

# LAKE MARLETTE DAM RECONSTRUCTION

## Background

The foundation of the original 26 foot high rock and earth dam was laid in 1873 by a logging company. In 1876 it was raised to 37 feet to enable the Virginia City & Gold Hill Company to draw water for the city and later it was increased to a height of 45 feet.

The U.S. Army Corps of Engineers recently rated the 150 year old structure as a “High Hazard Dam” based on the probability that a 6.5 magnitude earthquake would cause a raging flood down the mountain. This would flood Nevada Highway 28, damage the sewer under the highway and dump thousands of gallons of sewage into Lake Tahoe.

FEMA awarded a \$10 Million grant and the State of Nevada budgeted for the funding of planning and construction of the approximately \$21 million project to replace the dam.

Lumos & Associates was awarded the engineering contract and Granite Construction the construction contract.

In preparation for construction Marlette Lake was gradually drained 25 feet to a level of 20 feet to allow Granite to begin construction in May of 2025.

The Aqua Dam Company of Scotia, California manufactured 3 custom water-tight polyethylene tubes enclosed within woven outer sleeves for a 25 foot high cofferdam during construction.

Installation of the cofferdam started on June 2<sup>nd</sup> 2025.

Aqua Dam made four interesting You Tube Videos of the installation which can be found at:

Marlette Lake, Nevada 2025 [part 1 of 4]

When the cofferdam was completed the water between the dams was pumped out.

The old dam and underground spillway pipes were removed and the area excavated to bed rock.

The new spillway pipe and structure was constructed and the new dam construction started.



## September 17, 2025 Front Face Dam Nearing Final Elevation.

Material from the excavated dam is used in the new embankment structure roughly 16,000 yards of onsite material will be reused.

The compacted embankment is on a 3 to 1 slope.

The pipe on the right hand side was used to pump out the excavation through the emergency spillway.

The corner of the spillway intake structure is visible near the bottom of the embankment..



# Approaching The Current Top Of The Dam Fill At The South Abutment

Environmental constraints require that all work is completed between May and October.

The schedule is to have the new dam ready to hold water by October 15, 2025 and the cofferdam removed by November.

The average annual recharge for the lake is about 3 feet. Under normal conditions the lake will require 6 to 7 years to return to the 45 foot depth.

Work will resume in May 2026 and the project is scheduled to be completed by October 2026.

The project is on schedule.



## Crossing To The Back Side Of The Dam

The back side of the dam is the buttress which anchors the dam in place.

We were requested to go to the south abutment to cross over the top of the dam.

This is a filter dam.



## Standing On Top Of The Buttress Filter Layer

The filter layer is designed to allow water seepage through it without erosion.

It is an engineered material from a select quarry with specific mixed particle sizes to give it the desired attribute.

We were ask to not cross over the top of the dam to avoid contaminating the filter with he front face fill material, .



## Fill Material Versus Filter Material

The brown fill material is native soil and has a large range partical sizes.

The mixed filter material is gray and is made up relitive uniform small particles.

Imported material is hauled up the valley to in highway trucks and off loaded in Granit's staging area near Spooner Lake. It then loaded into large off highway construction trucks and transported approximately 5 miles to the dam site.



## Compacted Filter Material

Even after being walked on the compacted material holds the shape well.

The filter material looks like a fine graded concrete mix but there is not any cement in it.



# Looking Down Butress Filter Layer To Spillway Outfall Structure From North Abutment

The concrete outfall structure is at the bottom of the dam butress.

The slope of the filter structure is steep at 2 to 1



## The North Abutment

The large concrete block is the original block where the 2 hand wheels used to control the spliways are mounted.

It was located in the middle of the dam and moved here during the dam removal



## The Original Emergency Spillway

The emergency spill way is located at the north abutment, the floor is level with the top of the dam at 45 feet.

In the winter crews have to come in by snowmobile or helicopter to shovel the snow out.

The new emergency spillway will be at the same level but it will be covered.



## From North Abutment

Standing on the north abutment at finished height looking across the dam at south abutment.

This gives a good idea of how close the dam it is to full height.

Filter material stored on the right to be compacted as dam face is completed.



## Lake Marlette From North Abutment

The dam will be capped and the cofferdam removed before the winter shutdown.

During next years season the project will be completed including the control building and site restoration.

