STATE OF NEBRASKA

Pete Ricketts
Governor

DEPARTMENT OF NATURAL RESOURCES
Gordon W. "Jeff" Fassett, P.E.
Director

July 6, 2016

IN REPLY TO:

NID 2516

Hartland Homes North Homeowners Association
1825 Boston Circle
Lincoln, NE 68521

Dear Hartland Homes North Homeowners Association:

On April 21, 2016, Josh Wilhelm and I conducted the Department's periodic inspection of the HARTLAND HOMES NORTH DAM. Enclosed is the inspection report which includes a list of recommendations for the structure.

If you have any questions or comments about any of this information, please contact me at (402) 471-0581 or *mark.noble@nebraska.gov*.

Sincerely,

Mark Noble, P.E.
Dam Safety Engineer

Enclosure

cc: Lincoln Field Office

Ds-fp/Noble/2016
DS-07062016-2516-cor

PERIODIC DAM SAFETY INSPECTION REPORT

HARTLAND HOMES NORTH DAM

Prepared by:
NEBRASKA DEPARTMENT OF NATURAL RESOURCES

Owned By:
Hartland Homes North Homeowners Association

IDENTIFICATION NUMBER NE02516

INSPECTED: 04/21/2016
REPORT: 07/05/2016

SUMMARY OF INSPECTION AND RECOMMENDATIONS

HARTLAND HOMES NORTH DAM - NE02516
INSPECTED 04/21/2016

In general, Hartland Homes North Dam was found to be in satisfactory condition. The following routine maintenance item(s) should be addressed to help ensure the dam remains structurally sound and continues to operate as intended.

Please note, the findings contained in this report were based on a visual inspection of the dam and a review of available records. A more in-depth evaluation or investigation may reveal additional deficiencies that were not discovered during this inspection.

Any references in this report to left or right are made as if facing downstream.

RODENT BURROWS. A few rodent burrows were found along the shoreline of the upstream slope. The burrows appeared to be too small to be from beavers. The burrows could be caused by muskrats. If so, they could be entrances to dens inside the dam embankment.

On the dam embankment, burrows can provide paths for reservoir water to flow through the dam embankment and possibly appear as seepage on the downstream slope.

All rodent activity on the dam embankment should be eradicated. Then, the burrows should be backfilled.

After the rodents are removed, the recommended method of backfilling the burrows is mud-packing. This simple, inexpensive method can be accomplished by following these steps:

1. A mud-pack mixture is made by adding water to a 90 percent earth and 10 percent cement mixture until a slurry of thin cement consistency is attained.

2. The mud-pack mixture is poured into the burrow until the burrow is filled to within one foot of the burrow entrance with the earth-water mixture.

3. Dry, well-compacted earth is tamped into the top one foot of the burrow.

4. The affected area can then be reseeded, if necessary.

If there are muskrat dens within the dam embankment, once the muskrats have been eradicated, the affected portion of the embankment will need to be excavated, reconstructed, compacted properly, and reseeded.

CONCRETE CHUTE SPILLWAY – SHALLOW CRACKING OR SPALLING OF CONCRETE. Shallow cracks or spalls were found in the following areas of the concrete chute spillway:

1. A transverse crack across the spillway about 20 feet downstream of the spillway inlet.

2. A longitudinal crack along the right side slope of the spillway in the middle portion of the spillway.

The cracks should be sealed with a polyurethane caulk to ensure that:

1. Freeze-thaw damage does not occur in the affected area(s).

2. The steel reinforcement within the concrete is not exposed to moisture. If the steel reinforcement is exposed to moisture, it will corrode and swell, which will break up the surrounding concrete.

