OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RESOURCES

DAM SAFETY INSPECTION REPORT

LOWER SHAKER LAKE DAM

FILE NUMBER: 1314-001

INSPECTED: MARCH 29, 2023

CUYAHOGA COUNTY

CLASS I

2045 MORSE ROAD, BUILDING B-3
COLUMBUS, OHIO 43229-6693
WWW.DNR.STATE.OH.US

Dam Safety
Legal Obligations and Responsibilities in Ohio

In accordance with Ohio Revised Code (ORC) Section 1521.062, the owners of dams must monitor, maintain, and operate their dams safely. Negligence of owners in fulfilling these responsibilities can lead to the development of extremely hazardous conditions to downstream residents and properties. In the event of a dam failure, dam owners can be subject to liability claims and potential criminal charges.

The Chief of the Division of Water Resources has the responsibility to ensure that human life, health, and property are protected from the failure of dams. Conducting periodic safety inspections and working with dam owners to maintain and improve the overall condition of Ohio dams are vital aspects of achieving this purpose.

Representatives of the Chief conducted this inspection to evaluate the condition of the dam and its appurtenances under authority of Ohio Revised Code Section 1521.062. This inspection does not take the place of the owner's responsibility for performing dam inspections, nor does it provide any guarantee of the safety of the dam.

In accordance with Ohio Administrative Code (OAC) Rule 1501:21-21-03, the owners of dams must implement all remedial measures listed in the enclosed report.

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REQUIRED REMEDIAL MEASURES

The requirements listed below are based on observations made during inspection, calculations performed, and requirements of the Ohio Administrative Code (OAC). A checklist noting all observations made during the inspection is included as an appendix of this report. References to right and left in this report are oriented as if you were standing on the dam crest, looking downstream.

ENGINEER REPAIRS AND INVESTIGATIONS

The owner must retain the services of a registered professional engineer to address the following items. Plans, specifications, investigative reports, and other supporting documentation, as necessary, must be submitted to the Division of Water Resources for review and approval prior to construction. **These items have been noted previously and the appropriate time period for completion has already been exceeded. The owner must complete these items immediately.** A record of all repairs should be included in the operation, maintenance, and inspection manual. Please refer to the fact sheets included in the Dam Safety Fact Sheet Booklet for additional information.

1. The dam's discharge/storage capacity must be sufficient to safely pass the required design flood without overtopping the embankment. Perform a hydrologic and hydraulic study to determine the adequacy of the dam's discharge/storage capacity to safely pass the required design flood. Prepare plans and specifications as necessary to increase the discharge/storage capacity to pass the required design flood. In accordance with OAC Rule 1501:21-13-02, the minimum design flood for Class I dams is 100% of the Probable Maximum Flood or the critical flood. See the Flood Capacity section for additional information.

2. Every dam shall have a spillway system which will safely operate during the design flood without endangering the safety of the dam in accordance with OAC Rule 1501:21-13-03. The stability of the masonry principal spillway system must be maintained. Investigate the voids and undermining at the outlet and overall integrity of the structure. Prepare plans and specifications for repair. The condition of the spillway must be monitored quarterly and after severe floods until repairs can be made. This item should be completed in coordination with Item 1 above.

3. The embankment crest alignment must be uniform. Investigate the vertical alignment of the right end of dam crest and prepare plans and specifications remediation. Monitor this area for overtopping during severe floods. This item should be completed in coordination with Item 1 above. See Discussion Item 1 of this section for additional information.

4. Prepare plans and specifications for regrading, and reconstruction as needed, of the downstream slope to repair the damage from tree roots and to facilitate inspection and maintenance. The plans must include alleviating the perpetual wet/poorly drained area at the toe. See the "Trees and Brush" fact sheet for additional information. See Discussion Item 1 of this section for additional information.

OWNER REPAIRS AND MONITORING

The dam owner must address the items below as part of the required dam maintenance. The owner may perform the work or hire a contractor. The owner must implement all owner repairs

and monitoring items within a timely manner. Repair activities should be documented in the Operation, Maintenance, and Inspection Manual (OM!). Please refer to the fact sheets included in the Dam Safety Fact Sheet Booklet for additional information.

The monitoring items in this section must also be incorporated in the OM!. Information in the OM! must include inspection frequency, method of assessing the condition, and documentation of observations. See the Owner Dam Safety Program section of this report for additional information regarding an OM!.

