

# Peacock Hill Dam Primary Spillway Inspection Report



**March 4, 2014**

## Dam & Project Information

**Dam Name:** Peacock Hill Dam, VA  
Inventory # 00351

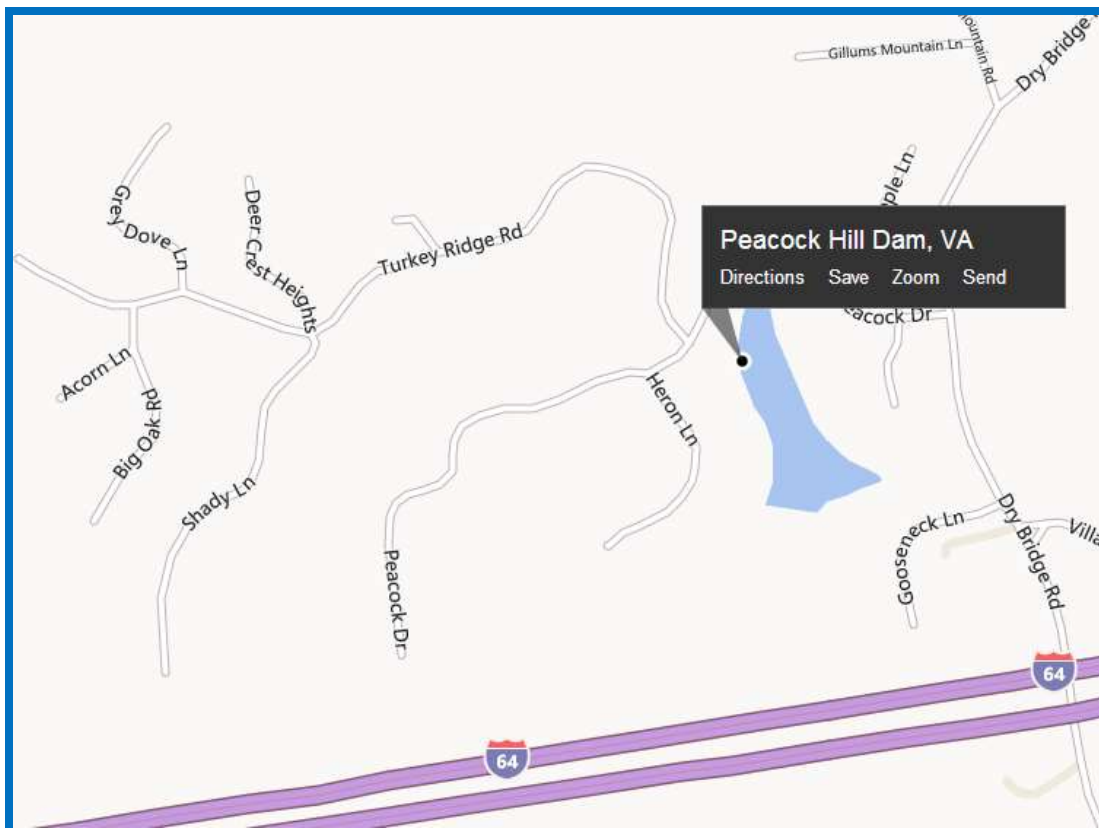
**Dam Owner:** Peacock Hill Homeowners Association

**Project Client:** Lacy Wilbur, CMCA®  
Association Manager  
Real Property, Inc.  
1500 Amherst Street  
Charlottesville, VA 22903  
Phone: 434-823-4407

**Date of On-site Inspection:** February 28, 2014 - 9:30 AM to 1:00 PM.

**Location:** Peacock Hill Subdivision is located approximately 10 miles west of Charlottesville, VA in Albermarle County. The dam is off of Dry Bridge Road (Route 708) and Peacock Drive

LAT/LONG 38.035045, -78.640398.



**Dam Access:**

Access to the dam is from a paved road on the North, upper end of the lake. A graveled pedestrian pathway goes about 1000 feet along the right/west side of the lake and to the crest of the dam. The pathway is narrow and steep in some locations, but during good weather conditions it can be accessed by a 4 wheel drive pickup truck. The access path could be improved to handle construction equipment with minimal disturbance.

**Site Conditions & Weather:**

The weather was 30-35 degrees Fahrenheit and clear, and the lake was at normal pool level at the time of the inspection. There were a few patches of snow remaining on the ground.

