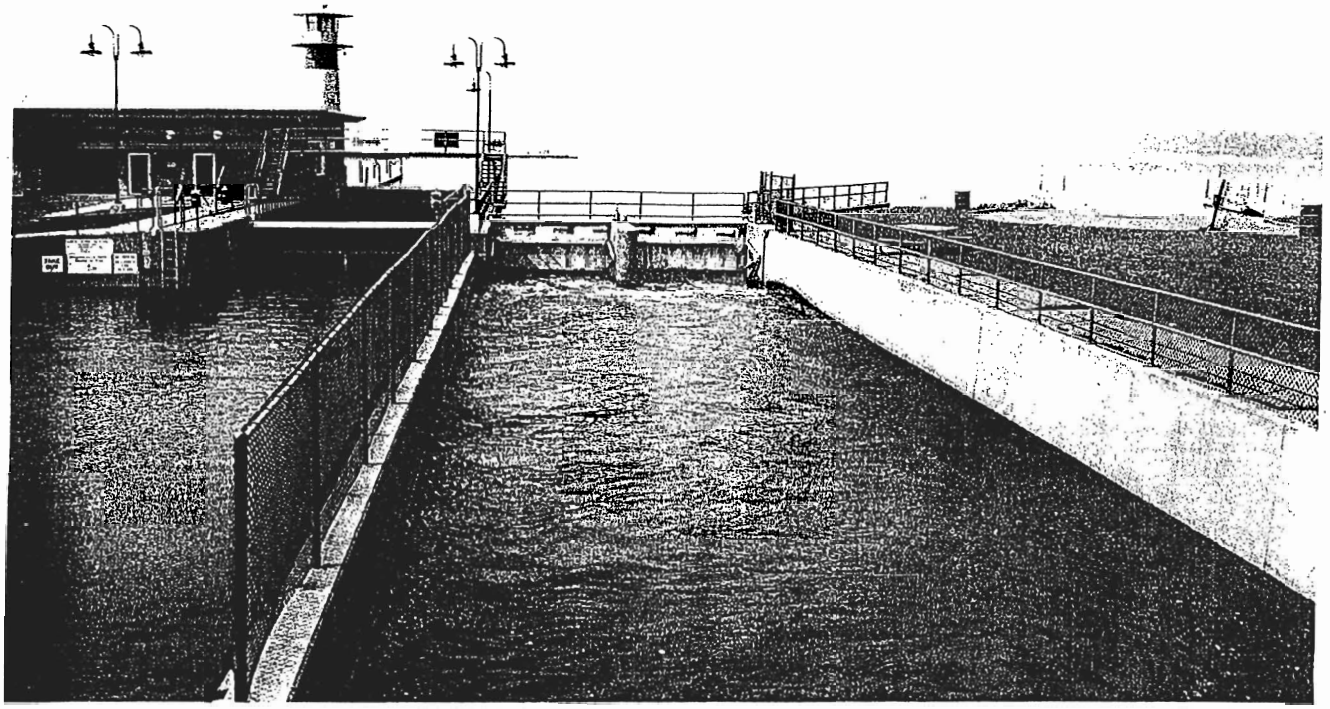


Photo 1 - View of dam from downstream. Two tainter gates on right of wall and lock on left

Photo 2 - View looking downstream from bridge over Sherman Avenue

Left and right are determined while looking downstream.

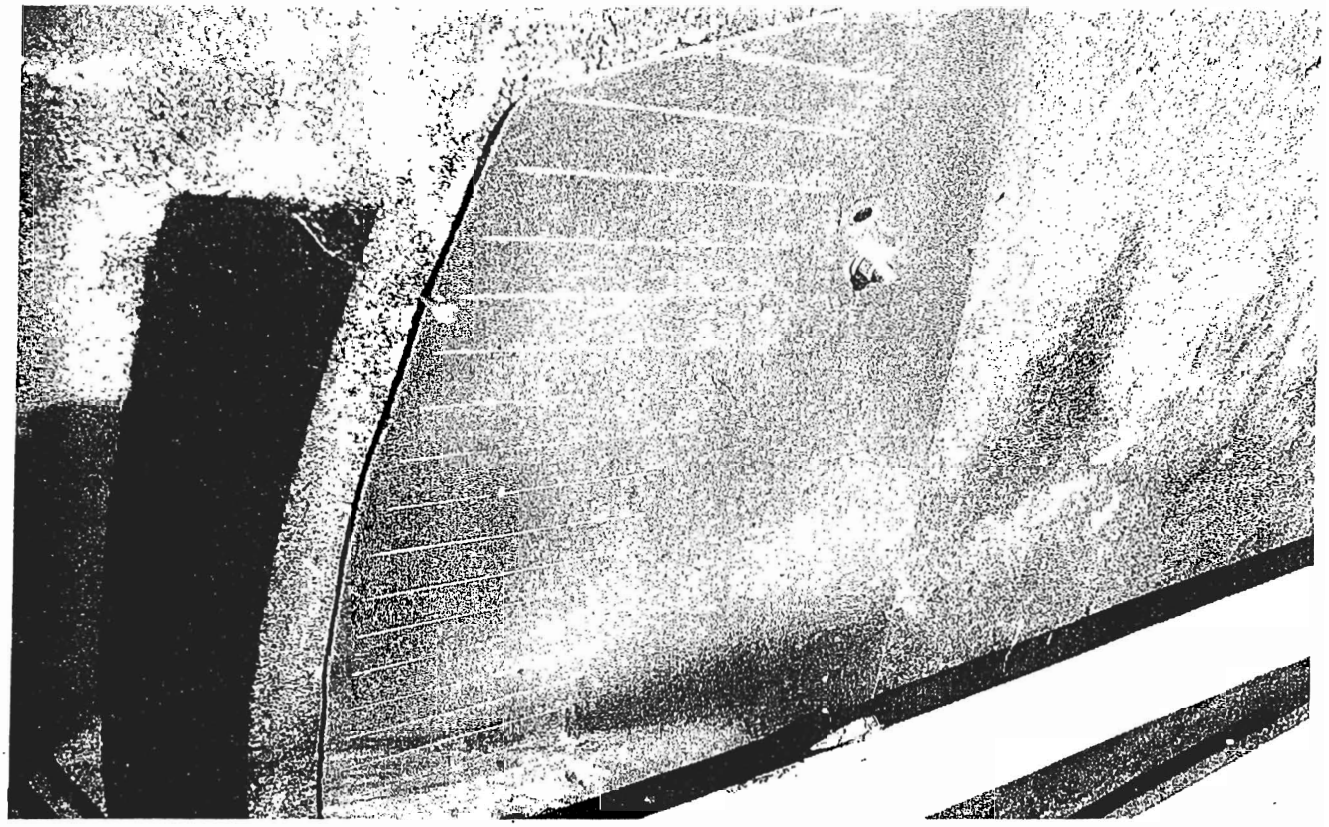
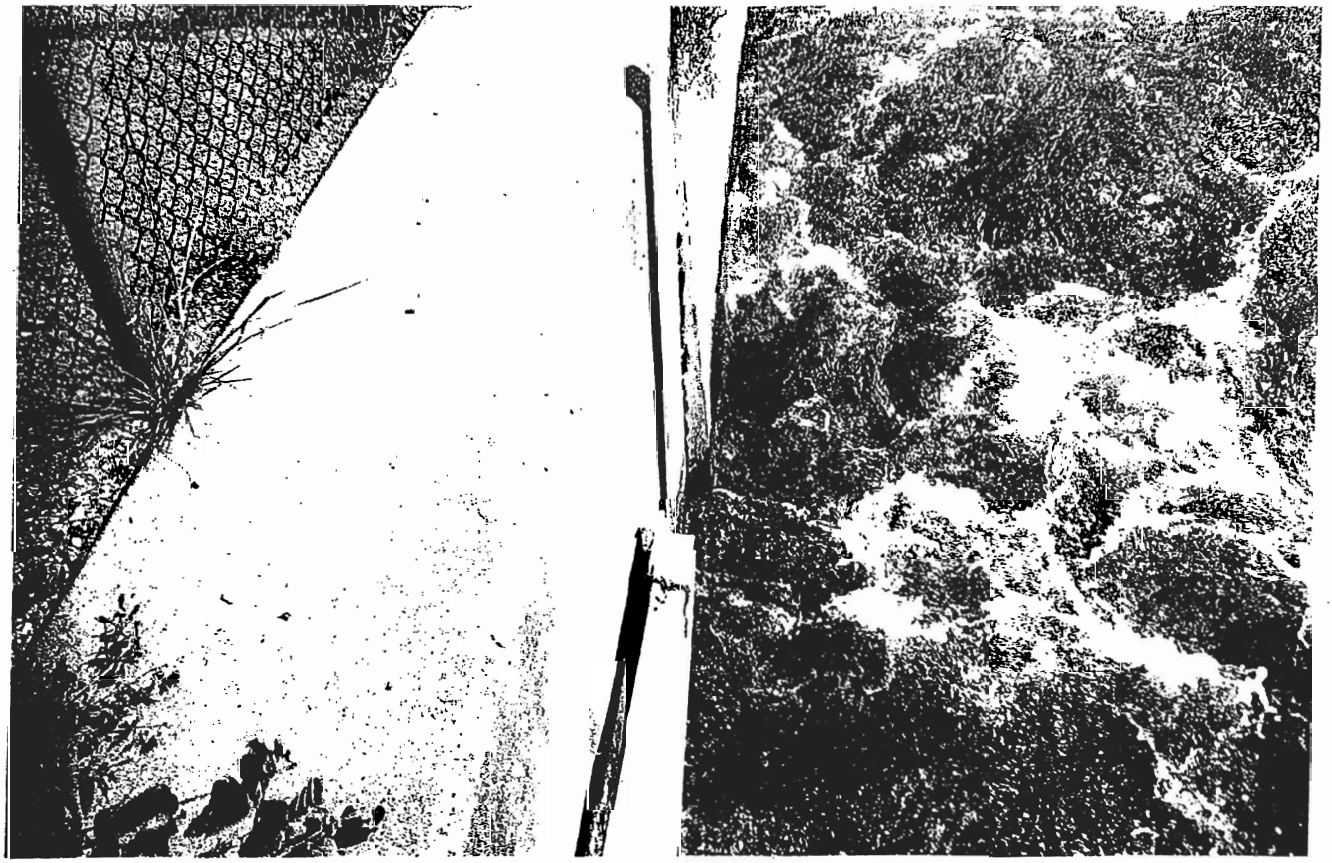


Photo 3 - View graduations showing how much the tainter gate is open

Photo 4 - View of left side of left tainter gate. Note patched wall with some minor shifting



Left and right are determined while looking downstream.