Owner Repairs

1. Remove saplings, brush, and undergrowth from the upstream and downstream slopes, from the crest near the principal spillway (garden), from within 15 feet of all sides of the principal spillway, and from within 15 feet of the lake drain outlet. (Clearing mature trees from the downstream slope is addressed *above* in Engineer Repairs and Investigations Item 1.) Seed all disturbed areas to establish a proper grass *cover* or install other appropriate erosion protection. See the "Trees and Brush" and "Ground *Cover"* fact sheets for additional information.

2. Remove the stop logs from the principal spillway; the staff gage should be reading "zero" under normal conditions.

Monitoring Items

3. Monitor the wet area at the right downstream toe monthly for any signs of increased flow, muddy flow, or instability on or adjacent to the embankment. See the "Seepage Through Earthen Dams" fact sheet for guidance and additional information.

Resolving all Engineering Repair and Investigation items as well as Owner Repair items listed in the sections above makes a dam eligible to receive a 15% discount off the annual fee for the dam. The Engineering items must be resolved as directed in this report The Owner Repair items may be resolved by submitting a description of the repairs and photographs. There are no partial discounts available.

OWNER DAM SAFETY PROGRAM

Assuring the safety of dams is a cooperative effort between owners, consultants and the Division of Water Resources - Dam Safety Program, with the most important role being that of the owner. The owners see the dam regularly and through their surveillance and monitoring, can detect changing and/or deteriorating conditions.

The scope of a particular owner's dam safety program should be commensurate with the size, type, and complexity of the owner's dam(s). There is no "one size fits all" dam safety program. At a minimum, the owner's dam safety program must include:

- A person (owner or owner's designated representative) responsible for dam safety (Dam Safety Officer) with the authority to maintain dam safety (clear designation of responsibility, oversight, and authority).

- Access to sufficient technical resources and expertise.
- A proactive and informed owner inspection and engineering evaluation program.
- Adequate on-site presence and/or remote monitoring capability.
- An approved Operation, Maintenance, and Inspection Manual that is kept up-to-date, requirements and recommendations followed, and proper records kept.
- An approved Emergency Action Plan that is kept up-to-date and is well coordinated with the local emergency management agencies.

OPERATION, MAINTENANCE, AND INSPECTION MANUAL **(OMI)**

A dam, like any other infrastructure, will change and deteriorate over time. Appurtenances such as gates and *valves* must be routinely exercised to ensure their operability. Inspection and monitoring of the dam identifies changing conditions and problems as they develop, and maintenance prevents minor problems from developing into major ones. Dam owners must have these procedures documented in an OM!.

1. Lower Shaker Lake Dam has an approved, up-to-date OM! on file with the Division of Water Resources.

EMERGENCY ACTION PLAN (EAP)

Despite efforts to provide sufficient structural integrity and to perform inspection and maintenance, dams can develop problems that can lead to failure. Early detection and appropriate response are crucial for maintaining the safety of the dam and downstream people and property. The ORC requires the owner to fully and promptly notify the Division of Water Resources of any condition which threatens the safety of the structure. A rapidly changing condition may be an indication of a potentially dangerous problem. The Division of Water Resources - Dam Safety Program can be contacted at 614/265-6731 during business hours or at 614/799-9538 after business hours. Dam owners must have emergency preparedness procedures documented in an EAP. All contact names and phone numbers in the EAP must be verified on an annual basis. Any revisions to the EAP must be submitted to the Division of Water Resources and the local county Emergency Management Agency (EMA).

1. Lower Shaker Lake Dam has an approved, up-to-date Emergency Action Plan (EAP) on file with the Division of Water Resources. The EAP and the dam failure inundation mapping will need to be updated following remediation and extend farther downstream.

Having an approved OM! and EAP on file with Division of Water Resources makes a dam eligible to receive a 10% discount off the annual fee charged to the dam.

DISCUSSION ITEMS

1. The right end of dam is about 2 to 3 feet lower than the main section of the dam. It was reported that the lake overflows and floods North Park Road during severe floods. Other reports have noted that this could be an emergency spillway. If an emergency spillway is

intended for this location, the following items must be addressed: obstructions within the spillway; erosion/stability issues within the spillway and on the embankment; and, using the city street to convey flood waters.

Representatives of the Chief of the Division of Water Resources conducted this inspection to evaluate the condition of the dam and its appurtenances. The owner(s) of the dam must implement all remedial measures listed in the report.