**Inspection Procedures:**

The dam was visually inspected and measurements and pictures were taken. The corrugated metal pipe primary spillway system was inspected with a camera crawler system, and video of that inspection is included with this report. A small amount of water was flowing into the primary spillway during the time of the inspection. Crews slowed the flow and leaks into the riser pipe using plastic sheeting.

Directions are from the perspective of an observer looking downstream.

**Overview of Dam:**

Peacock Hill Dam is an earthen embankment dam with a CMP primary spillway and grass lined auxiliary spillway. The dam is approximately 25 feet tall and impounds a pool with a surface area of roughly 3 acres at normal pool. The dam is 360 feet long, and has approximately 5 feet of freeboard at normal pool level. Judging by the CMP material in the dam, it was probably constructed 40-50 years ago.

## Inspection Findings

### Embankment Description:

The earthen embankment is slightly concave towards the lake, and has a crest that varies in width from 10-12 feet. The embankment appears to be well maintained and the majority of the dam is covered in a good stand of grass. There is some small diameter woody vegetation near the outfall and in the auxiliary spillway that should be removed.

The upstream slope of the dam does not have any armoring against wind and wave erosion, but appears to be in good condition. The downstream slope has a line of differing vegetation approximately 1/3 of the way from the crest, which would indicate some wetness. The downstream also has a slight bulge towards the middle, but it is unclear if this is from a past slide or from original construction. The downstream slope appeared stable and not excessively wet at the time of inspection.

### Primary Spillway Description:

#### Riser:

The riser pipe consists of a vertical 30 inch diameter CMP that was measured to 21 feet tall. The rim of the pipe appeared to be level, and several pinhole leaks were noted in the upper section. The connection to the horizontal outfall pipe appeared stable and no leaks were noted. Several small seeps are evident approximately half-way down the riser pipe, but no moving water was found emerging in these locations.

#### Trash Rack:

The riser intake is protected by a 48 inch CMP trash rack with anti-vortex plates. The rack is 12 inches tall and extends 2-3 inches below normal pool level. A fine metal screen is installed over the openings, and a small amount of marine debris was accumulated on the screen. The rack had some asphaltic coating remaining, was sturdily mounted and appeared to be in functional condition.

#### Valve:

A valve hand wheel operator was visible above the lake, upstream of the riser. This pipe was not inspected directly, but onsite measurements indicate a 12 inch sluice gate, located approximately 60 feet from the riser, on the lake bottom. There was no significant flow observed to indicate leakage along this section. Sediment levels indicate this valve is not covered, but lack of recent operation would probably render this valve inoperable except with the use of divers in an extreme emergency.

### Outfall:

The outfall pipe is a 24 inch CMP that runs 133 feet through the embankment, from the riser to the outfall. The furthest two downstream outfall pipe sections were replaced roughly 5-6 years ago. One pipe section measures approximately 20 feet and the other 10 feet. This pipe has a galvanized coating and appears to be in good condition. This section of pipe is on a noticeably steeper grade than the rest of the outfall pipe, but the joint appears to be watertight.

The remainder of the outfall consists of the original corrugated metal pipe. It is showing some deterioration throughout but no noticeable damage, failures, or leaks. Approximately 5% to 10% of the asphaltic coating remains on the pipe walls. On the last joint (Joint #7) the gasket is exposed and is hanging down from the top of the pipe. No leaks were noted in this area. The pipe is relatively straight throughout, however there are a few undulations and areas where sediment has accumulated. This is noticeable in the video by ponding water in the bottom of the pipe.

### Plunge Pool:

Primary spillway flows exit the outfall pipe into a plunge pool immediately downstream. The bottom invert of the outfall is approximately 10 feet above the plunge pool. The plunge pool has steep banks and is lined with rock rip rap. There appears to be positive drainage from the plunge pool, away from the dam.

### **Auxiliary Spillway Description:**

The auxiliary spillway is a 35-40 foot wide grass lined channel on the left (East) abutment of the dam. The control section of the auxiliary spillway is estimated to be 2 feet above the normal pool level and 3 feet below the crest of the embankment. The spillway was level with a good stand of grass, and no signs of erosion were noted in this location.

The embankment is not currently protected from potential flows in the auxiliary spillway. A natural groin was noted adjacent to the spillway, to which flows could be directed with a short earthen berm, however it is unknown if this feature is part of the community's common area.