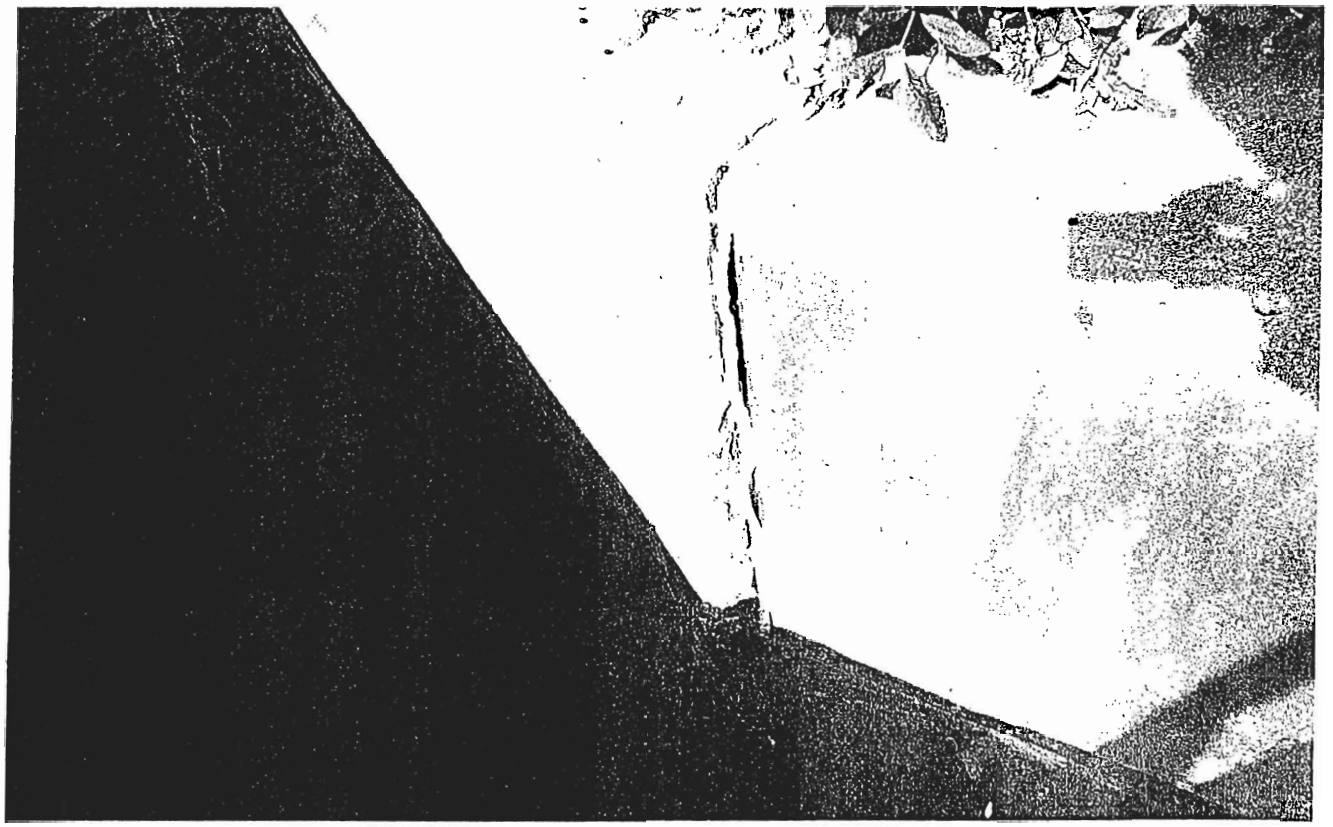
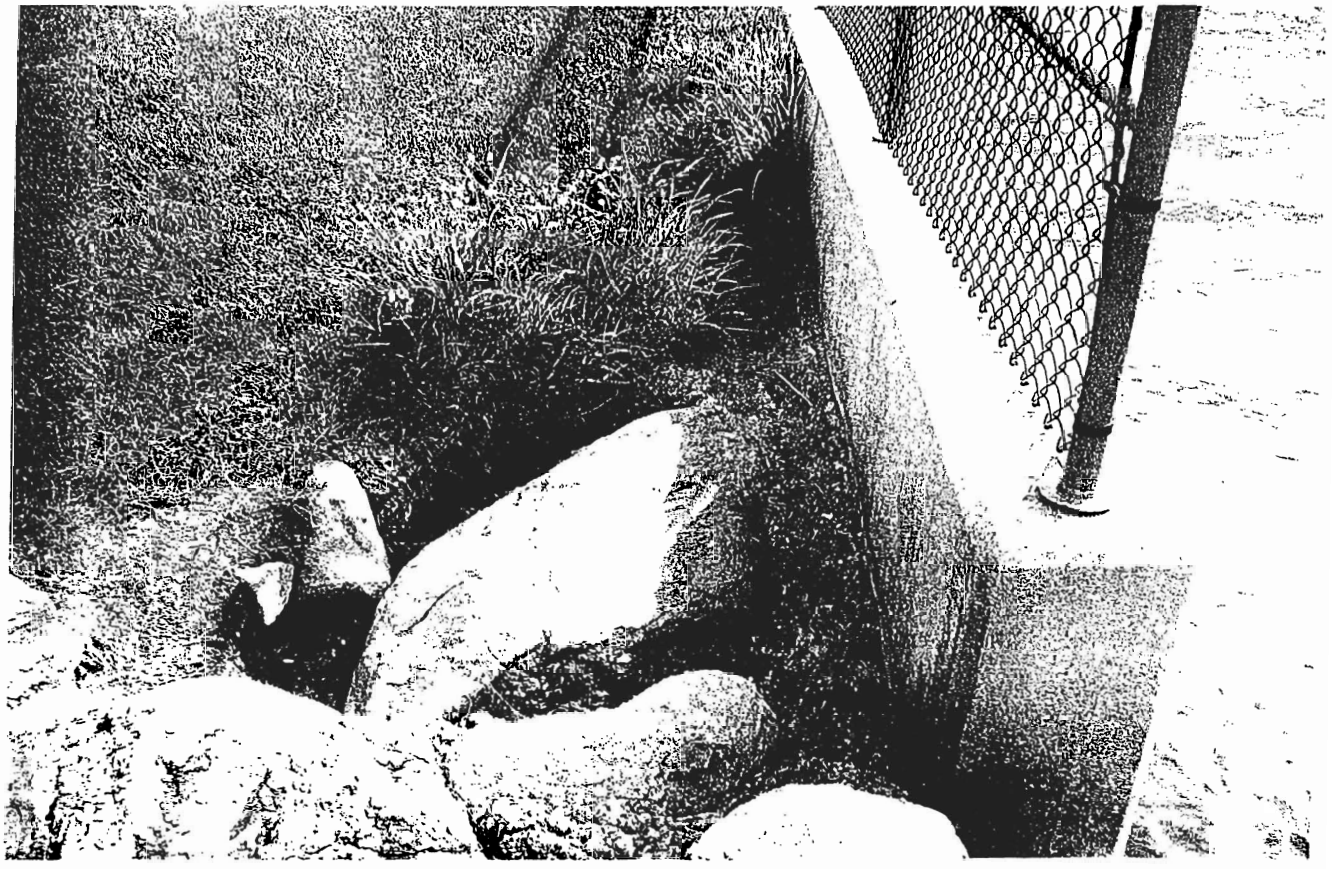


Photo 5 - View of left retaining wall upstream of the tainter gate. Not minor crack separation
Photo 6 - View of upstream end of left retaining wall. Note erosion working its way behind wall



Left and right are determined while looking downstream.

Name of Dam: LAKE MENDOTA DAM			Date: 9/21/07
Inspectors: ROB DAVIS, SUE JOSHEFF, KEN JOHNSON			F.F #: 13.06
Owner's Name: DANE COUNTY			Key Seq #: 578
Street:			
City, State, Zip Code:			
County: DANE		Phone:	
Weather and Site conditions: PARTLY CLOUDY, WINDY, 80°		Email:	

GENERAL

Item	N	Notes/ Observations	Action M	Action I	Action R
1 Monuments/Benchmarks		"BRIDGE DISK -- BRIDGE FROM 2003 P-13-759-34			X
Location:					
Elevation:		-BRONZE CAP ON D/S RT ¼ ABUT. WALL OF LOCKS			
2 Pool Level					
Normal/Operating:					
Maximum:					
Minimum:					
3 Access Road		SHERMAN AVENUE -- PARKING LOTS ON BOTH SIDES — GOOD ACCESS			
4 Signage/ Security					
Portage:	X	"DAM" & "TAKE OUT" SIGNS			
Dam Warning:	X	↓ 2'			
Downstream Hazard:		-OK-			
Fencing/Railings/Catwalks:					
5 Hazard Section					
A. D/S Development					
Density:		RESIDENTIAL			
Distance:					
Type (Residential, Commercial, Industrial):					
B. Channel Crossing					
Type:		(Bridge), Ford, Culvert, Trestle, Other (Explain) (Circle One)			
Dimensions:		150' D/S IS SHERMAN AVE.			
D/S distance:					
Traffic Level (Local, CTH, Rail Road, STH, Interstate, etc):					
C. Distance to nearest D/S community/impoundment:		IN CITY OF MADISON			
Name:					
D. Estimated Hazard (based on landuse):		EST. SIGNIFICANT			

N = Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

RECEIVED DEC 20 2007

EMBANKMENTS

Description:

	Item	N	Location on Embankment and Deficiency	Action M	Action I	Action R
1	**Vegetation:**		No problem			
	A. Trees Quantity (<5,sparse,dense): Diameter: Location:		SPARSE, VERY LARGE EMBANKMENT			
	B. Brush Quantity (sparse,dense): Location:		VERY LITTLE			
	C. Ground cover Type (grass, crown vetch,other): Quantity (bare, sparse,adequate, dense): Appearance (too tall, too short, good):		GRASS, ROAD			
2	**Erosion**		No problem / Not applicable / Could not inspect			
	A. Wave erosion (Beaching): Scarp: Length/ Width: Location:		LT U/S @ END OF RET. WALL SOME EROSION WORKING BEHIND WALL			X
	B. Runoff Erosion (Gullies) Quantity: Length/ Width/ Depth: Location:	X				
3	**Instabilities**		No problem / Not applicable / Could not inspect			
	A. Slides Transverse: Longitudinal: Scarp: Length/ Width: Crack Length/ Width:	X				
	B. Cracks: Transverse: Longitudinal: Length/ Width/ Depth: Location: Other:	X				
	C. Bulges/ Depressions Size: Height/ Depth:	X				
	D. Slope (Too Steep) U/S, D/S	X				

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U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

EMBANKMENTS (Cont.)

	Item	N	Notes/ Observations	Action M	Action I	Action R
4	**Slope Protection**		No problem ☐ Not applicable ☐ Could not inspect ☐			
	A. Type (none, riprap, wave berm, concrete slabs, loose formed concrete/asphalt):		RIPRAP OR CONCRETE WALLS			
	B. Condition:		GOOD			
5	**Other**	☒	No problem ☐ Not applicable ☐ Could not inspect ☐			
	A. Rodent burrows (few, many) Location:					
	B. Ruts Length/ Width/ Depth: Location:	☒				
	C. Other					
6	**Alignment**	☒	No problem ☐ Not applicable ☐ Could not inspect ☐			
	A. Vertical Low area: Elevation Difference: Location:		OVERTOPPING PT.?			
	B. Horizontal	☒				
	C. Width Too narrow: Location:	☒				
7	**Toe**	☒	No problem ☐ Not applicable ☐ Could not inspect ☐			
	Cracks/Slumps: Embankment drains: Type/Flow: Location: Seepage/ Wetness: Hummocky:					
8	**Seepage**	☒	No problem ☐ Not applicable ☐ Could not inspect ☐			
	Wet area: Boil: Sinkhole: Aquatic vegetation: Rust colored deposits: Other: Sediment in Flow: Flowrate: Location:					

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Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

SPILLWAY--PRINCIPAL - FIXED CREST			Action		
Item	N	Notes/ Observations	M	I	R
1 **Fixed Crest**		No problem ☐ Not applicable ☐ Could not inspect ☐			
A. Dimensions Top Width:					
B. Materials					
C. Shape (sharp-crested, broad-crested, ogee, chute, gated, overflow, morning glory, dropbox, labyrinth)					
D. Debris Prevention (racks, booms, etc.):					
E. Concrete Condition *					
F. Flashboards (none, number): Type (Metal, wood): Dimensions: Operability:					
G. Abutments Condition: * Seepage/wetness:					
H. Drains Type; Weep holes/ Relief drains/ Other: Flow Rate:		No problem ☐ Not applicable ☐ Could not inspect ☐			
I. Other					

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U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments:

NO FIXED CREST

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY-PRINCIPAL - GATES			Action		
Item	N	Notes/ Observations	M	I	R
1 Gates		No problem ☐ Not applicable ☐ Could not inspect thoroughly			
A. Types (lift/slide, tainter(radial), stoplogs, leaf, roller, flashboards, needles, other): Number and Size:		2 TAINTER GATES			
B. Stoplogs Dimensions: Condition:		NONE			
C. Abutments Condition: * Seepage/wetness:		NO APPR PROBLEMS -- GOOD COND.			
D. Piers (number, shape) Condition: *		1 -- GOOD CONDITION			
E. Operability Type of Operator: Condition(chain, cables,hoists): Security(locked?): Backup Operator:		CABLES -- MANUALLY CRANKED -- 3 TURNS = 0.1 FT HAS GRADUATED MARKS ON STAINLESS STEEL ~~Dock~~ LOCKED & FENCED IN -- CRANES REMOVED			
F. Access		OPERATOR'S DECK			
G. Condition Rust: Seals (leakage):		NONE APPR.			
H. Ice protection Type (Heaters, Bubblers, Barriers, Other)		HEATERS IN WINTER			
I. Debris Prevention (Rack, boom, etc.)		NONE -- CABLE IN FRONT OF DAM COULD CATCH ~~LARGE~~			
J. Condition of Flowway		NOT OBSERVED			
K. Drains Type (Weep holes/ Relief drains/ Other): Flow rate: Location:		NOT OBSERVED			
L. Other					

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I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments and/or Sketch:

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--PRINCIPAL- WHISTLE TUBES			Action		
Item	N	Notes/ Observations	M	I	R
1 Whistle Tubes		Full circle/ Whistle tube ☐ Half circle riser ☐ Glory hole (Drop Inlet) ☐			
A. Inlet Riser Diameter					
B. Outlet pipe * Dia: Type:					
C. Low level draw /Inlet Pipe What kind & Size:					
D. Debris/Trash Rack					
E. Antivortex					
F. Material					
G. Alignment					

N= Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments and/or Sketch:

NONE

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--PRINCIPAL - OUTLET EROSION CONTROL & UNDERMINING

Item	N	Notes/ Observations	Action M	Action I	Action R
1 **Outlet Erosion Control**		No problem ☐ Not applicable ☐ Could not inspect thoroughly ☐			
A. **Type** (none, endwall, plunge pool, energy dissipation structure rock lined channel, apron)		NOT OBSERVED			
B. **Scour**	☐	NOT OBSERVED	☐	☐	☐
C. **Material** a. **Riprap**: Avg Diameter: Condition (adequate, sparse, displaced, weathered): Bedding fabric- (Yes/ No): b. **Concrete** * Dimensions/Location:	☐		☐	☐	☐
D. **Sidewall/Headwall** Misalignment: Location: Description:	☐		☐	☐	☐
E. **Separated Joint** / Loss of Joint Material: Location: Description:	☐		☐	☐	☐
F. **Natural**	☐		☐	☐	☐
2 **Undermining**	☐	No problem ☐ Not applicable ☐ Could not inspect thoroughly ☐			
Location: Description:	☐		☐	☐	☐

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments:

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--AUXILIARY

Description:

Item	N	Notes/ Observations	Action M	Action I	Action R
1 **Dimensions**					
Length/ Width:					
Outfall Slope:					
2 **Type** (turf, reinforced turf, riprap, block, concrete):					
3 **Signs of usage** (debris, bent grass, etc.):					
4 **Vegetation:**		No problem			
A. Trees					
Quantity (<5, sparse, dense):					
Diameter:					
Location:					
B. Brush					
Quantity (sparse, dense):					
Diameter:					
Location:					
C. Ground cover:					
Type (grass, crown vetch, other)					
Quantity (bare, sparse, adequate dense):					
Appearance (tall, short,good):					
5 **Slope protection**		Not applicable			
A. Type (none, riprap, wave berm, concrete slabs, other):					
Condition:					
6 **Erosion**		No problem / Not applicable / Could not inspect			
A. Wave erosion (beaching):					
Scarp: Length/ Width:					
Location:					
B. Runoff erosion (Gullies)					
Quantity:					
Length/ Width/ Depth:					
Location:					
7 **Instabilities**		No problem / Not applicable / Could not inspect			
A. Slides					
Transverse Length:					
Longitudinal Length:					
Scarp: Length/ Width:					
Location:					
Crack Length/ Width:					
Location:					

N= Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--AUXILIARY (Cont.)			Action		
Item	N	Notes/ Observations	M	I	R
B. Bulges: (Depressions, Hummocky): Size: Height/ Depth:					
8 **Other**		No problem ☐ Not applicable ☐ Could not inspect			
A. Rodent burrows (few, many) Location:					
B. Ruts Location: Length/ Width/ Depth:					
C. Other (debris):					
9 **Outlet erosion control**		No problem ☐ Not applicable ☐ Could not inspect thoroughly			
A. Type (none, endwall, plunge pool, energy, dissipation structure rock-lined channel, apron): Condition (Scour?):					
B. Material Riprap: Avg. diameter: Condition (adequate, sparse, displaced, weathered): Bedding fabric (Yes/No):					
C. Concrete *		Not applicable			
a. Condition *					
b. Cracking * Dimensions/Location:					
c. Sidewall/ Headwall* Misalignment: Location: Description:					
d. Joints Separated: Loss of material: Location: Description:					
D. Natural					
10 **Undermining**		No problem ☐ Could not inspect thoroughly			
Location: Description:					

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I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

NONE

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

LAKE DRAINS

(Low level outlet, not a principle or aux. spillway)

Item	N	Notes/ Observations	Action M	Action I	Action R
1 General		None found / Does not have one			
A. Type of lake drain (isolated control/intake tower, valve vault with outlet conduit valve in riser/drop inlet siphon): Size:					
B. Operated (Yes/ No)					
2 Lake drain components					
A. Concrete structure Location: Description:* Condition:*					
B. Valve control (operating device): No operating device; No stem Bent/Broken Stem; Access Other: Operability:					
C. Valve/Sluice gate Quantity: a. Metal deterioration (surface rust, minor, moderate, extensive, other): Location: Flow rate: b. Misalignment c. Leakage - Flow rate					
D. Outlet conduit Size: Material: Condition:					
E. Energy dissipater Type (endwall, plunge pool impact basin, stilling basin, rock-lined channel, none): Condition:*					

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Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments: NONE

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

Powerhouse/ Mill Building

	Item	N	Notes/ Observations	Action M	Action I	Action R
1	Est. Capacity (Kw):					
	Date last used:					
	Current Use:					
2	Item:					
	A. Headrace general					
	Gates/ Trashracks:					
	Vegetation/ Erosion:					
	Sloughs/Slides/Cracks:					
	Seepage Wetness:					
	Rodent Burrows:					
	Concrete:					
	B. Tailrace					
	Scour:					
	Vegetation/Erosion:					
	Sloughs/Slides/Cracks:					
	Seepage wetness:					
	Rodent burrows:					
	Concrete:					
	C. Foundation: general					
	Concrete:					
	Seepage:					
	Integrity:					
	D. Superstructure					
	Condition:					

NONE

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F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

FIELD BOOK

Profile Leveling For: LAKE MENAOTA DAM

Instrument Person: SJ

Original Notes in Field Book #

Rod Person: KJ

Instrument Used:

Note Taker: SJ

Weather Conditions: PARTLY CLOUDY, WINDY, 80°

STATION	B.S. +	H.I.	F.S. -	ELEV.	DIST.	REMARKS
BM 689-C	8.69			853.40		
		862.09				BM ON R ~~O/S~~ BRIDGE RAILING ON ST S.T.O.C. (2003 BRIDGE P-13-759-34)
DISC ON BRIDGE			2.57	859.52		
LT WALL TOP D/S END OF WASTE			8.90	853.19		
D/S H_2O SURFACE			14.83	847.26		
LT BOTTOM @ D/S END OF WASTE			20.33	841.76		
LT WALL @ MID PT OF WASTE			8.90	853.19		
BOTTOM @ MID PT OF WASTE			20.43	841.66		
LT WALL TOP @ GATE			8.91	853.18		
TOP OF LT WALL U/S MOST			8.94	853.15		
TOP OF MID WALL @ D/S			10.93	851.16		
BOTTOM OF LOCK SIDE @ MID WALL D/S			22.24	839.85		
BOTTOM OF WASTE SIDE @ MID WALL D/S			19.80	842.29		
D/S END RT LOCK WALL			8.89	853.20		

Bench Mark Information:

Comments:

Suggested Survey points:

HW	Sill	Low Embankment
TW	Crest	Lt. Groin
D/S Channel	Abutments	Rt. Groin
Lt. Crest LT	Aux. Crest RT	Outlet Pipe Invert

STATION	B.S. +	H.I.	F.S. -	ELEV.	DIST.	REMARKS
BOTTOM O/S OF LOCK RT WALL		(862.09)	24.44	837.65		
BOTTOM @ U/S OF O/S LOCK GATE			24.48	837.61		
TOP OF WALL RT LOCK WALL MID PT			8.95	853.14		
TOP OF WALL LT LOCK WALL MID PT			8.94	853.15		
BOTTOM, LT MID LOCK CHAMBER			24.42	837.67		
WALL - LT LOCK U/S MOIT			8.95	853.14		
WS			11.65	850.44		
WASTE OPER. BRIDGE OVER RT GATE			8.92	853.17		
WASTE OPER. BRIDGE OVER LT GATE			8.93	853.16		
SILL LT GATE			11.09	851.00		
SILL RT GATE			11.26	850.83		
U/S END LOWER MID WALL			10.91	851.18		
RT EMB. RT. OF PATH			8.73	853.36		
BED			21.63	840.46		
DISK ON BRIDGE			2.68	859.41		(.52)
BM			8.95	853.14		(.40) CLOSE --OFF BY 0.26

Comments:

Suggested Survey points:

HW	Sill	Low Embankment
TW	Crest	Lt. Groin
D/S Channel	Abutments	Rt. Groin
Aux. Crest LT	Aux. Crest RT	Outlet Pipe Invert

OPERATION AND MAINTENANCE PLAN
XXXX LAKE DAM

TABLE OF CONTENTS

III. FIGURES

I. INTRODUCTION AND DEFINITION OF GENERAL RESPONSIBILITIES

A. Introduction

This manual describes a plan of operation, maintenance, and inspection for the Village of *XXXX, XXXX* Lake Dam. This manual should be periodically reviewed and modified to reflect operational and structural changes. The inspection and maintenance forms, and other applicable figures are designed for easy revision.

This manual was prepared for the Village of *XXXX*, by *XXXX*. This manual was prepare to conform with Wisconsin Administrative Code, Department of Natural Resources Section, Chapter NR 333 Dam Design and Construction Standards, Paragraph NR 333.07, "Hydraulic Design and Safety Requirements (4) Safety Measures Requirements."

B. Purpose and Intent

The purpose of operations and maintenance (O&M) plan is to provide the Village of *XXXX* Dam Operator and other officials with the following:

- Basic Guidelines which assist the operator / officials to
  - Perform routine and annual safety inspections
  - Properly document the inspections
  - Properly document maintenance related costs
  - Routinely observe river flows and determine gate operating levels.
- Guideline inspection checklist items for routine and annual safety inspections.
- A series of reproducible master forms which will assist documenting
  - Routine and annual safety inspections
  - Maintenance related costs

C. Description of the *XXXX* Lake Dam

The *XXXX* Lake Dam is located in the SW ¼ of Section*XX*. T*XX*N, R*XX*E, on the *XXXX* River (See Figure 8 " As-Built Information"). The dam lies within village limits adjacent to the south right-of-way of the STH *XX* bridge. The dam is used for recreational opportunities, aesthetic values and to help govern water level conditions. There are approximately 490 square miles (313,600 acres) in the upstream drainage area. The watershed is comprised of crop and forest lands.

The *XXXX* River flows into *XXXX* Lake downstream from the dam. *XXXX* Lake flows into the *XXXX* River. There are scattered rural residences and agricultural buildings along the *XXXX* River.

The *XXXX* Lake Dam was designed by *XXXX* in 19*XX* for the Village of *XXXX*. *XXXX*, Wisconsin constructed the dam in 19*XX*. The structure is constructed of reinforced concrete, Steel "H" and sheet piles, and earthen embankment materials (See Figure 7 As-Built Information"). The dam is approximately *XX* feet long.

Water flows through *XX* refurbished tainter gates and *XX* splashboard bays. The tainter gates serve both to maintain lake levels and as emergency drawdown devices. The *XX* splashboard bays control headwater levels through removable splashboards. The average observed river flow is 360 cubic feet per second. The dam was designed to be submerged under 100-year flood conditions.

D. Key Personnel and Their Responsibilities

The Village *XXXX* is the Owner/Operator of this *XXXX* County Dam. The Village of *XXXX* is responsible for both the routine and other preventative maintenance and operation of the dam.

Only the Dam Operator and trained Village employees may operate the dam spillway levels. The Dam Operator and Village support staff are required to maintain and inspect the dam. The operator is responsible for routine, monthly and annual inspections. More thorough inspections are required after high river flow conditions have subsided. The operator also is responsible for routine weekly and day by day monitoring when high flow conditions exist.

The operator should notify adjacent upstream and downstream operators about changes to the gate levels. Flood water levels may require the operator to change gate operating levels. The operator should coordinate changes with adjacent dam operators.

The *XXXX* Lake Dam does not have an "Early Warning System Device". The operator and trained officials must be able to identify potentially dangerous river flow conditions. Potential flood conditions are characterized by the following:

- Extended periods of greater than average precipitation or combined melting periods with greater than average precipitation.
- Rapidly increasing headwater levels (greater than 2" increase per hour).

II. OPERATION

Inspection, maintenance, and operation procedures are needed to ensure the public safety. Inspection is a requirement of maintenance. The operator can only reasonably maintain the dam in working order through active inspection. The following sections should be used to guide routine operation, inspection, maintenance, and emergency action.

A. Operational Procedures

1. General Surveillance Provisions

The *XXXX* Dam is routinely observed each month and inspected twice a year. Thorough inspections also occur after high flow conditions have subsided.. Flow conditions are routinely monitored weekly and day by day when high flow conditions exist. Routine and required preventive maintenance is performed by the Department of Public Works. Site inspection and flow monitoring records are kept on file at the Village Department of Public Works.

a. Adjacent Upstream "*XXXX* Dam"

The adjacent upstream "*XXXX* Dam" has only a measuring strip gage device. The dam is operated by the *XXXX* County Park and Forestry Department. Listed below is the necessary contact information:

XXXX County Park and Forestry Department
XXXX Parks Administrator
XXXX Dam Operator
XXXX
XXXX, WI *XXXX*
PH *XXXX*

b. Early Warning System

High water levels or increasing floodwater levels can be monitored by the measuring strip gage device. (The dam does not have an automatic warning device.) Upstream water levels (headwater) are controlled by tainter gates and splashboards. Adverse weather conditions may combine to create rising water conditions. The Dam Operator should be prepared to remove all splashboards in advance of high flow conditions. Higher than normal headwater conditions could prevent removing the splashboards.

The Dam Operator is responsible initiating and maintaining constant communication with the "*XXXX* Dam" Operator. Operation of both

dams, especially during flood flows, affects one another. Changes (and anticipated changes) in dam operation should be immediately communicated with the " *XXXX* Dam" Operator. The Dam Operator should also coordinate post flood dam operation with the "*XXXX* Dam" Operation.

Since an operator is not continuously on-site at the *XXXX* Dam, two upstream upstream spotters have been appointed by the *XXXX* Village Board. The spotters having ready access to the upstream end of the flowage and will monitor the water levels and immediately notify the *XXXX* Dam Operator of changes.

2. Response During Periods of Darkness

The dam is not equipped with lights. Lights adjacent to STH *XXXX* and *XXXX* Street partially illuminate the dam. The Village Fire Department and County Sheriff Department have spotlight equipped vehicles if necessary. Hand-held flashlights could also aid night illumination.

3. Identification of Emergency

The *XXXX* Lake Dam does not have an automated flood system. The Dam Operator and Village Officials will need to monitor weekly, monthly and seasonal weather conditions to help identify floodwater conditions. Flood conditions are characterized by significant increases in depth over relatively short periods of time. Depth increases in excess of 2" per hour need to be carefully evaluated. Listed below are important factors which require consideration in light of potential emergency flood situations:

- Initial Water Elevation and Gate Operation
- Previous Weather History (days and weeks) which includes past rainfall
- Predicted Weather
- Upstream and Downstream Dam Operation Procedures

4. Emergency Repair Supplies and Resources

Dam repair materials are not stockpiled at the dam for emergencies. Minor repairs would be evaluated by the EAP Coordinator and Dam Operator. The Dam Operator would coordinate repairs. Heavy equipment is available from the Village of *XXXX, XXXX* County Highway Commission and local contractors. Repair materials would need to be obtained from nearby sources. The operator should have an identified source of embankment repair materials for emergency use.

Major repairs would coordinated through the EAP Director and Dam Operator. *XXXX* constructed the dam in 19*XX* and could provide valuable assistance.

5. Coordination or Floodwater Flows

Upstream flows may be regulated from the adjacent *XXXX* Dam. The *XXXX* Lake level can only be lowered through the tainter gates and splashboards during higher than normal flows. The dam has no headwater or tailwater gages or an automatic warning device. The *XXXX* upstream dam only has a measuring strip gage device. Upstream water levels (headwater) levels are controlled by the tainter gates and splashboards headwater. Adverse weather conditions may combine to create rising water conditions. The Dam Operator should be prepared to remove all splashboards in advance of high flow conditions. Higher than normal headwater conditions could prevent removing the splashboards.

In conjunction with the daily, weekly, and monthly monitoring of flows, the Dam Operator shal regulate lake levels accordingly by the use of the tainter gates and splashboards. The Dam Operator shall take action to release water when a 2 inch increase in the water level is recorded.

The Dam Operator is responsible for coordinating high water flows with the adjacent upstream and downstream dam operators.

6. Winter Drawdown

Each splashboard should be removed during the fall before the lake freezes. Winter ice formation can damage splashboards. Spring thaws may also produce ice jam conditions at the dam. The boards should be removed to prevent damage to the splashboards.

The splashboards may be replaced in the spring after threats of ice damage have diminished. The tainter gates should additionally be opened prior to replacing the splashboards. Opening the tainter gates provides the following:

- Ensures proper tainter gate operation.
- Removes previously deposited silt materials from behind the tainter gates. This also prevents "clogging" of the dry fire hydrant.
- Allows detailed inspection and maintenance of the splashboards bays and the splashboard dowels.
- Allows removal of debris from the splashboard bays.