5./ May 1, 2023

Keith Banachowski, P.E. Date
Project Manager
Dam Safety Program
Division of Water Resources

4/17/2023

Ryan Heskett, E.I. Date
Project Engineer
Dam Safety Program
Division of Water Resources

This inspection was performed pursuant to the authority granted to the Chief of the Division of Water Resources in ORC Section 1521.062.

J/.JLI 5/1/2023

Mia Kannik, P.E. Date
Program Manager

On behalf of Dena C. Barnhouse, P.E., Chief
Division of Water Resources

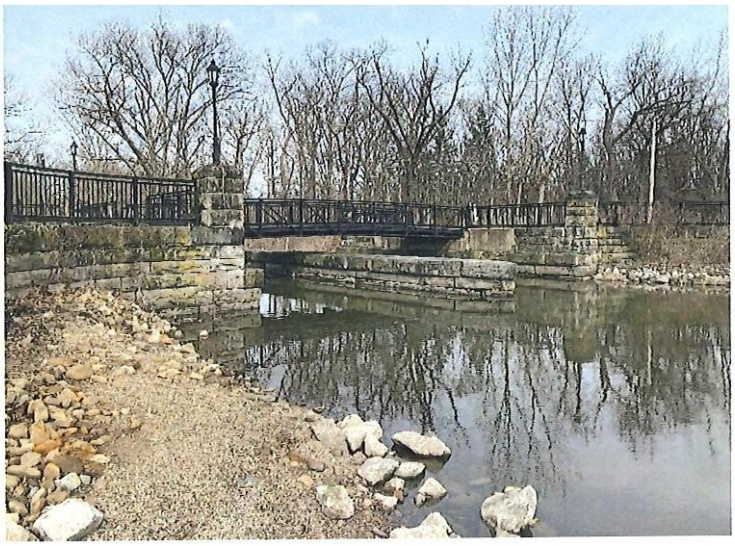
Lower Shaker Lake Dam, File Number: 1314-001, Inspected: March 29, 2023, KRB

SITE MAPS

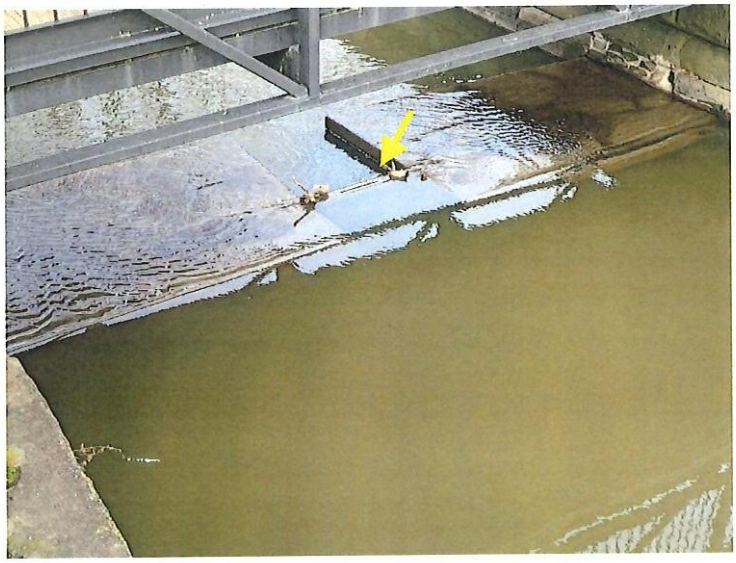

N
Low Area / Flow Path
Standing Water (Remnant Masonry Foundation)
Right End
Crest
Downstream Slope
Upstream Slope
Lake Drain Operator and Well
Lake Drain Outlet
Principal Spillway Outlet
Principal Spillway Inlet
Google Earth, November 2021


Area Unable to Freely Drain
Low Area / Flow Path
Downstream Slope
Upstream Slope
Crest
Coventry Rd
Brook Rd
OGRIP 2020 DEM (1-Foot

PHOTOGRAPHS



1. Overview of the principal spillway inlet area.



2. Left side of the spillway under the bridge. The arrow points to a flashboard, but its purpose is unclear because the downstream wall is the control.

3. Right side of the spillway under the bridge. The arrow points to a flashboard, but its purpose is unclear because the downstream wall is the control.