## Conclusions:

Peacock Hill dam appears to be well maintained and generally stable. It is in the process of state certification, which depending on the engineer's recommendations may require future earthwork.

The corrugated metal pipe primary spillway appears to be in decent condition for the age, but it is showing signs of deterioration in the areas most exposed to corrosive effects. Plans should be made to replace or repair the pipe when possible and it is highly recommended the community start to budget now for this future repair. The slipline rehabilitation for this dam would cost approximately \$90,000.00 to \$100,000.00 and take 2 weeks on site. The water level would have to be lowered 2 feet for the work to be completed. Depending on the long term plans and budget, the pipe should be re-evaluated at least every other year until repairs are made. Now that a baseline pipe inspection is in place, future inspections should be a little more cost effective for the dam owner.

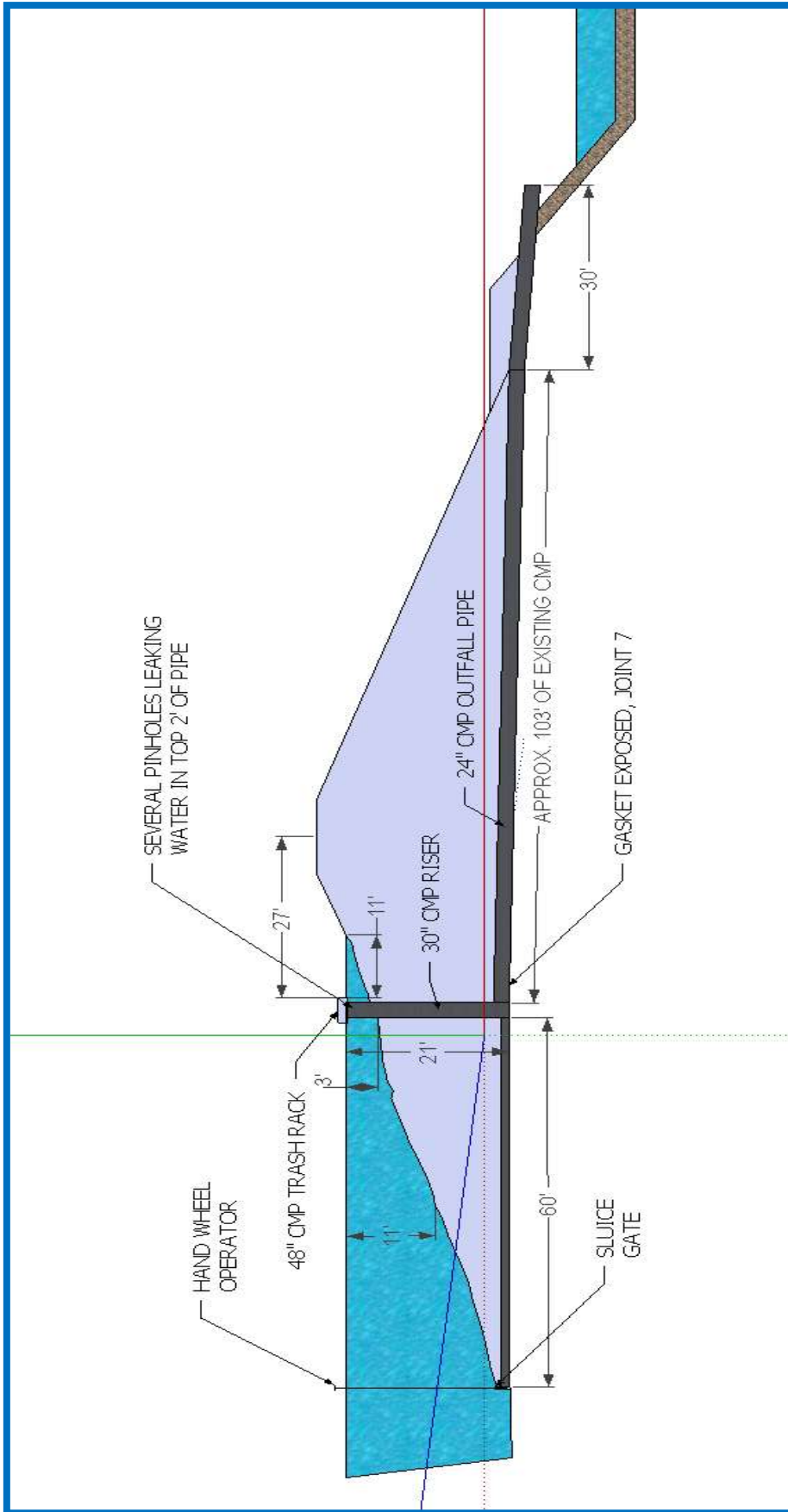
The riser and outfall pipe are suitable for sliplining at this time. A 24 inch and 18 inch HDPE pipe could be used as a liner if an engineer found the flow characteristics to be acceptable.