PERTINENT DATA

A. GENERAL:	
NID ID:	NE02516
Field Office:	Lincoln
Water Division:	2B (Elkhorn River and Salt Creek)
Hazard Potential:	H (High)
Owner:	Hartland Homes North Homeowners Association
Designer:	ESP
Owner Type:	P (Private)
Owner Address:	1825 Boston Circle
City, State, Zip:	Lincoln, NE 68521
Owner Phone:	(402) 476-7060
B. LOCATION:	
County:	Lancaster
River:	TR-SALT CREEK
Latitude:	40.8597
Longitude:	-96.6963
Section/Township/Range:	SW S1 T10 R6E
Private Dam on Federal Property?:	N (No)
Directions to Dam:	N on 19th from Superior St. 19th becomes Old Glory Rd. N 1 blk on 17th. W on Hartland Rd.
C. HAZARD POTENTIAL	
Downstream Town/City:	LINCOLN
Distance Downstream:	0 miles
Current Hazard Potential Class:	H (High)
Designed as Classification:	Unknown (Unknown)
Emergency Action Plan?:	Y (Yes)
Emergency Action Plan last updated:	09/01/1997
D. ENGINEERING INFORMATION	
Dam Type:	RE (RE - Earthfill)
Core:	HEZ (Homogeneous Dam, Earth, Unknown)

Foundation:	SS (Soil, Known)
Purpose:	C (C - Flood Control, Storm Water Mgmt)
Year Completed:	1972E
Year Modified:	1999
Dam Length:	220 feet
Dam Height:	21 feet
Structural Height:	21 feet
Hydraulic Height:	21 feet
Maximum Discharge:	480 CFS
Maximum Storage:	27 acre-feet
Normal Storage:	14 acre-feet
Normal Surface Area:	2 acres
Drainage Area:	64 acres
Dam Volume:	0 cubic yards

E. REGULATORY/INSPECTION INFORMATION

State Regulated Dam?:	Yes
Regulatory Agency:	NE DNR
Approval Status:	Approved
Inspection Frequency:	1 year(s)
Inspection Date:	4/21/2016
Previous Inspection Date:	05/12/2015

The Department of Natural Resources inspects dams in accordance with the Safety of Dams and Reservoirs Act in order to protect downstream life and property from dam failures (Neb. Rev. Stat. §§46-1635 and 46-1664). Before constructing, reconstructing, enlarging, altering, breaching, removing, or abandoning a dam in Nebraska, the dam owner is required to obtain the approval of the Department (Neb. Rev. Stat. §46-1646). Every owner of a dam subject to the Safety of Dams and Reservoirs Act and not previously approved by the Department is required to file plans for the dam with an application (Neb. Rev. Stat. §46-1670). A storage permit is required if the dam has a normal storage capacity of 15 acre-feet or more below the lowest open overflow, or if the water in the reservoir will be pumped or released for a beneficial purpose (Neb. Rev. Stat. §46-241). Inspection of the dam and the issuance of this inspection report in accordance with Neb. Rev. Stat. §46-1664, in no way changes the approval status of a dam. If you have questions regarding the approval status of your dam, the approval process, or the need for a storage permit, please contact the Department of Natural Resources at 402-471-2363.

Nebraska Department of Natural Resources
Dam Safety Inspection Checklist

Dam Name:	**HARTLAND HOMES NORTH DAM**
County:	Lancaster
NID ID:	NE02516
Owner:	Hartland Homes North Homeowners Association
Owner Address:	1825 Boston Circle
City, State, Zip:	Lincoln, NE 68521
Application No:	A-17600
Plan No:	P-15390
Maximum Storage:	27 acre-feet
Normal Storage:	14 acre-feet
Dam Height:	21 feet
Hazard Potential:	H (High)
Current Inspection Date:	04/21/2016
Previous Inspection Date:	05/12/2015
Inspected By:	Mark Noble, Josh Wilhelm