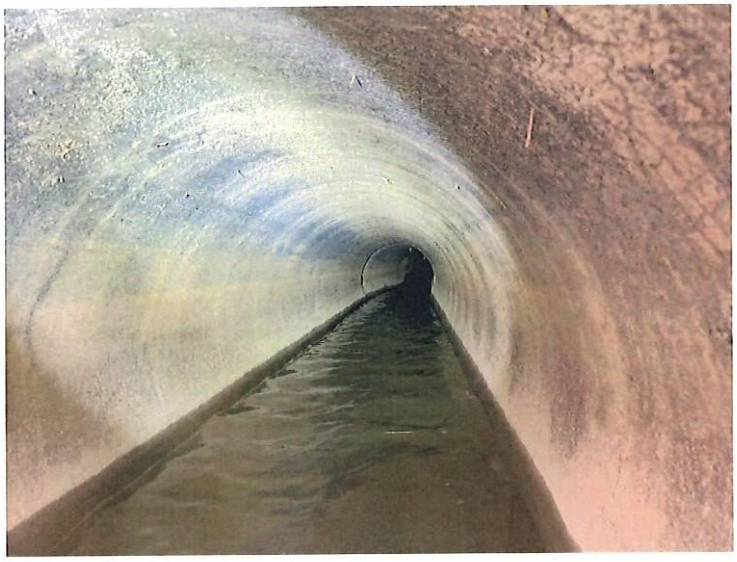
4. Overview of the spillway outlet area. The arrows point to the downstream wall that controls flow.

5. The downstream wall on the right side had recently been repaired.

6. Overview of the spillway outlet area. Notice the vegetation by the right sidewall (arrows). The masonry structure was deteriorated and the undermining at the outlet is unknown.

7. Channel downstream of the spillway; arrow points to the lake drain outlet.

8. Lake drain outlet.



9. Interior of the lake drain pipe.

10. Overview of the crest viewed from the right side of the principal spillway. The arrow points to the lake drain well and operator.

11. Lake drain well and operator.

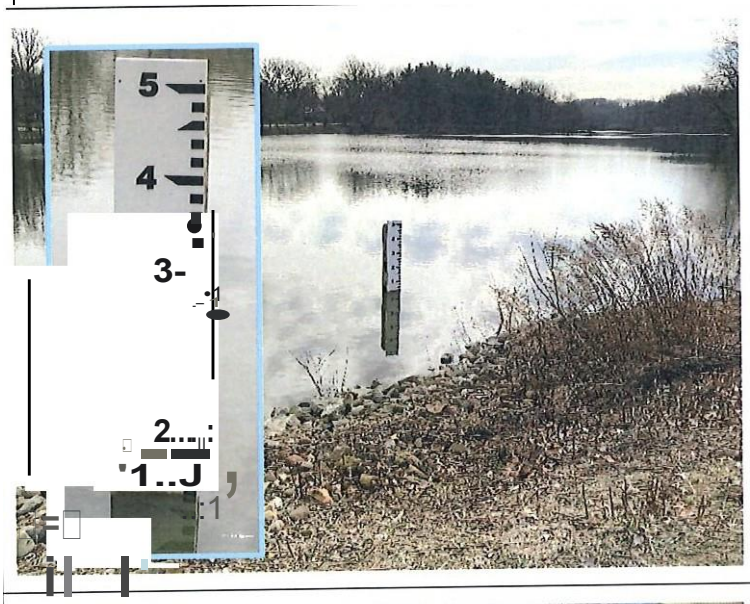
12. Interior of the well; no leakage or obstructions; no noticeable defects with the operator.

13. Downstream slope viewed from right end of dam; the wet area is circled; arrows point to the downstream slope.

14. Downstream slope viewed from toe looking toward the right end of dam; arrows point to the downstream slope.

15. Overview of the crest looking toward the spillway.

16. Overview of the right end of dam; arrows point to the low area/emergency spillway.



17. Newly installed staff gage. The gage was reading 0.3 foot, and this reflects the stop logs being in place. See Photograph No. 18.

18. Right side of spillway; notice that the stop logs are in place, create about 0.3-foot water surface elevation difference between the pool and the downstream overflow wall.

CLASSIFICATION

Lower Shaker Lake Dam

		Class
Height	17.3 ft	IV
Storage	178.0 ac-ft	III
Potential Downstream Hazard		I
	Final Class:	I

The classification of a dam is based on three factors:

- the dam's height,
- storage capacity, and
- potential downstream hazard.