The large drop from the outfall to the plunge pool creates high energy, erosive water in this location, and it may be wise to add additional rip rap or armoring here in conjunction with other work.



## Site View of Dam & Sketch







## Primary Spillway Table & Pictures

Peacock Hill Dam Primary Spillway Inspection Field Notes				
Location: Albermarle County, VA				
Date: 2/28/14				
Joint/Location	Distance	Height	Width	Notes
Outfall/Start	0'			Pipe elevated off ground 5/6 feet, new CMP section added several years ago
1	16'			Good condition
2	26'			connection into existing CMP, overlap along top, appears gasket coupling used
3	43'			good condition
***				apphaltic coating visible in a few locations, pipe walls appear in stable condition
4	63'			Good condition
5	83'			Good condition, several inches of water was in the bottom of the pipe
***	87'			Pipe appears to turn up slightly, no more standing water
6	103'			Good condition, standing water in bottom of pipe
***	119'			small seep on pipe wall @ 3:00, no flowing water
7	123'			Transition into Riser, gasket sticking through joint, no leaks
RISER	126'			Riser connection in good condition, no leaks observed



Figure 1 - Riser with Trash Rack



Figure 2 - Screen installed on top of trash rack





**Figure 3 - Looking down into riser before water was controlled**



**Figure 4 - Picture of small pinhole leaks near top of riser**



Figure 5 - Larger leak in riser





Figure 6 - Close-up on large leak in riser pipe



Figure 7 - Looking down into riser, note small seeps as evidence by brownish color



