



## **TRANSPARENCY REPORT: WEST LAKE SPILLWAY PROJECT 2017**

Update Presented by the Lakewood Property Owners Association  
March 29, 2017

### **SUMMARY:**

The LPOA is pleased to give you the latest updates on the progress of the Spillway Project on Lakewood Lake. Phase Two (the last phase) of the project is beginning in April, 2017.

### **OVERVIEW:**

Phase One of the Spillway Project was completed in 2013, and major improvements were made to the spillway by means of a grout curtain across the entire spillway. The water seepage has been reduced from 4000 GPM (gallons per minute) in 2013, down to just 750 GPM at current day.

Phase Two of the Spillway Project is now underway. (April 2017)

A three-man professional geotechnical dive team will be in the water during April 2017 to inspect and videotape the interior (lake side) face of the limestone formations at the spillway or what Lakewood Residents refer to as “The Rock”. With the implementation of Phase Two, the goal is to reduce seepage through the limestone down to a final acceptable rate of 100 GPM.

The mission is to try to find the lower pressure inlet of lake water in the face of the Limestone. This can lead to a simple and economical fix to block the inlet. If we are unable to locate the inlet(s), then we will commence with the final grouting as planned to seal off the seepage.

Read more below to follow the timeline of the project!

### **TIMELINE HISTORY | REPAIR AND MAINTENANCE OF THE SPILLWAY SEEPAGE:**

#### **1960's**

The lake was built by the developer, Farm and Home Savings, in conjunction with Andes and Roberts Construction Company.

#### **1973**

A small amount of original grouting occurred to seal natural seepage soon after the spillway construction was completed.

## **1977**

The Lake was filled up initially from heavy rainstorms. The dam and spillway were turned over to the LPOA by Farm and Home. **Previous boards referenced seepage in their earliest documents. No action was taken to repair the seepage until 2013.**

## **1977 thru 2012**

The seepage continued to grow over the decades. Annual Dam Inspections occurred, and the seepage was noted every year since 1977. About every 10 years there would be a natural drought, and during the droughts, records show that the Board interest level in the seepage began to increase as residents would complain of low waters, harm to their boats, etc.

Repairing the seepage would be a very expensive project, and there were no reserved funds set aside for it. Although the Boards spent time trying to decide what steps to take, after the droughts would end and the water would rise again, the boards would move onto new topics and leave it alone until later.

## **2012**

Mark Reid became General Manager of LPOA. His first action item as GM was to address the high rate of seepage, most noticeable during the severe drought of 2012. The 2012 Board of Directors took the initiative to stop this long standing issue and approved the borrowing of funds to complete the project.

## **2012 - 2013**

Geotechnical Study of the Spillway and Grouting Project:  
Geotechnical Engineers were Terracon ([www.Terracon.com](http://www.Terracon.com))

## **2013 Summer**

Borings were completed and analyzed and the engineers completed their design for the new Grout Curtain.

## **2013 Fall**

**PHASE ONE** – The Judy Company, who did the initial grouting of the spillway In 1973 was selected as the low bidder to install the Grout Curtain. This project, including Engineering, was \$537,000.

**Nov 2013** – **Success! The project Reduced seepage flow by 73% .**

**See images from Thursday, Nov. 13 vs Tuesday, Nov, 18, 2013.**

**Flow was reduced from 4000 GPM down to 750 GPM (gallons per minute)!**

### **Nov 2013 – Present**

Ongoing maintenance of the spillway is now budgeted into LIP (Lakewood Improvement Program) which can provide funds for things including small grouting projects, weir replacement or repair, and other maintenance as needed.

### **April 2017**

#### **PHASE TWO begins**

The LPOA is now entering PHASE TWO of the Program which is being overseen by Dr. Charles Cammack, of Cammack Consulting in conjunction with Terrafirm, [www.terrafirmconstruction.com](http://www.terrafirmconstruction.com) (formerly The Judy Company).

Currently the rate of flow has maintained at 750 GPM (Gallons per minute) since the 2013 grouting project. The Goal of PHASE TWO is to continue to reduce seepage from the rate of 750 GPM (Gallons per minute) down to an acceptable rate of 100 GPM, where it can be maintained long term.

In conjunction with Tiger Docks, there will be highly specialized geotechnical divers brought in from out of state. They will be in the water during April 2017 to map the limestone walls and video the conditions as well as search for any water inlets. This will be followed up with final remediation of any seepage in late summer 2017.

Remediation will be much less expensive if we can find the inlet and treat at the inlet, rather than the alternative of having to drill downstream and seal it off with grout. Bringing in highly specialized divers to identify the conditions will drastically reduce costs and increase the reliability of findings.

PHASE TWO will essentially catch the last remaining seepage and virtually seal it off. The goal of Phase Two is to reduce to 100 GPM and maintain that as an acceptable level for downstream flow.

This project has been closely monitored since the drought in 2012, and will continue to be monitored in the future. Your association is currently committed to maintaining this spillway so it never returns to the unacceptable rate of flow that we saw in 2013.

#### **COSTS ASSOCIATED WITH THE SPILLWAY PROJECT, PHASE 1 AND 2:**

PHASE ONE - About \$537,000 - from the grout curtain

PHASE TWO - About \$75,000 - to get the last of the seepage under control and achieve our goals.

After this point, the association will be committed to tracking and maintaining the spillway flow in future years. There have also been funds set aside (which continue to grow) in order to help

fund these projects as needed in the future.

### **ABOUT OUR WEST LAKE AND EAST LAKE DAMS (NOT THE SPILLWAY)**

All our engineers have inspected the dam. [URS](#) and [MO Dam Safety Program](#) have never found fault with our dams. They are inspected every year by our geotechnical engineer Dr. Charles Cammack and every 2 years by the MO Dam safety program.

They are in great shape, as noted in the 2016 report which you can read [on-line here](#) or at [www.lpoa.com](http://www.lpoa.com).