The height of the dam is the vertical distance from the top of dam (crest) elevation to the lowest point along the downstream toe. The storage capacity is the total volume of water that the dam can impound at the top of dam (crest) elevation. The potential downstream hazard consists of roads, buildings, homes, and other structures that would be damaged

HEIGHT AND STORAGE CRITERIA

Class	Height		Storage (ac-ft)
I	> **60**		> 5000
II	> 40		> 500
III	> 25		>50
IV	s 25		s **SO**
Exempt	< 10	and	< 50
Exempt	<6	or	< 15

in the event of a dam failure. Potential for loss of life is also evaluated. Various dam failure scenarios must be considered, and they include failures when the dam is at normal pool level and failures during significant flood events. Each of the three factors is evaluated, and the final classification of the dam is based on the highest individual factor. Class I is the highest and Class IV is the lowest. The classification of a dam can change based on future development or other changes along the downstream channel or from changes made to the dam.

POTENTIAL DOWNSTREAM HAZARD

The following table shows the structures such as homes, businesses, roads, etc. that have been identified as part of the potential downstream hazard investigation. The letter in the table corresponds to the structure on the aerial photograph. The table is intended to establish or verify the appropriate classification in accordance with the OAC. It does not necessarily show all potential hazards or the full extent of inundation. Furthermore, in the event of dam failure, property owners in addition to those identified in the table should be made aware of the situation. This potential downstream hazard investigation is based dam failure inundation mapping from the approved emergency action plan for the dam.

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							Probable loss of human life.
							Loss of public water supplKi or wastewater treatment faci1ty, release of health hazardous waste
							Flooding of structure or high-value property
							Damage to high-value or Class I, 11, lll dam or levee
							Damage to major road (US or state route), disruption of only access to residential or critical facility area
							Damage to railroad or public utility
							Damage torural building, not otherwise hi□h-valued property, or Class IV dam or levee
							DamaRe tolocal road (county and towns ip)
							Lossrestricted mainly to the damor agricultural, rural land
							No hazard to structure noted
							No hazard assessment; further investigation needed
							Downstream - Dam to affected structure
							Vertical - Streambed to base of affected structure
							Horizontal - Stream to affected structure

Lower Shaker Lake Dam. File Number: 1314-001, Inspected: March 29, 2023, KRB

FLOOD CAPACITY

A dam must be able to safely pass severe flood events. A dam uses a combination of spillway discharge capacity and the reservoir's ability to store floodwater (storage capacity), known as discharge/storage capacity, to prevent floodwater from overtopping the embankment crest and destabilizing the dam. When a dam has inadequate discharge/storage capacity, floodwater will overtop and most likely erode the embankment. This can cause severe damage and dam failure.

As part of this inspection, the Division of Water Resources did not thoroughly investigate the ability of this dam to safely pass the required design flood. However, in 2016, a consultant performed hydrologic and hydraulic calculations to estimate the size of the design flood and the total spillway discharge capacity of the dam. These calculations combined with the reservoir storage capacity were used in the flood routings to estimate the maximum water surface elevation in the reservoir for various flood events (see Table).

Lower Shaker Lake Dam is a Class I dam; therefore, in accordance with OAC Rule 1501:21-13-02, the required design flood is 100% of the Probable Maximum Flood (PMF) or the critical flood. This dam and its spillway system must safely pass the design flood without overtopping the embankment crest. Flood routing calculations indicate that the dam can pass 2% of the PMF; Lower Shaker Lake Dam does not appear to be able to safely pass the design flood.

Flood Routing Summal'}'

			Overtopping	
	Maximum Inflow	Maximum WSEL[1]	Depth[2]	Duration
Flood Event	(cubic feet per second)	(feet)	(feet)	(hours)
PMF	19697	909.7	5.7	
12% PMF[3]	2032	906.0	2.0	

1. WSEL - water surface elevation, in feet

2. A negative number indicates that the dam does not overtop and represents the elevation difference between the Maximum WSEL and the Top of Dam Elevation (freeboard)

3. 12% PMF is similar to the 100-year flood. The 100-year flood event has a 1% chance of occurring in any given year. This is only an approximation.

Dam and Spillway Elevations

Top of Dam 904.0 Normal Pool
902.5

Lower Shaker Lake Dam, File Number: 1314-001, Inspected: March 29, 2023, KRB

HISTORY

Lower Shaker Lake Dam

1830	Dam constructed.
1977	Dam Safety Inspection by the Division of Water Resources.
1979	USACE Phase I Inspection
1985	Dam Safety Inspection by the Division of Water Resources.
1996	Dam Safety Inspection by the Division of Water Resources.
1998	Partial tree removal; installation of lake drain.
2004	Dam Safety Inspection by the Division of Water Resources.
2009	Hydrology and Hydraulics Study submitted and approvecJ_.
April 29, 2009	Dam Safety Inspection by the Division of Water Resources.
Sep.30,2014	Dam Safety Inspection by the Division of Water Resources.
2016-2018	Basis of Design Report and Preliminary Engineering Report and Draft Plans and Specifications submitted; comments provided.
Apr. 18, 2018	Dam Safety Inspe_ctio11 by the Division of Wa!E!r Resources._ --
2019	Upstream slope cleared; shoreline erosion protection installed (engineered plans on file).
2021/2022	Engineering repair of downstream wall on right side of spillway (not reviewed or approved by Division of Water Resources).
July 25, 2022	EAP and OM! approved.
March 29, 2023	Dam safety inspection by the Division of Water Resources.