Figure 8 - Close-up of seeps in riser, approximately half-way down pipe





**Figure 9 - Riser and Low Level Drain Hand Wheel**



**Figure 10 - Low Level Drain Hand Wheel**



Figure 11 - Close-up of Hand Wheel



Figure 12 - Sluice Gate Frame is deteriorated





**Figure 13 - Looking downstream at plunge pool and outfall pipe**



**Figure 14 - Looking towards right abutment at primary spillway outfall pipe**





Figure 15 - Outfall Pipe and support



Figure 16 - Plunge Pool





Figure 17 - Looking up into new section of CMP outfall



Figure 18 - Picture inside new section of CMP



Figure 19 - Picture at Transition from new to old CMP



Figure 20 - Typical view of existing CMP, note patches of coating





Figure 21 - Joint 7 as it transitions to riser

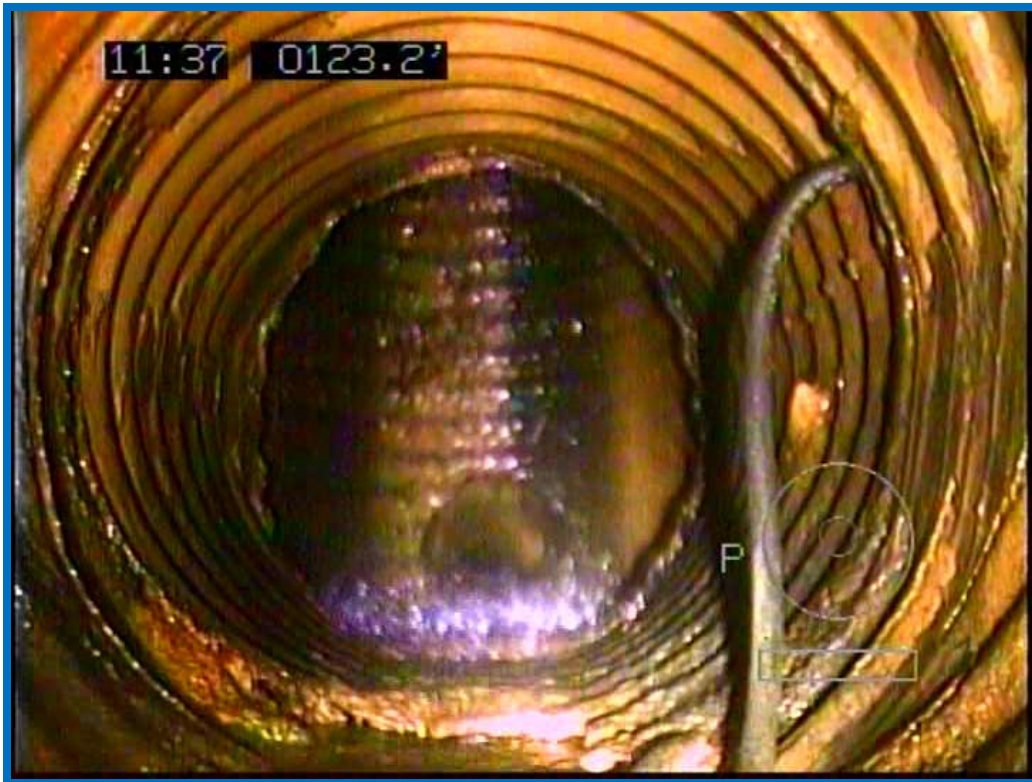


Figure 22 - Close-up of gasket sticking out of Joint 7

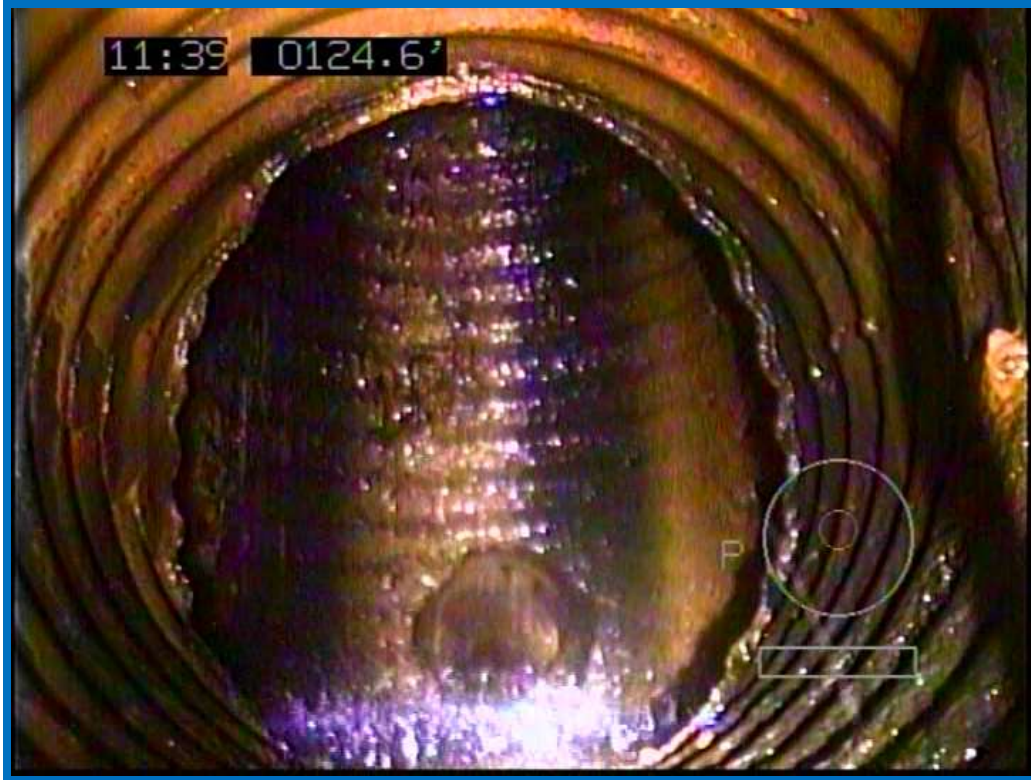


Figure 23 - Riser and Low Level Drain in background



Figure 24 - Looking across riser into low level drain pipe



## Embankment Pictures



Wet Area about 1/3 of the way down the downstream slope.  
Also noted by change in vegetation in this area



**Figure 25 – Middle of the dam looking towards the left abutment**



**Figure 26 - Middle of the dam looking towards the right abutment**





**Figure 27 - Auxiliary Spillway and channel**



**Figure 28 - near lake shore looking downstream at auxiliary spillway**



**Figure 29 - Looking across upstream embankment towards right abutment**



**Figure 30 - Looking across the crest of the dam towards left abutment and auxiliary spillway**