B. Inspection

Inspection is a necessary part of operation since early detection of gradual changes can reduce maintenance costs. Routine inspections provide a way to monitor the dam performance. **All inspections should be perfonned by properly trained persons.** Listed below are the several categories of inspections:

- Daily /Weekly
  - River flow observations
  - Precipitation Records
- Monthly
  - Operating Equipment
  - Safety Equipment
  - Performance and Superficial Structure
- Yearly
  - Structural
  - Operating and Safety Equipment
- 10 year Department of Natural Resources
- After High Flow Conditions have Subsided (post storm)

The categories are time based with increasing considerations. **Daily/weekly and monthly inspections** require little time to perform. These inspections provide insight on how the dam is operating under current weather conditions. They also provide insight if the dam is mechanically operable for emergencies. River flow conditions should also be regularly monitored. The water depth measuring strip on the upstream abutment provides the easiest way to consistently monitor water levels. Water levels and gate operating positions should be recorded on Figure 1 "Daily /Weekly Inspections Observations".

Yearly inspections are designed to evaluate how the dam performed throughout the year and what is the dam's condition. This inspection evaluates how the dam has changed from its original as-built plan condition. Detailed photo documentation provides a permanent record of changing conditions. Cracking conditions can be carefully monitored by placing a ruler within the photo. Larger scale repair and maintenance items should be identified for correction. These inspections are best performed mid-year after the higher spring flows have subsided. State code requires that copies of a thorough annual inspection report be submitted to the Wisconsin Department of Natural Resources (WDNR).

A ten-year WDNR inspection is required by Ch 31.19 State Statutes. The dam must be inspected by dam safety officials. This coordinated inspection thoroughly details a minimum of the following:

- Structures Integrity (concrete, piling, up / downstream conditions)
- Dam Equipment Operation (gate operators, winches, etc.)
- Dam Safety Equipment Operation (fences, signage)

Post storm inspections should be made as soon as flood water conditions have subsided. This dam is susceptible to damage during high flow conditions because it is designed for submergence during the 100 year flood. Listed below are key elements to be inspected after storm flows have subsided:

- Vegetation: high flow damage
- Earthen Fill: slope, riprap, and abutment stability, seepage
- Tainter Gates: operation
- Flashboard Bays: board damage .Gate Openings: deposited debris

Figure 2 "Inspection and Maintenance Checklist" may be used for routine, annual, and post storm inspections.

1. Equipment

The Dam Operator and qualified officials should be adequately equipped for inspection. The following are recommended inspection related equipment items:

- Camera with flash.
- Ruler with graduations large enough to be identified on photos
- Knives for prying cracks and removing materials
- Boat with 15 feet graduated rod to check upstream and downstream depths and scour locations.
- Blueprint copy of site map or Figure 3 "Site Plan" to note locations of problems and changing conditions.

C. Maintenance

The *XXXX* Lake Dam is constructed of reinforced concrete and steel, fabricated components and earthen embankment mat~rials. The dam has relatively few maintenance items and operating compon:."nts. The dam has an estimated life of 100 years when properly maintained. Periodic maintenance and item replaceme~t are expected and preventative maintenance activities will increase with time. Figure 2, "Inspection and Maintenance Checklist" lists these minimum items requiring maintenance.

Maintenance should be regularly performed. Routine, annual, and post storm inspection results will dictate how often and to what degree maintenance is required. Most items can be repaired by the Dam Operator or Village personnel. Larger repair items may be required by qualified contractors. Generally, questionable repair items should be inspected by a qualified engineer and if required, repaired by contractors. Figure 4 lists each inspection item with an average repair frequency and description. Figure 5 is a maintenance report which should be used to document maintenance activities.

1. Maintenance Frequency

Maintenance should be routinely performed. Some items require more frequent attention than others. Figure 4 provides a guideline for how often features may require maintenance and repair.

- Waterproof filler materials may be removed from construction joints by flood waters and settling of the structure. Waterproof filler materials should be maintained as outlined by the contractors or product suppliers specifications.

2. Budget Considerations

The *XXXX* Lake Dam is constructed of reinforced concrete and steel, fabricated components, and earthen embankment materials. Periodic maintenance and item replacement are expected. Preventive and regular maintenance items are both to be expected and will increase with time. The dam contractor and component fabricators will be able to provide guidelines for routine maintenance and replacement. The operator should expect to use expendable items as fencing, paint, lubrication, riprap materials, etc. Riprap, geotextile fabric and embankment fill materials should be stockpiled for both emergency and routine use. Other expendable items should be budgeted based on manufacurers recommendations and owners experience. Funds should be allocated for larger overhaul items and repairs even though they may not always be predicted.

D. As-Built Plans and Photo Documentation

The As-Built plans and photographs detail construction dimensions, materials, and installed conditions. The photos were selected to document how key features should be maintained. The photos are referenced to Figure 6, "Photo Documentation of As-Built Conditions"

Figure 7 "As-Built Information" summarizes as-built information for key dam features. As-Built plans and photo documentation are located with the Village of *XXXX* Dam Operator and Village Hall. Copies of the master As-built plans for the *XXXX* Lake Dam are on file with *XXXX*.

E. Emergency Action Plan

An Emergency Action Plan (EAP) was created to comply with State of Wisconsin Administrative Code, Department of Natural Resources Chapter NR 383. This code requires an EAP to be prepared by the local unit of government and concurred by the Division of Emergency Government.

The purpose of this EAP is to provide the Village of *XXXX*, *XXXX* County, and Emergency Warning Agency designated officials with specific guidelines for emergency action in the event that high flood water conditions on a dam failure occurs.

The intent of this plan is primaily to protect the lives of the Village of *XXXX* and *XXXX* County citizens and secondarily to reduce property damage.

The underlying intent of the plan is to provide a specific schedule of events to do the following:

1. Monitor/assess dam structure conditions to help predict dam behavior at all water level conditions.

2. Provide basic levels of required communication for various water level conditions (Including dam overflow, dam failure, etc.)

3. Provide for a required yearly coordination meeting between all emergency contacts, landowners directly affected by immediate dam failure, and designated safety officials.

4. Define each agencies/persons duties for public notification securing.

5. Provide detailed response actions for the particular emergency.

An observer other than the designated officials may notice unexpected high flows, potential dam failure or a dam failure. An observer noticing unusual behavior should

immediately notify the Village of *XXXX* Police Department at *XXXX*. Further action/response will depend on whether Condition A or B exists, as described below:

- Condition A: Failure of the *XXXX* Lake Dam is imminent or has occurred.

- Condition B: A potentially hazardous situation is developing at the *XXXX* Lake Dam.

III. FIGURES

IV. REFERENCES

V. LOCATIONAL MAP

ATTACHMENT 4

SAMPLE OPERATION PLAN

Dam Name: _____

Date: _____

Owner Name: _____

WHO

1. Who operates the dam? (Owner or other agent/employee)

   Address: _____

   Telephone: _____

2. Who is the backup operator?

   Address: _____

   Telephone: _____

3. Who maintains the dam?

   Address: _____

   Telephone: _____

4. Who must be called in an emergency?

   Address: _____

   Telephone: _____

WHAT

1. What downstream structures would be affected by a flood?

2. What minimum flow, if any, is required for downstream users?
   25% of natural low flow is minimum allowable

3. What impoundment levels are required to protect upstream users?

    Maximum Elevation
    Normal Elevation
    Minimum Elevation

WHEN

1. When are gates operated during storm events?

2. When are gates operated during normal conditions?

WHERE

1. Where is emergency power?

2. Where is engineering assistance?

HOW

1. How are gates operated?

2. How often is mechanical equipment operated?

ATTACHMENT 5

SAMPLE INSPECTION/MAINTENANCE PLAN

DAILY

Note water surface elevation
Check security and safety devices
Make required changes in gates and valves
Check spillway outflow channel for debris
Record pertinent information in
Determine reservoir inflow
Check toe and/or gallery drain flows
Read weather gauges and record data
Check log or safety boom
Check instrumentation schedule

MONTHLY

1. Dam and Reservoir

Check condition of:
crest of dam upstream and downstream
faces visible portions of foundation
abutment contacts
galleries
stilling basin(s)
critical landslide areas
reservoir area
drainage systems, toe drains
measuring devices
rodent problems
security and safety devices

2. Electrical System

Check:
standby gasoline-engine-driven
generator run for a minimum of 1 hour
keep battery charged
gas supply

Replace:

light bulb

3. Outlet Works

Grease hydraulic gate hanger
Check signs that warn public near

4. Spillway

Check:

for debris in inlet channel
for operation of gates
fence condition and caution signs

QUARTERLY

1. Outlet Works
Operating instructions - up to date and legible

2. Spillway

Check and clear bridge drains

Check gate air vents on downstream face
Clean gate control switchboxes

Clean inside of motor control cabinet

SEMI-ANNUALLY

1. Outlet Works

Check:
- hydraulic oil lines
- oil reservoir level in hydraulic system
- rubber seals and seal clamp bar
- hoist cables - lubricate

Lubricate gate rollers

2. Electrical System and Equipment

Change oil in standby gasoline-engine-driven generator

Check:

- exposed electrical wiring
- outlet works valve house
- gate hoists
- spillway bridge

3. Spillway

Check:

- paint on gates
- hoist cables - lubricate
- mechanical hoist bearings
- flexible coupling bearings
- gear cases
- hoist gear case, replace grease
- spur gear units and gear motors

ANNUALLY

1. Outlet Works

Paint:

- metalworks
- color-coded valves
- woodwork and trim

Exercise gates and valves
Check condition of interior and exterior of outlet conduit

2. Dam and Reservoir

Review the Standard Operating Procedure (SOP)

3. Spillway

Check and repaint metalwork:

- on spillway
- bridge
- gates
- fence

Operate and exercise gates
Examine stilling basin and downstream channel

4. Electrical

Check:

- electrical conduits
- pull-boxes
- switches
- outlet works valve house
- gate hoists
- spillway
- galleries

5-YEAR PERIOD

Examine intake structure and stilling basin which normally are under water -less frequent if experience indicates

OWNER'S INSPECTION CHECKLIST

Dam Name: _____

Date of Inspection: _____

Owner's Name: _____

Any rapid or great change in the condition of your dam should be immediately reported to the State Dam Safety Engineer, Dick Knitter, (608) 266-1925 or the State Warning Center (608) 266-3232.

	NO	YES	IF YES
Surface Cracks?	☐	☐	Monitor[1]
Slumping or cracking on the upstream or downstream side?	☐	☐	Contact state agency or engineer
Erosion from runoff, wave action or pedestrian/vehicle traffic?	☐	☐	Repair and stabilize
Embarkment/spillway seepage?	☐	☐	Monitor[2]
Seepage water muddy? Boils?	☐	☐	Contact state agency or
Top of the dam settled?	☐	☐	Monitor[3]
Loss of riprap?	☐	☐	Replace and maintain
Trees, brush or burrows on dike? dike	☐	☐	Clear trees, brush, fill holes and seed bare
Spillways blocked?	☐	☐	Clear spillway immediately
Exposed metal rusty?	☐	☐	Clean and paint
Concrete deterioration or cracks?	☐	☐	Monitor[4]

Cracks or uneven movement?	☐	☐	Monitor[5]
Scour?	☐	☐	Monitor[6]
Pipe joint separation?	☐	☐	Repair
Gates non-operation?	☐	☐	Repair and make operational
Trash racks blocked?	☐	☐	Clean out debris

---

[1]Monitoring surface cracks in the embankment includes tracking the speed with which the cracks widen, and documenting this development through the use of photographs or instrumentation records. Any rapid development requires immediate notification of the State Dan Safety Engineer.

[2]Monitoring seepage involves determining the quality and quantity of flow through the embankment/dike/spillway. Measure the quantity per unit time, if possible, and note any solid materials carried in the flow, such as sand or other fines. Excessive flows and/or turbid flows require immediate notification of the State Dan Safety Engineer.

[3]Settlement of the top of the dam can be caused by surface erosion or by internal compaction. Rapid settlement requires immediate notification of the State Dam Safety Engineer.

[4]Concrete deterioration may be patched through routine maintenance procedures. Extreme deterioration should be examined by an engineer. Severe cracking or rapid changes require immediate notification of the State Dam Safety Engineer.

[5]Cracks or displacement of the abutments may occur over time. Monitoring includes determining the rate of change. rapid separation requires immediate notification of the State Dam Safety Engineer.

[6]Scour can be determined by probing the streambed. Abrupt changes or rapid erosion of the streambed requires immediate notification of the State Dam Safety Engineer.

EMERGENCY ACTION PLAN
XXXX Dam
XXXX COUNTY, WISCONSIN

TABLE OF CONTENTS

EMERGENCY ACTION PLAN
XXXX DAM
XXXX COUNTY , WISCONSIN

INTRODUCTION

This section describes the purpose of this Emergency Action Plan (EAP); describes the dam hazard area; identifies those responsible for dam operation and implementation of the EAP; and describes the procedures for training participants, and reviewing, testing, and updating the EAP

PURPOSE AND INTENT

The purpose of this EAP is primarily to safeguard lives and secondarily to reduce property damage of citizens *XXXX* County who live along *XXXX* Creek in the event of flooding caused by a large volume of runoff from or failure of *XXXX* Dam. This EAP provides dam and contact information and describes actions to take in the event of such flooding.

DESCRIPTION OF DAM

XXXX Dam is located on *XXXX* Creek in *XXXX* County, Wisconsin, in Section *XX*, T*XX*N, R*XX*W. The dam is owned by the *XXXX* County Land Conservation Department. The dam creates a 1.87-acre impoundment used for flood control. The drainage area at the dam is 0.58 square miles. The reservoir flood storage capacity is 37.2 acre-feet at the emergency spillway crest, elevation 1223.49 feet. Downstream of the dam, *XXXX* Creek winds through steep forested valleys with flat agricultural flood plains and runs into *XXXX* Structure 29. Exhibit 1 is a plan and section of *XXXX* Dam. All report elevations are referenced to USGS datum. Add 0.51 feet to report elevations to obtain elevations shown on the drawings.