APPENDIX - LOCATION MAP, INVENTORY, INSPECTION CHECKLIST, OTHER AGENCIES

LOCATION MAP


1 inch = 3-000-feet

Dam Inventory Sheet

Name: LOWER SHAKER LAKE DAM

Reservoir:

File No: 1314-001
National #: OH00352
Permit No.: N/A

Owner Information

Owner: Multiple Owners
Address:

City: Cleveland
Contact: Patricia Speece (Shaker Heisihts)

Owner Type: Public, Local
Multi-Dams: -
Parcel No.:
State: OH **Zip:** 44108
Phone No.: 216-870-0282

Location Information

County: Cuyahoga
Township: City Of Shaker Heights
Stream: Doan Brook

Latitude Deg.: 41 **Min.:** 29 **Sec.:** 24
Longitude Deg.: 81 **Min.:** 34 **Sec.:** 54

USGS Quad.: Shaker Heights

USGS Basin No.: 04110003

Design/Construction Information

Designed By: North Union Shaker Colony
Constructed By: North Union Shaker Colony
Completed: 1830 **Plan Available:** NO **At:**

Failure/Incident/Breach:

Structure Information

Purpose: Recreation, Private
Type of Impound.: Dam And Spillway
Type of Structure: Earthfill
Drainage Area (sq. miles): 4.82 or (acres): 3085

Embankment Data

Length (ft): 600
Height (ft): 17.3
Top Width (ft): 45

Upstream Slope: 3H:1V
Downstream Slope: 1H:1V
Volume of Fill (cub. yds.): 25700

Spillway Outlet Works Data

Lake Drain: 24-IN-DIA DUCTILE IRON PIPE

Principal: 39.5-FT-LONG STONE MASONRY WEIR
Emergency: NONE
Maximum Spillway Discharge (cfs): 425 **Design Flood:** 1.0 **Flood Capacity:** 0.02

Dam Reservoir Data	Elevation (ft-MSL)*	Area (acres)	Storage (acre-feet)
Top of Dam:	904	18.7	178
Emergency Spillway:			
Principal Spillway:	902.5	16	132
Streambed:	88 ISHS		

*Elevations are not necessarily related to a USGS benchmark

Foundation:

Inspection Information

Inspection History:

3/29/2023 KRB
4/18/2018 MJH
9/30/2014 DCB
4/29/2009 TMG
6/21/2004 DMR
5/21/1996 TML
9/17/1985

Phase I:	7 9	3/13/97, 5/7/1997, 6/8/1999	
10/25/19	**Other Visits:**	**Inspection Year:**	B

1_11_2_91_19_7_7_ ***0peration Information/Remarks*** CLEV

PHASE I: UNSAFE - NON-EMERGENCY; SHAKER HEIGHTS & CLEVELAND HEIGHTS OPERATE AND MAINTAIN THE DAM.

Emergency Action Plan: Approved **Format:** ICODS **OMI:** Approved
Last Entry: 3/30/2023

Dam Safety Inspection Checklist

Name of Dam: Lower Shaker Lake Dam — Cuyahoga County

Date ofInspection: March 29, 2023 — Required Action

File Number: 1314-001 — None Mon. Maint. Eng.