1. General Conditions	Item	Yes	No	NA	Remarks
	a. Alterations to dam?		X		
	b. Size or storage capacity different from plans?		X		
	c. Development in downstream floodplain?	X			The dam is located within a residential area in northwest Lincoln.
	d. Inadequate vegetative cover?		X		
	e. Recent high water marks?		X		
	Elevation:				
	f. Public allowed on dam?	X			Residents in the area use the dam for recreation.
	g. Livestock allowed on dam?		X		
2. Crest	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Settlements or cracks?		X		
	b. Erosion?		X		

2. Crest	c. Trees?		X		
	d. Rodent holes?		X		
3. Upstream Slope	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Erosion?		X		
	b. Trees?		X		The trees that used to grow on the dam have been cut down. However, several of the stumps remain in place.
	c. Rodent holes?	X			There were a few burrows into the dam at the reservoir level. The burrows did not appear to be large enough to be beavers. They may be muskrat burrows.
	d. Cracks, settlements, slides, or bulges?		X		
	e. Inadequate or unsound riprap?			X	
4. Intake Structure	**Item**	**Yes**	**No**	**NA**	**Remarks**
	Water Surface Elevation:				
	Size and type:				There is no intake structure.
	Estimated Rate of Flow Entering Spillway:				
	a. Spalling, cracking, or scaling?			X	
	b. Exposed reinforcement?			X	
	c. Leakage?			X	
	d. Inadequate trash rack?			X	
	e. Obstacles to inlet?			X	
	f. Inadequate drawdown?			X	
	Current State:				
5. Auxiliary Spillway	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Obstructions?			X	
	b. Erosion?			X	
	c. Rodent holes?			X	
	d. Condition of control section inadequate?			X	
	e. Vegetation condition inadequate?			X	

6. Downstream Slope	Item	Yes	No	NA	Remarks
	a. Erosion?		X		
	b. Trees?		X		
	c. Rodent holes?		X		
	d. Cracks, settlements, slides, or bulges?		X		
	e. Problem at drain or well outlets?			X	
	Est. GPM:				
	f. Seepage or boils?		X		
	Est. GPM:				
7. Conduit and Outlet	**Item**	**Yes**	**No**	**NA**	**Remarks**
	Est. Flow Rate:				
	Size and type:				There is no conduit.
	a. Spalling, cracking, or scaling?			X	
	b. Exposed reinforcement?			X	
	c. Joints offset or excessively elongated?			X	
	d. Leakage?			X	
	e. Conduit obstructed?			X	
	f. Earth Erosion?			X	
8. Plunge Pool	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Riprap inadequate?			X	
	b. Problem at drain outlets?			X	
	Flow GPM:				
	c. Outlet channel obstructed?			X	
	d. Erosion problems?			X	
9. Stilling Basin	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Spalling, cracking, or scaling?			X	
	b. Exposed reinforcement?			X	
	c. Joints displaced or offset?			X	
	d. Joint material lost?			X	
	e. Leakage or seepage?			X	
	f. Rock inadequate?			X	

9. Stilling Basin	g. Dissipators deteriorating?			X	
	h. Problem at Drain Outlets?			X	
	Est. GPM:				
10. Concrete Spillway	**Item**	**Yes**	**No**	**NA**	**Remarks**
	Water Surface Elevation:				Just above the spillway inlet
	Estimated Rate of Flow Entering Spillway:				10 gpm
	a. Spalling, cracking, or scaling?	X			There were a couple of cracks in the spillway that have not yet been sealed: 1. A transverse crack runs across the spillway about 20 feet downstream of the spillway inlet. 2. A longitudinal crack runs along the right side slope in the middle portion of the spillway.
	b. Exposed reinforcement?		X		
	c. Joints displaced or offset?		X		
	d. Joint material lost?		X		
	e. Dissipators deteriorating?			X	
	f. Earth erosion?		X		
	g. Outlet channel obstructed?		X		
11. Gates	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Broken or bent?			X	
	b. Eroded or rusted?			X	
	c. Inoperative?			X	
12. Instruments	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Need to be installed?		X		
	b. Are they un-monitored?			X	
13. Cathodic Protection	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Needs to be installed?		X		
	b. Working properly?			X	
14. Deficiencies, Comments, Findings, Directions	**Item**	**Yes**	**No**	**NA**	**Remarks**
	a. Previously Noted Deficiencies, Comments		X		Minor cracks in concrete spillway channel.