The main components of the dam are:

- Homogenous earth embankment, approximately 250 feet long, with a crest elevation of 1225.49 feet and an approximate structural height of 36 feet.
- 2.5H:1V upstream embankment slope with a 8-feet-wide berm at elevation 1210.49 feet, a 14-feet-wide crest, and 2.5H:1V downstream embankment slope.
- Grass-lined overflow chute emergency spillway, 20 feet wide with a crest elevation of 1223.49 feet, located at the right abutment.
- Concrete rectangular drop inlet principal spillway, 3 feet by 3 feet, with a crest elevation of 1210.49 feet.
- Concrete conduit and outlet, 18 inches in diameter with an outlet invert elevation of 1190.99 feet.
- Unlined stilling pool.

The Soil Conservation Service (SCS) designed and funded construction of the dam under Public Law 566. Dam construction was completed in 1961. No significant modifications have been made to the dam since its construction.

HAZARD AREA

Area That Would Be Affected by a Breach or Major Flooding

A dam failure analysis was performed to determine the area that would be inundated if the dam were to fail during the 100-year flood on *XXXX* Creek. The analysis extended approximately 2.01 miles downstream from the *XXXX* Dam to just past *XXXX* Structure 29. The hydraulic shadow ends 1.79 miles downstream of the dam. Exhibit 2 is a hydraulic shadow map showing the area that would be inundated by a 100- year dam failure flood. Exhibit 3 shows 100-year flood profiles for the river reach studied.

Populations Affected

No residences, buildings, or campgrounds would be inundated by the dam failure flood or 100-year flood.

Critical Facilities

No critical facilities, such as hospitals, rescue and relief facilities, water supply facilities, hazardous waste facilities, or bridges, are in the hazard area.

RESPONSIBILITY AND AUTHORITY

Dam Operation and Maintenance

The *XXXX* County Land Conservation Department maintains the dam and Allen *XXXX* is the dam operator. An emergency phone number list is in Appendix A.

The dam operator works at the *XXXX* County Conservation Office and observes the dam two to three times a year during inspections and routine maintenance. The operator is also on call during high water conditions.

The address and telephone number of the dam operator are:

XXXX County Conservationist
Work address and telephone number:
820 Industrial Drive, Suite 3
XXXX, WI *XXXX*
(608) *XXXX*
Home address and telephone number:
820 *XXXX*
XXXX, WI *XXXX*
(608) *XXXX*

EAP Coordinator and Participants

Allen *XXXX*, *XXXX* County Conservationist, is the EAP Coordinator and has overall responsibility for implementing the EAP, including training participants and periodic reviewing, testing, and updating of the EAP.

The address and telephone number of the EAP Coordinator are as follows:

XXXX County Conservationist
Work address and telephone number:
820 Industrial Drive, Suite 3
XXXX WI *XXXX*
(608) - *XXXX*
Home address and telephone number:
820 *XXXX*
XXXX, WI *XXXX*
(608) *XXXX*

The EAP participants are the following:

XXXX, County Sheriff
XXXX, County Emergency Government Director

The telephone numbers for the participants are listed on the notification charts in Appendix B. The procedures for carrying out the phases of the EAP are described in the subsection titled "Levels of Emergency and Notification Procedures."

PERIODIC TRAINING. REVIEW. UPDATING. AND TESTING

The EAP coordinator's duties include the following:

- Training EAP participants to handle an emergency situation at *XXXX* Dam.
- Annually reviewing the EAP with EAP participants for any required changes and distributing copies of the revised plan to participants.
- Testing the EAP.
- Submitting EAP revisions and testing reports to the Wisconsin Department of Natural Resources.

Review and Updating

Annually the EAP Coordinator verbally reviews the plan with EAP participants to explain the procedures to follow in the event of an emergency, address any changes that need to be made in the plan, answer questions regarding the procedures, and test their understanding of the plan. The

EAP participants review the plan for possible changes, including:

- Changes in personnel.
- Changes in telephone numbers.
- New conditions that would affect flood flows or the extent of damage due to a dam failure.

The EAP Coordinator promptly makes the needed changes in the EAP and distributes a revised plan to all participants. If changes are made in the EAP at any other time, the EAP Coordinator also verbally reviews these changes with the participants and distributes a revised plan.

Testing

The EAP Coordinator is responsible for conducting a test simulating a dam failure. Testing the plan familiarizes the EAP participants with the plan, helps estimate the time needed for notification, and helps reveal any plan deficiencies. The EAP Coordinator initiates the test by contacting the *XXXX* County Sheriff. EAP participants must perform their required actions as if in a real emergency. When executing the test, each participant states their name and position and indicates that this is only a test.

To assess the degree of success of the test, the EAP Coordinator requests that each participant comment about the execution of the notification procedures, discuss any problems encountered, and suggest any changes that would improve the EAP. The EAP Coordinator keeps this information on file for comparison with future tests and revises the EAP if needed.

APPROVAL

Key EAP participants need to approve the EAP by signing and dating the approval form on the following page. By signing the approval form, they agree to their responsibilities to review the EAP process and carry out the plan.

EAP Approval Form

We, the undersigned, this date acknowledge this plan as part of the emergency operation procedure to protect life and reduce property damage in case of an emergency at *XXXX* Dam.

_____ _____

Allen *XXXX* Date
XXXX County Conservationist

_____ _____

Dale *XXXX* Date
XXXX County Sheriff

_____ _____

Gordon *XXXX* Date
County Emergency
XXXX Government Coordinator

IDENTIFICATION OF EMERGENCY

This section describes the events or conditions that indicate an emergency, defines the levels of emergency, and describes how EAP participants and the public should be notified in the event of an emergency.

EVENTS OR CONDITIONS THAT INDICATE AN EMERGENCY

An emergency exists when dam failure has occurred or when dam failure is imminent. Floods are a major cause of dam failure, and the dam should be monitored during high water conditions. However, failure may also occur during normal conditions, and this failure can be the most dangerous because the resulting flood would be sudden.

- Conditions indicating potential failure include, but are not limited to, the following:
- Slumping or sloughing of the embankment.
- Excessive erosion on the embankment, below the spillway, or at the abutments.
- Excessive seepage or cloudy seepage through the abutments or embankments.
- Settlement or cracking in the embankment.
- Piping or boils in the embankment.
- Large cracks in the concrete spillway.
- Noticeable movement of the spillway.

The most common cause of failure for dams like *XXXX* Dam is a flood or high water event that erodes the embankment and eventually results in a breach. Ice buildup can also be a factor in dam failure because it creates additional stress on the dam. If ice builds up on the drop inlet spillway, it can block flow and lead to a high water condition.

LEVELS OF EMERGENCY AND NOTIFICATION PROCEDURES

The first step in the notification process is to identify that there is a potential problem with the dam and to assess its seriousness.

The two levels of emergency are an alert condition and a warning condition:

- An alert condition indicates that a potentially serious condition is developing and failure could occur if conditions do not improve.
- A warning condition indicates that failure of the dam is imminent or has already occurred.

Notification charts for an alert condition and a warning condition are in Appendix B. These notification charts list contact names and telephone numbers.

Alert Condition

If a potentially serious situation is developing, the observer contacts the EAP Coordinator, who can then make a decision as to what further steps are required. The EAP Coordinator informs the Sheriff of the situation. The Sheriff may then decide to contact the *XXXX* County Emergency Government.

Warning Condition

If failure is imminent or has occurred, the observer contacts the EAP Coordinator who will then contact the County Sheriff. The Sheriff contacts the *XXXX* County Emergency Government and then the Wisconsin State Warning Center, and the Monroe County Highway Commissioner, so they can set barricades and reroute traffic, if needed. The Sheriff also contacts the news media and the public. The Wisconsin State Warning Center will contact the Wisconsin Department of Natural Resources Duty Officer and the State Dam Safety Engineer.

The top priority in the notification process is the protection of human life, and the order of those notified in a warning condition may need to be modified to meet this priority.

After carrying out the notification procedures, the EAP Coordinator or the Sheriff proceed to the dam. The dam is approximately 15 miles from *XXXX,* the county seat. After arriving at the site, they will closely monitor the dam, assess damage, and develop a plan for repair in coordination with the State Dam Safety Engineer.

PREVENTIVE ACTION

During an alert condition or warning condition, specific preventive actions may help to prevent or delay dam failure. Because the feasibility and effectiveness of a preventive action will depend on the specific situation, we advise the County to consult a qualified engineer before taking any preventive action. Preventive actions could include:

- Removing ice or debris from the drop inlet intake.
- Placing riprap in pipe outlet plunge pool if scour is occurring.
- Placing sandbags on the crest of the embankment.

Because of uncertainties about their effectiveness, these preventive actions should be carried out simultaneously with appropriate notification of an alert condition or warning condition.

A key person in implementing preventive actions *XXXX* Dam is the dam operator, who closely observes the dam and monitors water levels during high water conditions.

The contacts for equipment such as sand bags, that could be used at the dam for preventive action are listed in Appendix C.

REENTRY AND RECOVERY

The *XXXX* County Sheriff's Department performs the reentry. The Sheriff's Department should inspect the private drive and CTH Y that crosses *XXXX* Creek for washouts or other hazardous conditions and perform surveillance of the rest of the accessible area downstream of the dam. This surveillance should include inspection of any water, gas, and sanitation lines. The area downstream of the dam is accessible from a private drive off of CTH Y. The Sheriff's Department should photograph and keep a log of observed damages.

CALIBRATION

Model calibrated to _____ Historical data _____ FIS

Were any sensitivity analyses performed _____

HAZARD RATING

Hazard rating assigned _____

___ Development in hydraulic shadow _____

___ Development in w/o dam fp/fw _____

___ Inventory and identification of downstream structures

___ All other information necessary to determine hazard rating

___ Did we field check

Required principle spillway capacity _____

total spillway capacity _____

Can dam pass design flow? _____

If yes, is there any freeboard? _____ How much? _____

STABILITY ANALYSIS

Method used to calculate sliding _____

Overturning _____

foundation _____

Was embankment stability addressed? _____

Do the embankment slopes and construction look stable? _____

Was subsurface investigation made? _____ If so how extensive? _____

Elevation	**Factors of Safety**		
	Sliding	Overturning	Foundation
Normal Pool	_____	_____	_____
Max Pool	_____	_____	_____
Max Load (ice, debris...)	_____	_____	_____