Class: I — Design Flood:I1.0 — I Flood Capacity:I0.02 — I D D D

Haz.: I, Height: IV, Volume: III

Interview with Owner (at the site):

Owner/Representative present: (□ -Ne} Name(s): Chuck Orlowski, Joe Ciuni, Tony Ferrone

Owner's Name(s): Multiple Owners — We also met via Teams prior to the inspectio□

Address: , ,

City: Cl□nd — State: OH — Zip (+4): 44108

Contact Person: Eatricia Speece (Shaker Heights) — Telephone: 216-87.Q..-0282

Email Address:

Purpose of dam: Recreation, Private

Owner Dam Safety Program

			None	Mon.	Maint.	Eng.
Emergency Action Plan	Approved	ICODS				
EAP (document):	Recently approved, will need future Up-to-date?	(m.1.j(!)	ocl	□	D	□

Downstream development: None — revision after dam remediation

			None	Mon.	Maint.	Eng.
Operation, Maintenance, and Inspection	Approved	Acceptable				
OMI (document):		Up-to-date? □ □ *If)*	Ix!	D	D	D

All drains operable? (□ *Nl)* Reported to be operable, and used routinely

Normal rate of drawdown: Unknown — Accessibility for operation: Dam Crest

Maintenance

Frequency of mowing: N/A

Other maintenance: Some landscaping maintenance; installed shoreline protection 2019; repaired spillway wall

Inspection

Frequency and thoroughness of day-to-day & routine inspections: :...:.Ro""u""t""in:...:e""v""is:...:.ua.'".'I f.o.r..:...W:.aS:.::EL.

Problems found during inspections: None new

Field Information

Pool Elevation (during inspection): At normal pool — Time: 11:00 am (a.m. p.m.)

Site Conditions (temp., weather, ground moisture): 45 degrees, partly cloudy, dry

Inspection Party: KRB, RGH

Confirm the Following: g]oam Height (ft): 17.3 — [8:JNP Area (ac): 16

Reference Information

City of Cleveland owns the dam;20230324 confirmed leased to Shaker Hts and Cleveland Hts (same as Upper Shaker)

High pools would potentially overtop right end and flow down street; added flashboards under bridge;
Lake drain: valve controlis 50 ft upstream of p.s.; flows into a dry well, outlet is along downstream channel about 100 feet downstream;

Phase I: Unsafe- Non-emergency;Shaker Heights & Cleveland Heights Operate And Maintain The Dam.

	Elev.	Area (ac)	Stor. (ac-ft)	(in.)
TOD:	904	18.7	178	0.2
Em. S/w:				
Prin. S/w:	902.5	16	132	

Igned t::Sy: North union :::;naKer t;olony
Constr. By: North Union Shaker Colony
Year Compl.: 1830 Plans Avail.? No At:
Fail./Incid.:

Basin (ac): 3085

}

Required Action

EIGradient: 3H:1V

Upstream Slope

Typical Problems: shoreline erosion, trees & brush, surface erosion, ruts, rodent burrows, earth slides, cracks

- Shoreline is overgrown with tall weeds and brush, difficult to inspect — X
- Repairs (N2020) included clearing the slooe and installing shoreline erosion protection — X

Crest

IK] Width(ft):45 [I]Length (ft): 600 [] Total Freeboard (ft):1.50

Typical Problems: low areas, trees & brush, surface erosion, ruts, cracks

- Mostly paveid and adequate grass cover on edges; no indications of instability — X
- Gargen near princpal spillway
- Right end is low

Downstream Slope [[] Gradient:1H:1V

Typical Problems: trees & brush, surface erosion, ruts, rodent burrows, earth slides, cracks, seepage

- Heavy trees and brush; remnant masonry structures; difficult to inspect
- Wet area at the t area does not have E h for drainage — X

Principal Spillway 18::J 39.5-ft-long Stone Masonry Weir

Typical Problems: Inlet obstructed, unsatisfactory trashrack/anti-vortex plate, material deterioration, misalignment. open joints, outlet erosion, outlet overgrown, undermining

- Inlet was clear of obstructions, but the stop logs were in place (need to be removed) — X
- Masonl'{. str\.Jcture is weathered, aged, deteriorated; questionable competer1 cy Q s a reliable hydraulic struct:tre — X
- Outlet area has erosion and overgrown with vegetation — X
- The right overflow wall had been re ed; engineered plans J)rovid (f onsidered tem porary/interim repairs until more comprehensive investigation and repairs re conduct) — X
- Previous inspection noted a storm drain outlet in the spillway outlet area, lef!:side. Should be considered with comprehensive investigation the spillway. Area overgrown during 2023 inspection — X
- No noticable deflections/alignment issu or top of walls — X

- [ ] Sufficient measurements to perform hydraulics (dimensions, riser depth, outlet elevation)

Required Action

Emergency Spillway

[x] None

☐ Freeboard (to normal pool, feet)

Typical Problems: Flowpath obstructed, material deterioration, erosion, misalignment, overgrown, undermining

- None - not required

Lake Drain

[E] 24-in-dia Ductile Iron Pipe

Typical Problems: Poor operating access, inoperable, deteriorated/missing components, outlet erosion

- Reported to be operable; no defects noted with control or components; control protected with bollards; well was free of debris
- No problems noted with interior of pipe noted (viewed with flashlight from downstream end).
- No sinkholes or defects noted on ground surface following alignment of pipe
- Outlet area overgrown

Other

- Staff g_age was located in the pool area near the spillway and wa☐reading "0.3 foot". guring normal conditions, it should read "0.0 foot", indicating that th☐ *stop* logs are in place and raising the pool level. The stop logs need to be removed.