14. Deficiencies, Comments, Findings, Directions	b. Reevaluate Hazard Potential Classification?		X		
	c. Current Condition Assessment	X			Satisfactory
	d. Current Deficiencies	X			A few rodent burrows, possibly muskrats, along the water level on the upstream slope. A couple of unsealed cracks in the spillway. Stumps remain from trees cut down on upstream slope.

The upstream slope. Note the stumps still in place from trees cut down in the past. Also note the burrow into the dam along the shoreline.

One of the burrows into the dam along the shoreline of the upstream slope.

Another of the burrows into the dam along the shoreline of the upstream slope.

The upstream slope, as seen from the left end of the dam embankment.

The crest of the dam, as seen from the left end of the dam embankment.

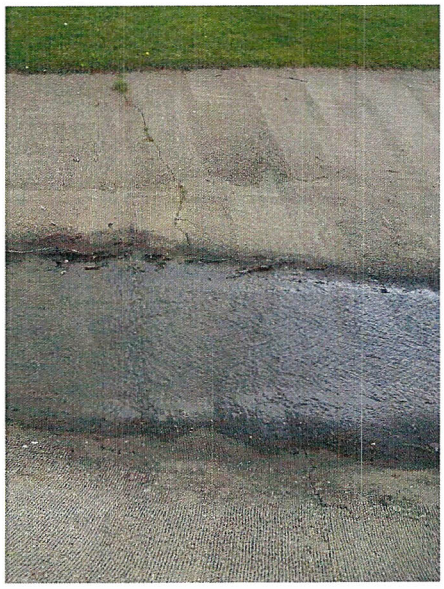
The downstream slope, as seen from the left end of the dam embankment.

Looking upstream at the downstream slope of the dam embankment.

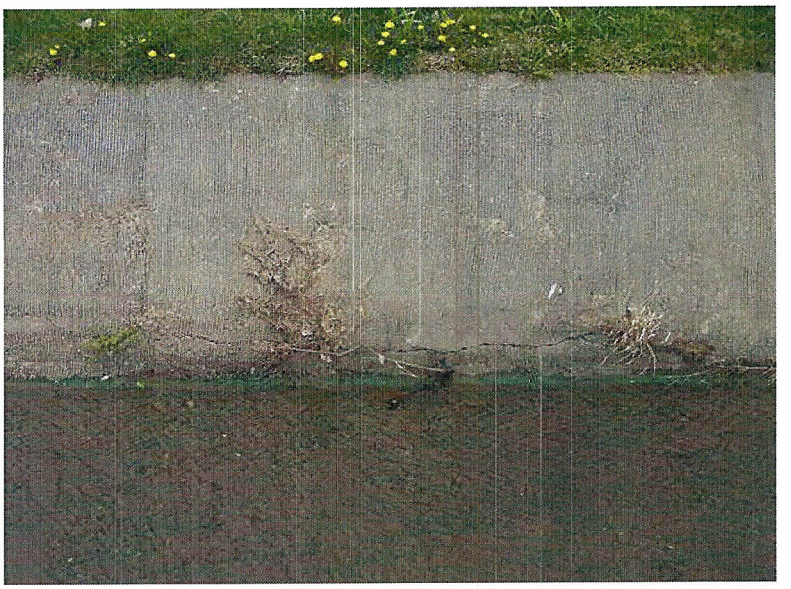
The spillway inlet.

Looking downstream along the spillway.

An unsealed transverse crack running across the spillway about 20 feet downstream of the spillway inlet.



An unsealed longitudinal crack running along the right side slope of the spillway, in the middle portion of the spillway.



Looking downstream at the spillway outlet.