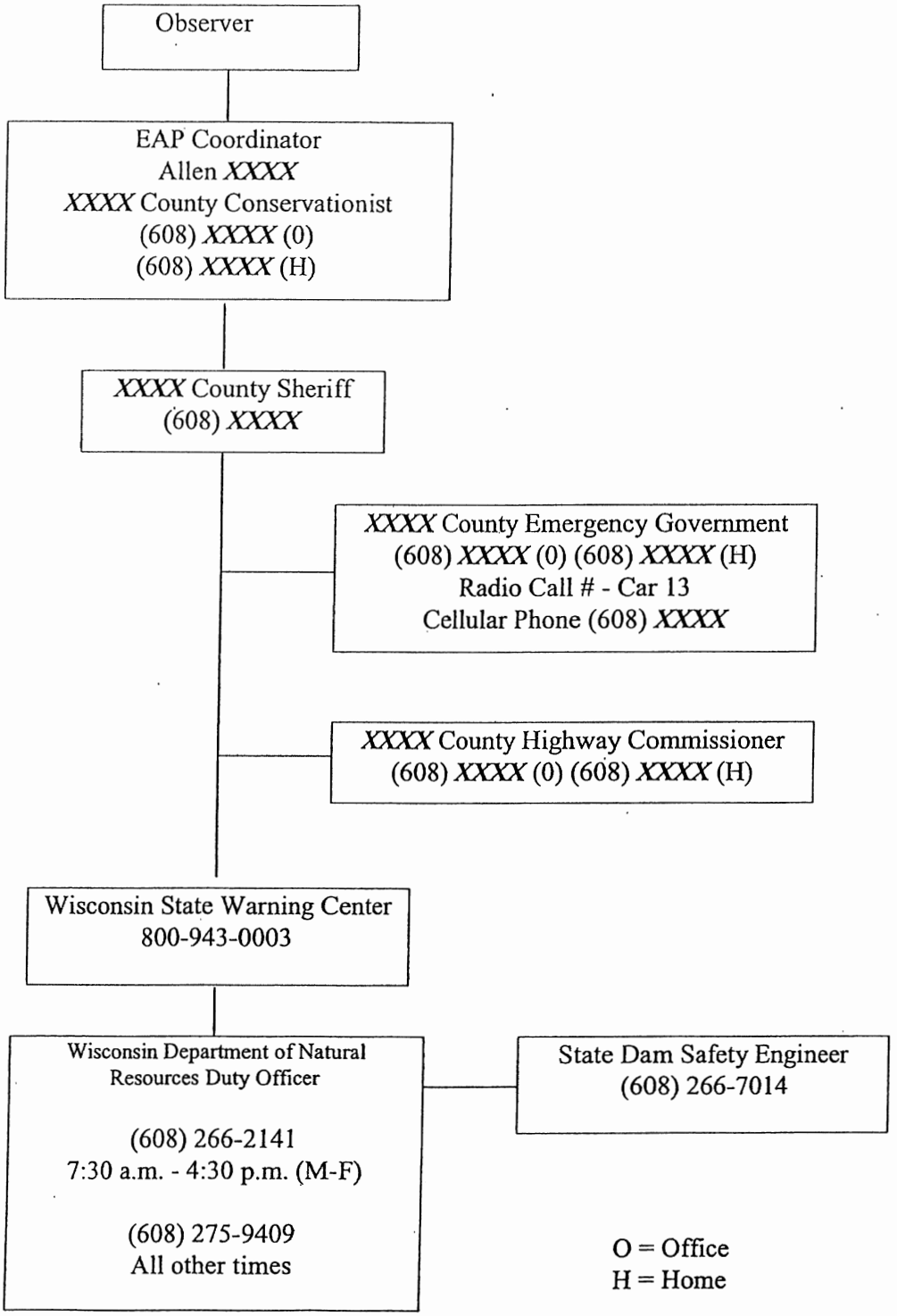
Are factors of safety adequate _____

Is the dam safe _____

NOTIFICATION FLOW CHART

WARNING CONDITION

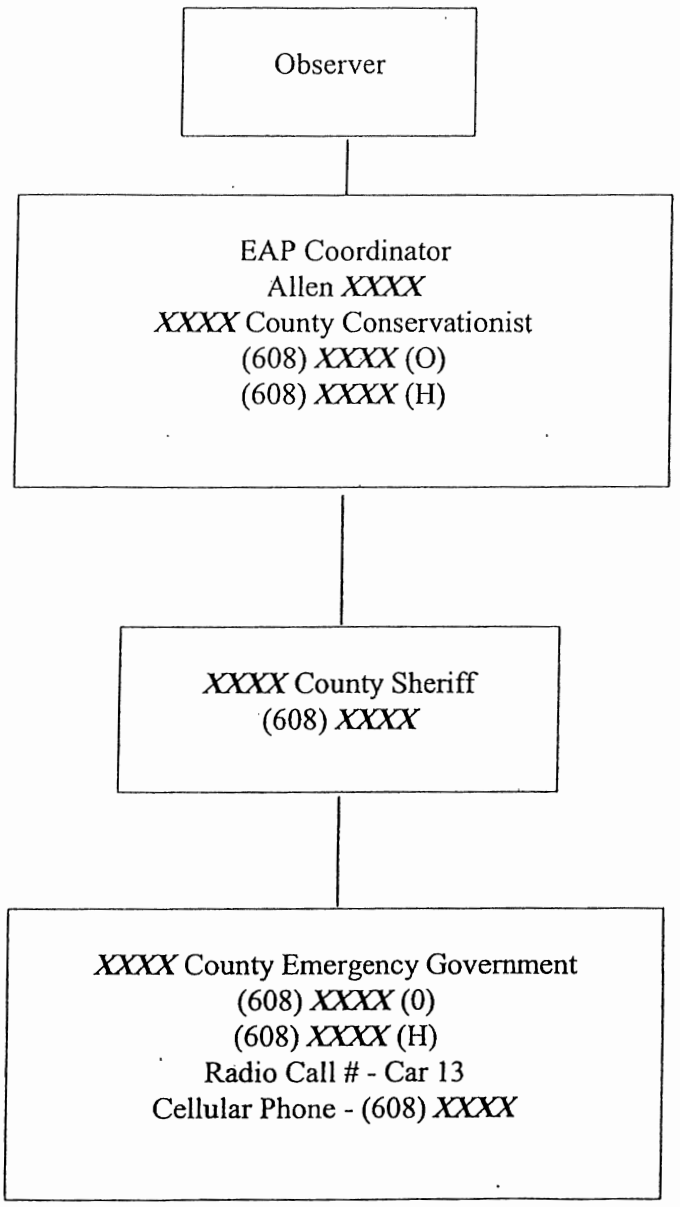
Failure of *XXXX* Dam Is Imminent



NOTIFICATION FLOW CHART

ALERT CONDITION

Potentially Hazardous Situation Is Developing at *XXXX* Dam



O = Office
H = Home

EQUIPMENT LIST

Type of Equipment	Approximate Number Available	Contact	Telephone Number
Sand bags			

ATTACHMENT 3

SUGGESTED OUTLINE FOR EMERGENCY ACTION PLANS

Summary of Plan - Checklist of Key Actions

A. INTRODUCTION

I. **Purpose & Intent** - Why is an emergency action plan needed in the community? What will the plan do? Should include a statement such as "The purpose of this emergency action plan (EAP) is primarily to safeguard the lives and secondarily to reduce property damage of the citizens of Adams County, living along Spring Creek in the event of flooding caused by large runoff or failure of the Stoney Creek Dam."

II. **Description of Dam** - Provide a brief description of the dam including location, purpose, name of owner, date built. A sketch of the dam is also helpful. If more detail is needed, such as height, maximum storage capacity or other physical data, include in Appendix.

III. **Hazard Area** - Provide a brief description of the area that would be impacted by a breach or major flooding. Describe the populations affected and any critical facilities, such as hospitals, rescue and relief facilities, water supply and/or hazardous waste facilities, and bridges that may be significant. An inundation map should be included to show the extent of the hydraulic shadow, and a proposed time schedule of anticipated events based on historic data should also be included.

IV. **Responsibility and Authority** - Indicate the person or organization responsible for the maintenance and operation of the dam and the persons or groups responsible for implementing various phases of the EAP. The basic authority for carrying out the various components of the EAP should also be cited. See telephone list below.

V. **Periodic Review, Testing and Updating** - This section should provide the basis to update, extend, and improve the emergency action plan and to ensure readiness for executing the plan.

Include a schedule for carrying out periodic reviews of the plan by the participants at intervals not to exceed 1 year with updating for the changes in telephone numbers and personnel as they occur.

Include procedures and schedules for periodic testing of the plan. Special procedures for those aspects of the plan not susceptible to direct testing should be established and periodic exercise simulating emergencies carried out. Consideration should be given to updating (such as use of "controlled copies"), whereby plan holders are advised of any changes.

DAM OWNER/OPERATOR TELEPHONE LIST

1. State Warning Center

   (608) 266-3232

2. Local Police/Sheriff Department

   ( )

3. State Police/Patrol

   ( )

4. Downstream and Upstream Dams and Operators

   • Dam Name _____

   • Telephone ( )

   • Dam Name _____

   • Telephone ( )

5. Downstream Residence/Business

   ( )

6. Hospital/Ambulance

   ( )

7. State Dam Safety Agency

   Name: Richard J. Knitter, Wisconsin Department of Natural Resources, Bureau of Water Regulation & Zoning

   Telephone: **(608) 266-1925**

8. Contractor
   Name: _____
   Telephone: ( )

9. Engineer
   Name: _____
   Telephone: ( )

Post this list in a prominent place at the dam and give a copy to all of your operators.

VI. **Approval** - This section should provide the means by which all parties to the plan agree to their responsibilities to review the process and educate the public. The following is an example of a format that could be used:

We, the undersigned, this date acknowledge this (ANNEX or PLAN) as a part of the emergency operation procedure to protect life and reduce property damage in case of an emergency at the Stoney Creek Dam.

_____ _____

Signature, I.M. Dam owner Date

_____ _____

Signature, County Sheriff, Adams County Date

_____ _____

Signature, Mayor, City of Springfield Date

_____ _____

Signature, Director of Springfield Civil Defense Date

_____ _____

Signature, Chief of Springfield Police Date

B. IDENTIFICATION OF EMERGENCY

The procedures and means for assuring timely and reliable identification and evaluation of potential or existing emergencies should be included. These would normally explain the events or conditions which indicate an emergency; define the levels of emergency and when each level is reached; describe the data and information collection system and how information is disseminated to the public; describe the analysis process; designate the responsible person(s); and ensure continuous coverage through designation of appropriate alternatives. Include media plan, shelter and food sites, utility shut-off, evacuation information.

For unattended dams, the surveillance and warning system should be described along with the expected reliability and backup system in place to assure that warning is given in the event of failure in the primary system.

C. PREVENTIVE ACTION

This section should discuss those preventive actions that need to be taken at the dam to prevent or delay failure after an emergency is first discovered. Because of uncertainties about their effectiveness, preventive actions usually would be carried out simultaneously with appropriate notification of an alert situation or warning situation.

D. REENTRY AND RECOVERY

This section should discuss the reentry procedures including road and bridge checks, water, gas and sanitation inspections, and damage documentation. Provide information on reentry routes, sanitation and help for the public, and mitigation opportunities.

Appendices

A. Flood workers: names, addresses and phone numbers
B. Critical facilities: contact, location and phone number
C. Structures in hazard area: residents names, potential access problems
D. Shelters: contact, address, phone number, capacity
E. Map of evacuation routes
F. Equipment (vehicles, sand bags, walkie-talkies, short wave, etc.): contact, phone number

Summary Sheet

Name of Dam Mendota Locks File No. 13.6 County Dane

Location NW ¼ SE ¼ Section 12 T 7 N, R 9 E

Stream Yahara River Name of Lake Held by Dam Mendota

Present Owner City of Madison

Existing Bench Marks

Benchmark 689-C is a brass marker set in the downstream end of the right abutment wall of locks. Elevation ~~853.00~~. 853.40

Benchmark 689-D is a one inch bronze disc on upstream walkway of bridge below dam on center line of locks. Elevation ~~957.07~~ ~~857.07~~. 857.47

O.O = 847.82 ′

847.42 ′

B.M. 689-E is a chiseled square in left upstream walkway of bridge on Sherman Road just upstream of last post of guard fence on bridge

ELEV. = ~~857.04~~ 857.44

Lake Waubesa Dam FF # 13.19 September 21, 2007

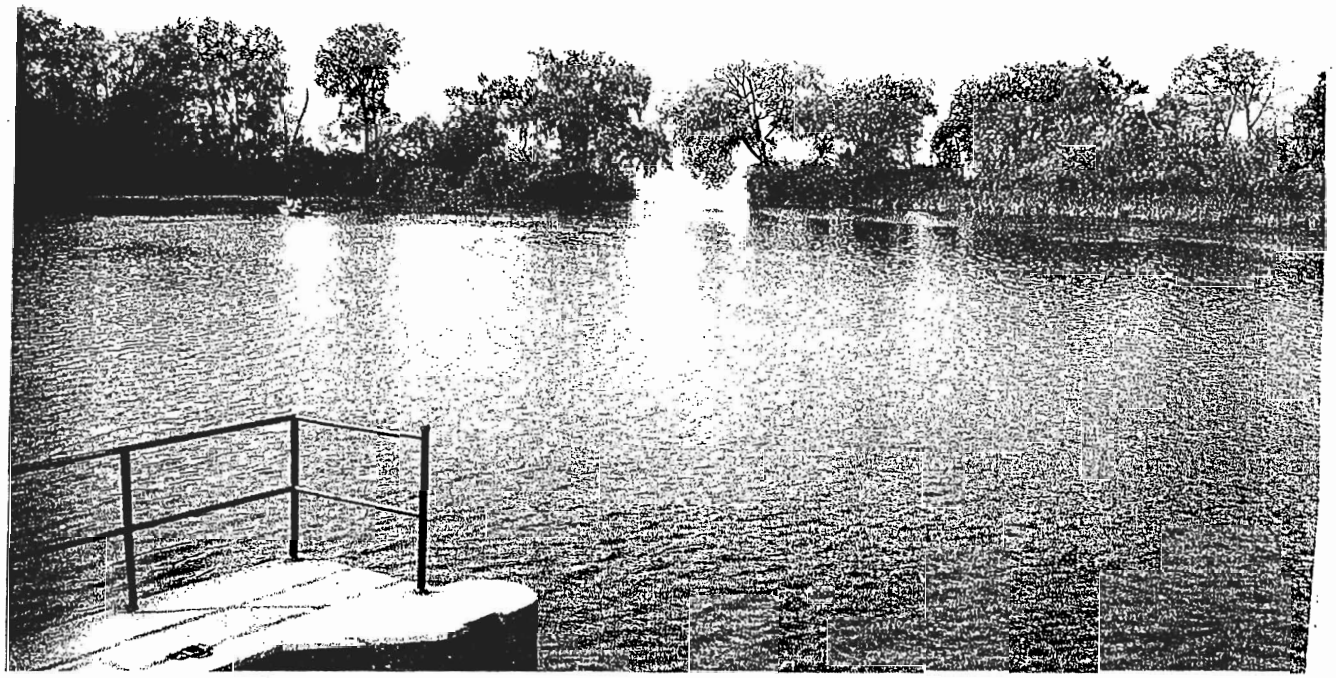
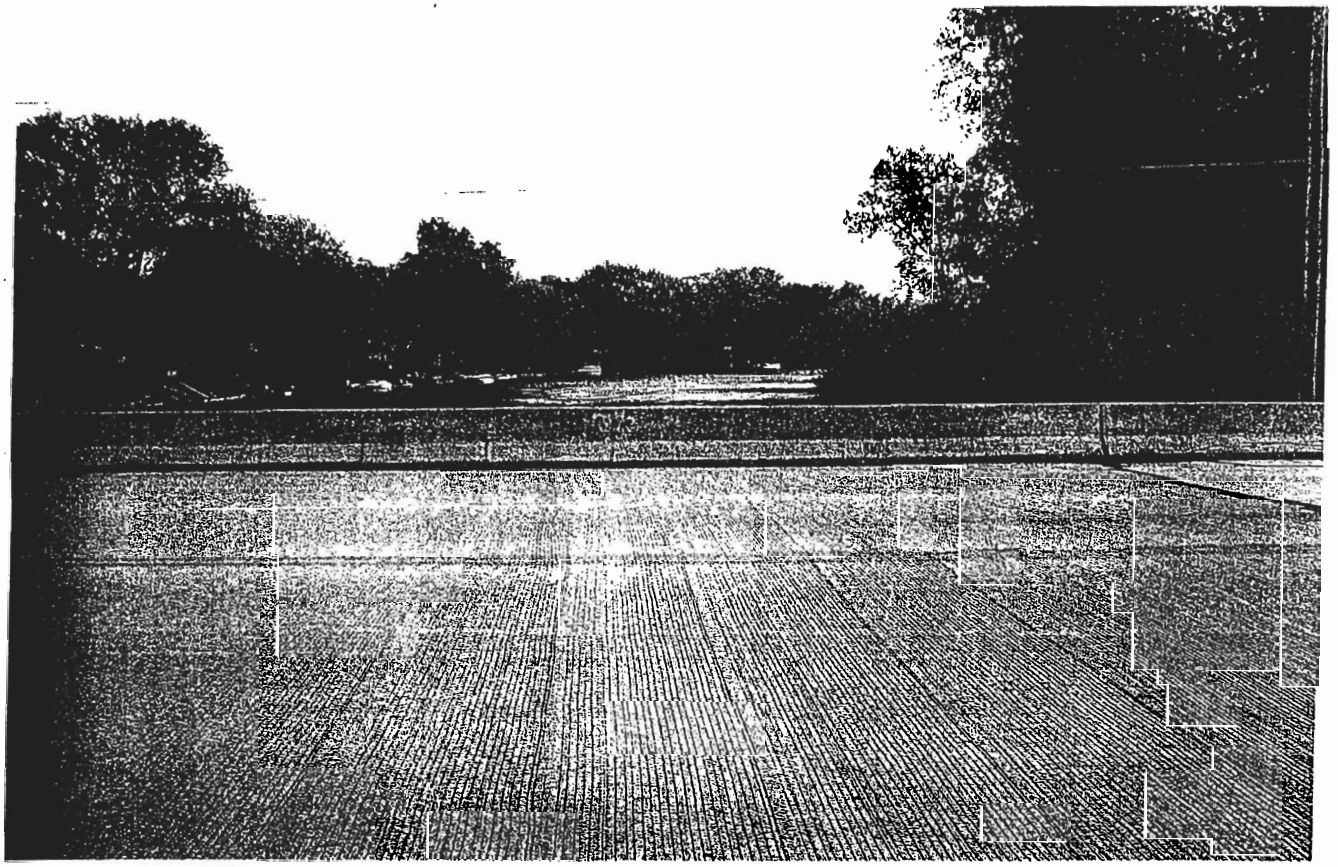


Photo 1 - View from dam looking upstream
Photo 2 - View from Highway 51 bridge looking downstream



Left and right are determined while looking downstream.