[XJ Sufficient measurements to perform hydraulics (dimensions, breadth, side slopes)

☐ All Field Data Gathered (inspector's inititals): KRB

Site Sketch

See Report

☐ Investigate Downstream Hazard

Agencies Associated with Dams and Lakes

The Division of Soil & Water Resources has the responsibility to ensure that human life, health, and prope1ty are protected from dam failures. The division provides fact sheets and dam safety information for dam owners on the division's web site: www.dnr.state.oh/water. Other governmental agencies are involved with the lakes and streams associated with dams, but have other responsibilities. Listed below are several relevant agencies that dam owners may be interested in contacting.

County Emergency Management Agency

County Emergency Management Agencies (EMAs) serve the public in disaster preparedness, public safety, and emergency management at the county level. County EMAs are responsible for coordinating relief efforts related to mam11ade and natural disasters. In the case of a dam emergency, the County EMA is one of the dam owner's first contacts.

Telephone: 216-443-5700

State Web Site: http://ema.ohio.gov/index.aspx

Soil & Water Conservation District

County soil and water conservation districts (SWCDs) serve communities by providing assistance to urban and agricultural land users. SWCDs specialize in soil erosion prevention and water management. Some of services offered by county SWCD offices include survey and design of grassed waterways, erosion control structures, surface and subsurface drainage, farm ponds, and livestock waste management facilities. SWCDs also sponsor a number of information and education programs. In addition to these services, SWCDs may utilize assistance from the USDA Natural Resources Conservation Service (NRCS) for some technical matters.

http://www.dnr.state.oh.us/H_Nav2lOFFICESSWCDS!Dist rictOfficesItabid/9093/Default.aspx

216-524-6580 - Telephone

Natural Resources Conservation Service

Since 1935, the Natural Resomces Conservation Service (originally called the Soil Conservation Service) has provided leadership in a partnership effort to help America's private landowners and managers conserve their soil, water, and other natural resources. NRCS employees provide technical assistance based on sound science and suited to a customer's specific needs. NRCS provides financial assistance for many conservation activities.

Web Site: http://www.nrcs.usda.gov/

Division of Wildlife

The Division of Wildlife within the Ohio Depa11ment of Natural Resources manages fish and wildlife of the state. The division offers assistance in stream improvement and pollution investigations and provides fishery information and publications on pond stoc□i'.1□. Inform□ti_o'.1 regardi□g pest and roden_t control c□n be obtained by v1s1ttng the d1v1s1011 website or by contactmg the regional office. The Division of Wildlife should be contacted before starting any construction activity where loss of aquatic life is anticipated.

330_644_2293 _District Office 3

http://ohiodnr.com/HomelContactUs/tabid/1S 270/Default.aspx _Web Site

Ohio Environmental Protection Agency

The Ohio Environmental Protection Agency (EPA) establishes environmental guidance and enforcement standards for the state. In pa1ticular, the Division of Surface Water provides assistance for matters pe11aining to rivers, lakes, and streams in Ohio. The Division of Surface Water can provide information and assistance in developing best management practices for the control of point and non-point pollution sources and spills. Suspected pollution spills can be reported directly by using the Ohio EPA Spill Hotline at 1-800-282-9378.

District Office Northeast: 330-963-1200

state Web Site: http://www.epa.state.oh.us/

OSU Extension

The Ohio State University (OSU) Extension utilizes knowledge and research developed by the Ohio Agricultural Research and Development Center, Ohio State, and other land-grant universities to assist communities, businesses, and individuals. In addition to a wide variety of community leadership and agricultural services for all ages, county OSU Extension offices offer information and assistance in agricultural water resource conservation and management, farm pond management, and safety, Ohio hydrologic cycles and non-point source pollution management. Information regarding dry hydrant fire protection and legal liabilities associated with farm ponds in Ohio can be found on the extension website.

330-263-3831- Extension Region: North st Ea

http://extension.osu.edu/locate-an-office - Web Site