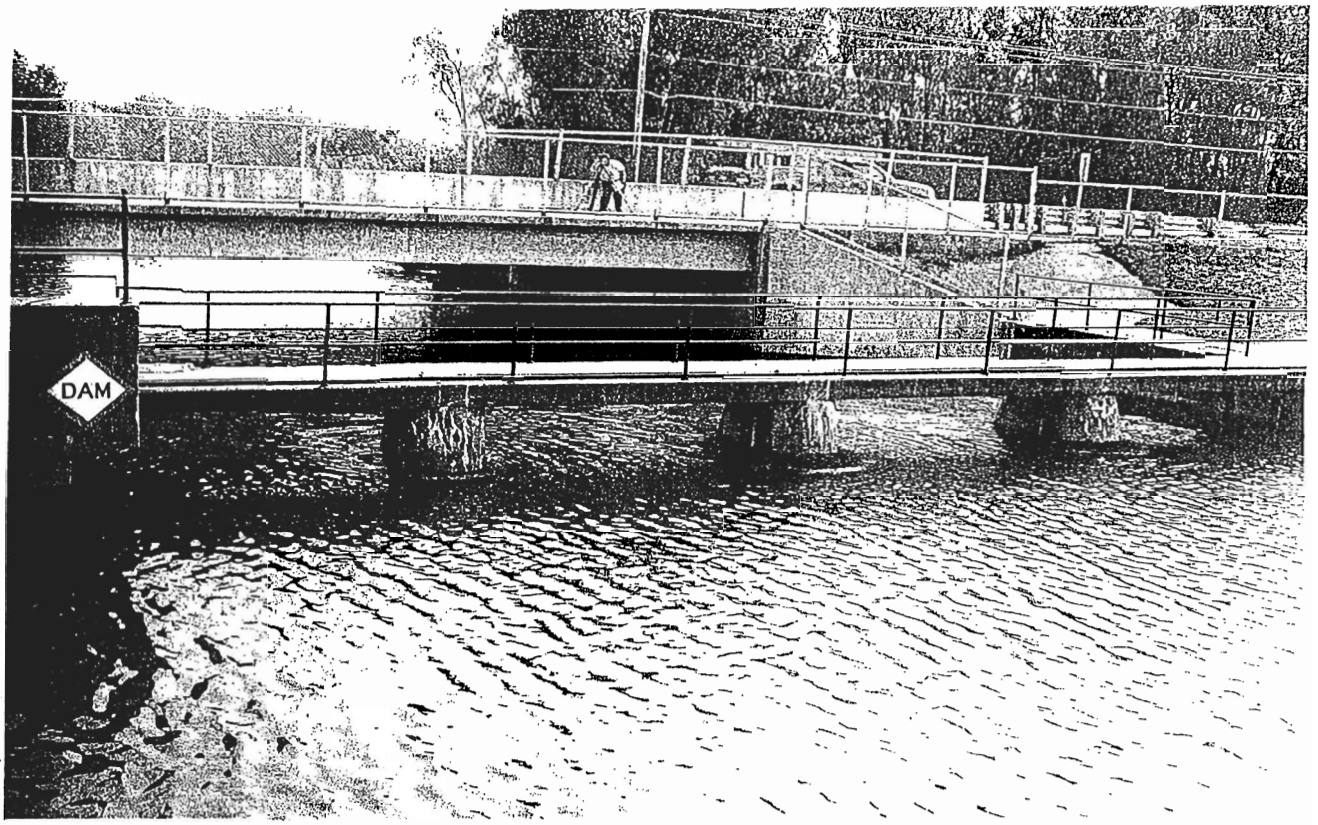
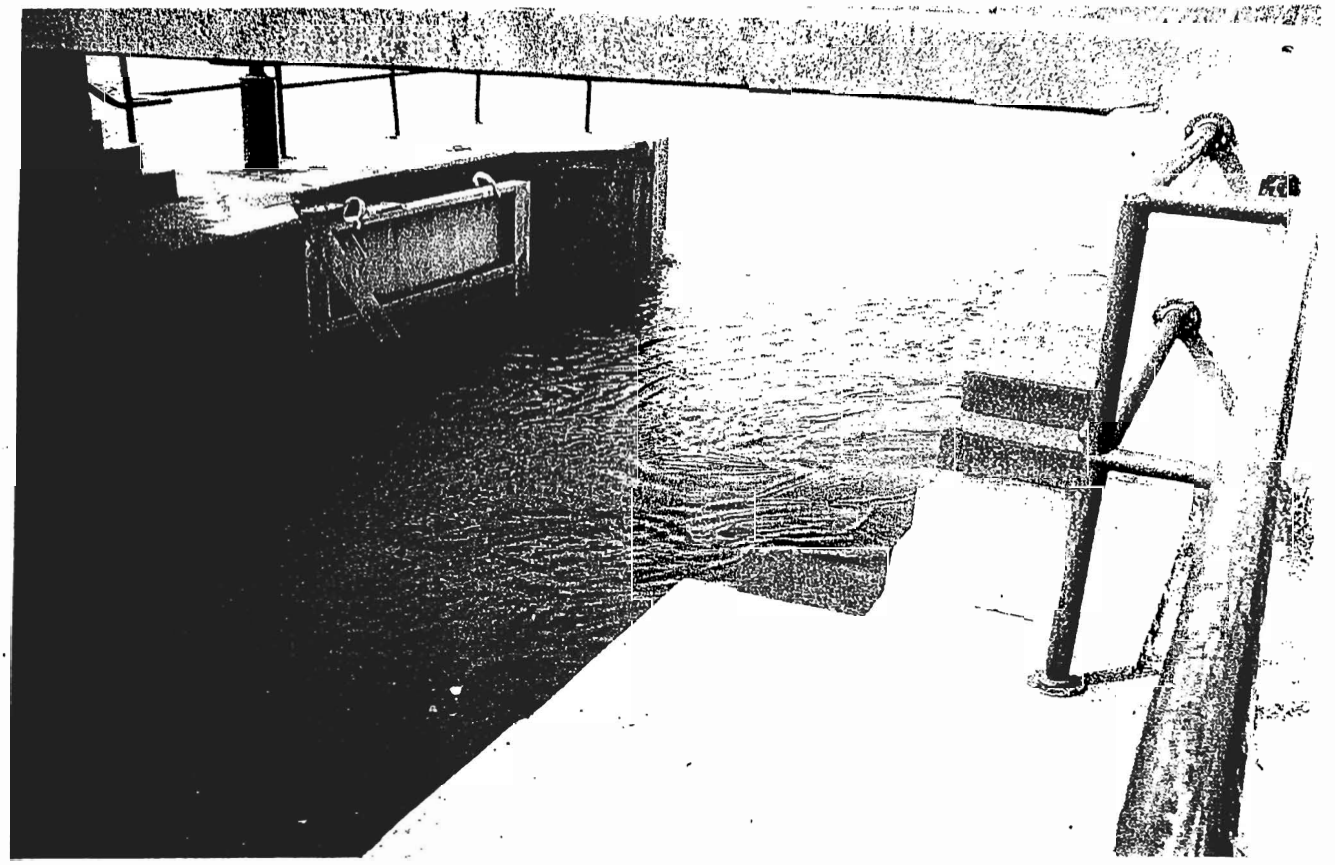


Photo 3 - View of piers/operator's deck from upstream

Photo 4 - View of lock portion of dam. Currently not operational



Left and right are determined while looking downstream.

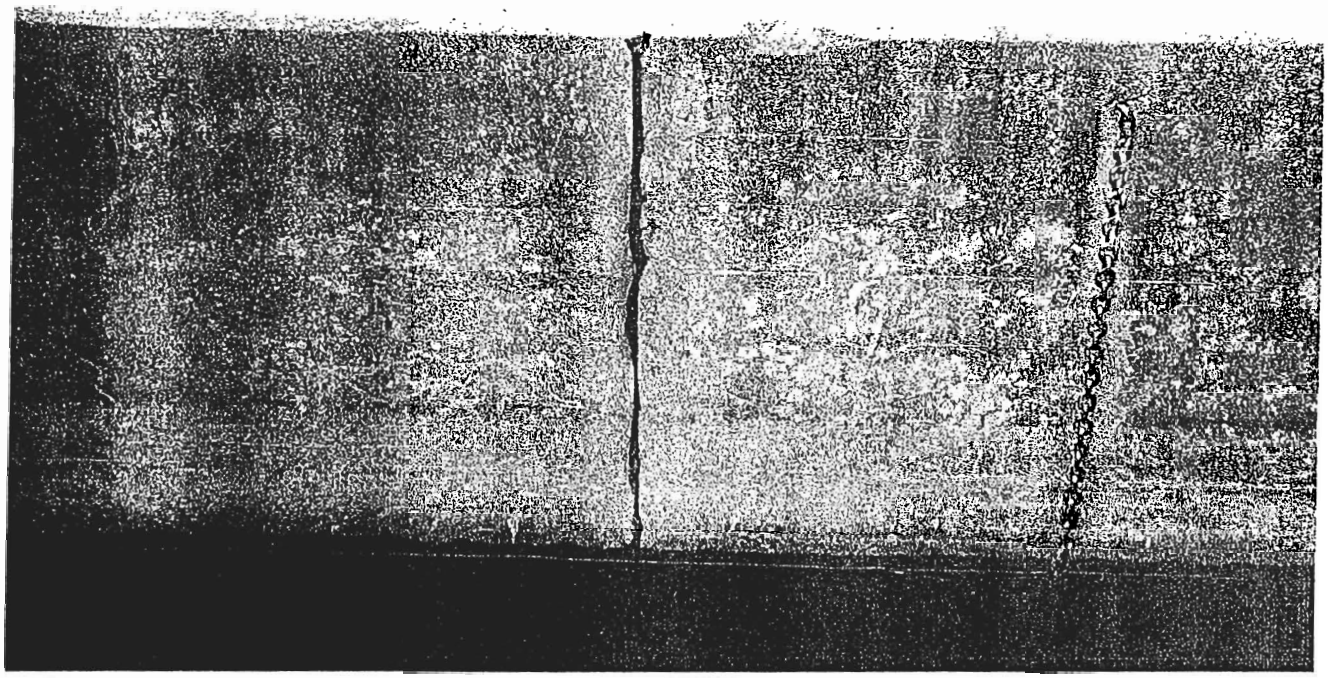


Photo 5 - View of cold joint in concrete (in lock). Fill joint with crack filler

Photo 6 - View of cold joint at right side of operator's deck. Fill joint with crack filler

Left and right are determined while looking downstream.

Name of Dam: LAKE WAUBESA			Date: 9/21/07
Inspectors: ROB DAVIS, SUE JOSHEFF, KEN JOHNSON			F.F #: 13.19
Owner's Name: DANE COUNTY			Key Seq #: 958
Street:			
City, State, Zip Code:			
County: DANE		Phone:	
Weather and Site conditions: PARTLY CLOUDY, WINDY, 80°		Email:	

GENERAL

Item	N	Notes/ Observations	Action M	Action I	Action R
1 Monuments/Benchmarks		BRIDGE B-13-385-92 ON D/S RT OF BRIDGE			X
Location:					
Elevation:		FD BM 691-B			
2 Pool Level		GAGE ON U/S LT OF LOCK @ 6.00 +/- (W.INDF			
Normal/Operating:					
Maximum:		ALSO ON D/S LT OF LOCK			
Minimum:					
3 Access Road		FROM PARKING LOT IN PARK			
4 Signage/ Security					
Portage:	X	TAKE OUT & DAM SIGNS -- ~~[illegible]~~			
Dam Warning:	X	~~[illegible]~~ - OK -			
Downstream Hazard:					
Fencing/Railings/Catwalks:					
5 Hazard Section					
A. D/S Development					
Density:		RESIDENTIAL -- ABOVE F.P.			
Distance:					
Type (Residential, Commercial, Industrial):					
B. Channel Crossing					
Type:		Bridge, Ford, Culvert, Trestle, Other (Explain) (Circle One)			
Dimensions:		HWY 51 -- RIGHT AT THE DAM			
D/S distance:					
Traffic Level (Local, CTH, Rail Road, STH, Interstate, etc):					
C. Distance to nearest D/S community/impoundment:		~~[illegible]~~			
Name:					
D. Estimated Hazard (based on landuse):		~~EST SIGNIFICANT~~ LOW BASED ON SUBMERGENCE			

N = Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

EMBANKMENTS

Description:

	Item	N	Location on Embankment and Deficiency	Action M	Action I	Action R
1	**Vegetation:**	X	No problem			
	A. Trees Quantity (<5,sparse,dense): Diameter: Location:					
	B. Brush Quantity (sparse,dense): Location:					
	C. Ground cover Type (grass, crown vetch,other): Quantity (bare, sparse,adequate, dense): Appearance (too tall, too short, good):					
2	**Erosion**	X	No problem / Not applicable / Could not inspect			
	A. Wave erosion (Beaching): Scarp: Length/ Width: Location:					
	B. Runoff Erosion (Gullies) Quantity: Length/ Width/ Depth: Location:					
3	**Instabilities**	X	No problem / Not applicable / Could not inspect			
	A. Slides Transverse: Longitudinal: Scarp: Length/ Width: Crack Length/ Width:					
	B. Cracks: Transverse: Longitudinal: Length/ Width/ Depth: Location: Other:					
	C. Bulges/ Depressions Size: Height/ Depth:					
	D. Slope (Too Steep) U/S, D/S	X				

N= Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

EMBANKMENT IS HWY 51 -- VERY LARGE -- IN VERY GOOD CONDITION

EMBANKMENTS (Cont.)

	Item	N	Notes/ Observations	Action M	I	R
4	**Slope Protection**	X	No problem ☐ Not applicable ☐ Could not inspect			
	A. Type (none, riprap, wave berm, concrete slabs, loose formed concrete/asphalt):	☐				
	B. Condition:	☐				
5	**Other**	X	No problem ☐ Not applicable ☐ Could not inspect			
	A. Rodent burrows (few, many) Location:	☐				
	B. Ruts Length/ Width/ Depth: Location:	☐				
	C. Other					
6	**Alignment**	X	No problem ☐ Not applicable ☐ Could not inspect			
	A. Vertical Low area: Elevation Difference: Location:					
	B. Horizontal	☐				
	C. Width Too narrow: Location:	☐				
7	**Toe**	X	No problem ☐ Not applicable ☐ Could not inspect			
	Cracks/Slumps: Embankment drains: Type/Flow: Location: Seepage/ Wetness: Hummocky:					
8	**Seepage**	X	No problem ☐ Not applicable ☐ Could not inspect			
	Wet area: Boil: Sinkhole: Aquatic vegetation: Rust colored deposits: Other: Sediment in Flow: Flowrate: Location:					

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

SPILLWAY--PRINCIPAL - FIXED CREST									Action		
Item	N	Notes/ Observations							M	I	R
1 **Fixed Crest**		No problem		Not applicable		Could not inspect					
A. Dimensions Top Width:											
B. Materials											
C. Shape (sharp-crested, broad-crested, ogee, chute, gated, overflow, morning glory, dropbox, labyrinth)											
D. Debris Prevention (racks, booms, etc.):											
E. Concrete Condition *											
F. Flashboards (none, number): Type (Metal, wood): Dimensions: Operability:											
G. Abutments Condition: * Seepage/wetness:											
H. Drains Type; Weep holes/ Relief drains/ Other: Flow Rate:		No problem		Not applicable		Could not inspect					
I. Other											

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments:

NONE -- ALL STOPLOG BAYS & LOCK CHAMBER

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY-PRINCIPAL - GATES			Action		
Item	N	Notes/ Observations	M	I	R
1 Gates		No problem ☐ Not applicable ☐ Could not inspect thoroughly			
A. Types (lift/slide, tainter(radial), stoplogs, leaf, roller, flashboards, needles, other): Number and Size:		4 STOPLOG BAYS UNDER THE OPERATOR'S DECK			
B. Stoplogs Dimensions: Condition:		NOT OBSERVED -- UNDER WATER			
C. Abutments Condition: * Seepage/wetness:		GOOD, MONITOR SEPARATION AT COLD JOINTS	X		
D. Piers (number, shape) Condition: *		3 PIERS -- MINOR CRACKS/ EFFLORESCENCE	X		
E. Operability Type of Operator: Condition(chain, cables,hoists): Security(locked?): Backup Operator:		MANUALLY FROM OPERATOR'S DECK BOARDS IN OPERATOR'S DECK -- CHAINED IN PLACE			
F. Access		FROM OPERATOR'S DECK			
G. Condition Rust: Seals (leakage):		NOT OBSERVED			
H. Ice protection Type (Heaters, Bubblers, Barriers, Other)		NONE APPR.			
I. Debris Prevention (Rack, boom, etc.)		NONE APPR.			
J. Condition of Flowway		NOT OBSERVED			
K. Drains Type (Weep holes/ Relief drains/ Other): Flow rate: Location:		NONE APPR.			
L. Other					

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments and/or Sketch:

CONSIDER UPDATING TO DIFFERENT TYPE OF GATES.

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--PRINCIPAL - WHISTLE TUBES			Action		
Item	N	Notes/ Observations	M	I	R
1 Whistle Tubes		Full circle/ Whistle tube ☐ Half circle riser ☐ Glory hole (Drop Inlet)			
A. Inlet Riser Diameter					
B. Outlet pipe * Dia: Type:					
C. Low level draw /Inlet Pipe What kind & Size:					
D. Debris/Trash Rack					
E. Antivortex					
F. Material					
G. Alignment					

N= Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments and/or Sketch:

NONE

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--PRINCIPAL - OUTLET EROSION CONTROL & UNDERMINING

Item	N	Notes/ Observations	Action M	Action I	Action R
1 **Outlet Erosion Control**		No problem / Not applicable / Could not inspect thoroughly			
A. Type (none, endwall, plunge pool, energy dissipation structure rock lined channel, apron)					
B. Scour					
C. Material **a. Riprap**: Avg Diameter: Condition (adequate, sparse, displaced, weathered): Bedding fabric- (Yes/ No): **b. Concrete** * Dimensions/Location:					
D. Sidewall/Headwall Misalignment: Location: Description:					
E. Separated Joint / Loss of Joint Material: Location: Description:					
F. Natural					
2 **Undermining**		No problem / Not applicable / Could not inspect thoroughly			
Location: Description:					

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion 1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated **Uncontrolled** = Overflow

Additional Comments:

NOT OBSERVED

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--AUXILIARY

Description:

Item	N	Notes/ Observations	Action M	I	R
1 **Dimensions**					
Length/ Width:					
Outfall Slope:					
2 **Type** (turf, reinforced turf, riprap, block, concrete):					
3 **Signs of usage** (debris, bent grass, etc.):					
4 **Vegetation:**		No problem			
A. Trees					
Quantity (<5, sparse, dense):					
Diameter:					
Location:					
B. Brush					
Quantity (sparse, dense):					
Diameter:					
Location:					
C. Ground cover:					
Type (grass, crown vetch, other)					
Quantity (bare, sparse, adequate dense):					
Appearance (tall, short,good):					
5 **Slope protection**		Not applicable			
A. Type (none, riprap, wave berm, concrete slabs, other):					
Condition:					
6 **Erosion**		No problem / Not applicable / Could not inspect			
A. Wave erosion (beaching):					
Scarp: Length/ Width:					
Location:					
B. Runoff erosion (Gullies)					
Quantity:					
Length/ Width/ Depth:					
Location:					
7 **Instabilities**		No problem / Not applicable / Could not inspect			
A. Slides					
Transverse Length:					
Longitudinal Length:					
Scarp: Length/ Width:					
Location:					
Crack Length/ Width:					
Location:					

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

- NONE -- POSSIBLY LOCK CHAMBER COULD BE CONSIDERED AUX. SPILLWAY

*** Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

SPILLWAY--AUXILIARY (Cont.)			Action		
Item	N	Notes/ Observations	M	I	R
B. Bulges: (Depressions, Hummocky): Size: Height/ Depth:					
8 Other		No problem / Not applicable / Could not inspect			
A. Rodent burrows (few, many) Location:					
B. Ruts Location: Length/ Width/ Depth:					
C. Other (debris):					
9 Outlet erosion control		No problem / Not applicable / Could not inspect thoroughly			
A. Type (none, endwall, plunge pool, energy, dissipation structure rock-lined channel, apron): Condition (Scour?):					
B. Material Riprap: Avg. diameter: Condition (adequate, sparse, displaced, weathered): Bedding fabric (Yes/No):					
C. Concrete *		Not applicable			
a. Condition *					
b. Cracking * Dimensions/Location:					
c. Sidewall/ Headwall* Misalignment: Location: Description:					
d. Joints Separated: Loss of material: Location: Description:					
D. Natural					
10 Undermining		No problem / Could not inspect thoroughly			
Location: Description:					

N= Noted; M= Monitor
I= Investigate; R= Repair
F.F.= Field File; RT = Right; LT = Left
U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments: NONE

* **Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

LAKE DRAINS
(Low level outlet, not a principle or aux. spillway)

Item	N	Notes/ Observations	Action M	Action I	Action R
1 General		None found / Does not have one			
A. Type of lake drain (isolated control/intake tower, valve vault with outlet conduit valve in riser/drop inlet siphon): Size:					
B. Operated (Yes/ No)					
2 Lake drain components					
A. Concrete structure Location: Description:* Condition:*					
B. Valve control (operating device): No operating device; No stem Bent/Broken Stem; Access Other: Operability:					
C. Valve/Sluice gate Quantity: a. Metal deterioration (surface rust, minor, moderate, extensive, other): Location: Flow rate: b. Misalignment c. Leakage - Flow rate					
D. Outlet conduit Size: Material: Condition:					
E. Energy dissipater Type (endwall, plunge pool impact basin, stilling basin, rock-lined channel, none): Condition:*					

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream.

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments: NONE APPR.

*** Type of Concrete Problems:** Spalling, cracks, exposed rebar, misalignment, joints bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

Powerhouse/ Mill Building

	Item	N	Notes/ Observations	Action M	Action I	Action R
1	Est. Capacity (Kw):					
	Date last used:					
	Current Use:					
2	Item:					
	A. Headrace general					
	Gates/ Trashracks:					
	Vegetation/ Erosion:					
	Sloughs/Slides/Cracks:					
	Seepage Wetness:					
	Rodent Burrows:					
	Concrete:					
	B. Tailrace					
	Scour:					
	Vegetation/Erosion:					
	Sloughs/Slides/Cracks:					
	Seepage wetness:					
	Rodent burrows:					
	Concrete:					
	C. Foundation: general					
	Concrete:					
	Seepage:					
	Integrity:					
	D. Superstructure					
	Condition:					

NONE

N= Noted; **M**= Monitor
I= Investigate; **R**= Repair
F.F.= Field File; **RT** = Right; **LT** = Left
U/S = Upstream; **D/S** = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Additional Comments:

FIELD BOOK

Profile Leveling For: LAKE WAUBESA DAM

Instrument Person: SJ

Original Notes in Field Book #

Rod Person: KJ

Instrument Used:

Note Taker: SJ

Weather Conditions: PARTLY CLOUDY, WINDY, 80°

STATION	B.S. +	H.I.	F.S. -	ELEV.	DIST.	REMARKS
BM 691-B	10.98	860.80		849.82		
LT ABUT U/S LOCK (N) SIDE			11.00	849.80		
RT SIDE OF LOCK U/S (S) SIDE			11.02	849.78		
LOCK SILL U/S			22.23	838.57		
LOCK SILL D/S			22.23	838.57		
LT END SPILLWAY SILL			22.41	838.39		
LT CENTER SPILLWAY SILL			20.90	839.90		
RT CENTER SPILLWAY SILL			21.14	839.66		
RT SPILLWAY SILL			20.86	839.94		
OPERATOR BRIDGE @ RT ABUT			10.99	849.81		
OPERATOR BRIDGE @ LOCK			11.02	849.78		
WS			14.83	845.97		
BRIDGE BM			1.82	858.98		BRIDGE BM B-13-385-92
BM			10.98	849.82		CLOSE
Bench Mark Information: BOATHOUSE DOOR			9.82	850.98		

DEPTH @ D/S = 6.5'

Comments:

Suggested Survey points:

HW	Sill	Low Embankment
TW	Crest	Lt. Groin
D/S Channel	Abutments	Rt. Groin
Aux. Crest LT	Aux. Crest RT	Outlet Pipe Invert

STATION	B.S. +	H.I.	F.S. -	ELEV.	DIST.	REMARKS

Comments:

Suggested Survey points:

HW	Sill	Low Embankment
TW	Crest	Lt. Groin
D/S Channel	Abutments	Rt. Groin
Aux. Crest LT	Aux. Crest RT	Outlet Pipe Invert

Dam Inspection Checklist

Dam Name: F.F.#: Date: Page __ of __

rec 1-4-08

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Lloyd L. Eagan, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TTY Access via relay - 711

January 2, 2008

IN REPLY REFER TO: 13.19

Dane County Department of Land and Water Resources
Mr. Kevin Connors, Director
1 Fen Oak Court, Room 208
Madison, WI 53718

SUBJECT: Assignment of the Hazard Rating for the Lake Waubesa Dam, Field File No. 13.19, Dane County

Dear Mr. Connors:

I am sending you this letter to notify you that we are setting the hazard rating for the Lake Waubesa Dam. The hazard rating is being set as Low Hazard. The dam, as currently configured, is submerged by less than the 10-year flood according to the detailed study of the Yahara River done for the Dane County FIS. The dam was witnessed to be submerged by Department staff during our inspection of the dam on September 21, 2007.

Dane County has floodplain zoning in place below the dam that incorporates the required dam failure floodplain (hydraulic shadow). This will provide adequate floodplain zoning downstream to prevent future, unprotected development in the floodplain and allow this assignment of a low hazard rating.

If you have questions, please give me a call or e-mail me. Thank you for your continued cooperation.

Sincerely,

Robert R. Davis, P.E.
Water Management Engineer
Robert.Davis@Wisconsin.gov
608-275-3316

cc: Bill Sturtevant, P.E. - WT/3