

Memo

CRD

TO: Joshua Ferderick, Manager, Environmental Planning and Engineering
Parks and Environmental Services

FROM: Fraser Hall, Technical Lead, Hydrology and Dam Safety
Infrastructure Engineering

DATE: December 19, 2016

FILE: 5240-20
Dam Inspections-Annual- All Dams

SUBJECT: 2016 DAM INSPECTION REPORT – GARDOM POND

In accordance with Provincial Dam Safety regulations regarding dam inspections, attached is the annual 2016 dam inspection report for Gardom Pond Dam, which is inspected by Infrastructure Engineering personnel, but are under the jurisdiction of CRD Parks and Environmental Services.

Outstanding items have been identified and are required to be addressed in 2017:

Gardom Pond Dam:

1. Remove vegetation in channel leading up to spillway.
2. Brushing required in spillway channel leading up to the road culvert.
3. Remove trees and brush along the extent of the spillway to 2m either side.
4. Remove trees at both ends of the dam and remove vegetation along upstream dam face.
5. Install a permanent staff gauge to monitor reservoir water level.
6. Install a permanent staff gauge in the valve chamber at the downstream toe of the dam.

Please inform me in writing when the above items have been completed.



FH:ls

Attachment: 1

cc: Ted Robbins, General Manager, Integrated Water Services
Larisa Hutcheson, General Manager, Parks and Environmental Services
Ian Jesney, Senior Manager, Infrastructure Engineering
Mike Walton, Senior Manager, Regional Parks
Scott Mason, Manager, Water Engineering & Planning
Ben Martin, Engineering Services
Brad Drew, Regional Parks



GARDOM POND DAM INSPECTION CHECKLIST 2016 ANNUAL

Instructions: Record the condition of each item as follows:

S Satisfactory - Will fulfill intended purpose. No significant change since last inspection.

F Fair - Will fulfill intended purpose but maintenance is required.

P Poor - May not fulfill intended purpose. Repair or modification required.

U Unsatisfactory - Will not fulfill intended purpose. Repair or replacement required.

NI Not inspected - Give reasons under "Remarks/Recommendations".

	Condition					Remarks/Recommendations
	S	F	P	U	NI	
1. Structure						
a) Upstream Face of Dam - check for:						
• Cracking and Differential Movement	X					Brushing required near waterline. Unable to fully inspect embankment due to heavy vegetation. Large tree to be removed at east end of dam Small trees to be removed at west end of dam
• Excessive vegetation		X				
• Signs of Deterioration	X					
b) Dam Crest - check for:						
• Cracking and Differential Movement	X					Driveway crosses dam with distinct wheel depressions. Depressions should be filled so water can flow freely.
• Signs of wheel depressions			X			
• Signs of deterioration	X					
c) Downstream Face of Dam - check for:						
• Seepage	X					No seepage at time of inspection from RPID box. Irregular steep slope
• Subsidence	X					
• Excessive vegetation	X					
d) Areas Downstream of Dam - check for:						
• Evidence of any abnormal development caused by seepage	X					There is a 200mm drain pipe under the gravel driveway directly d/s of the low level outlet indicating a need to control overland flows. Moist area observed downstream of dam.
2. Mechanical						
• Valve Chamber		X				Some standing water in valve chamber. No visible seepage. Recommendation to install drain from concrete chamber to daylight where seepage flows can be measured. Outlet gate valves were not operated due to concerns regarding the integrity of the valves and pipeworks. Investigations should be completed to either repair or replace the pipeworks.
• Outlet Gate Valves and Pipe					X	
3. Spillway - check for:						
• Visible signs of earth deterioration (cracking, subsidence, etc.)		X				Some vegetation to be removed u/s spillway and alongside spillway channel. Small trees cover the slopes of the channel. Brushing and removal of fallen trees and branches along spillway channel from Reservoir to Gardom Lane should be carried out. Clearing to 2m from top of spillway bank, both sides.
• Excessive vegetation			X			

Other Comments:

- Recent heavy rain two days prior to inspection.
- A water level staff gauge should be installed at a location that will measure seasonal low levels to replace the wooden yard stick attached to a dock.
- A staff gauge should be installed in the valve chamber at the downstream toe of the dam to replace the 48" wooden 'yard' stick.
- The upstream face of the dam has a 'Dry Hydrant' located approximately 10m from the west end of the dam. It is not known how far the submerged end of the connection extends into the reservoir.
- Investigate the installation of a drain pipe from the valve chamber floor to daylight downstream.

Work required for 2017:

1. Remove vegetation in channel leading up to spillway.
2. Brushing required in spillway channel leading up to the road culvert.
3. Remove trees and brush along the extent of the spillway to 2m either side.
4. Remove trees at both ends of the dam and brush along upstream dam face.
5. Install a permanent staff gauge to monitor reservoir water level.
6. Install a permanent staff gauge in the valve chamber at the downstream toe of the dam.

Dam Consequence Classification: **High**

	Date of Inspection	Reservoir Water Level	Name of Inspector(s): <u>F. Hall</u>
Dam, Spillway and Mechanical	June 16, 2016	Unreadable – measured 16" not spilling	
Valve Chamber (downstream toe of dam)		32" of water in chamber	

Copies:

- Senior Manager, Regional Parks, (M. Walton)
- Manager, Saanich Peninsula & Gulf Islands Operations (D. Robson)
- Manager, Water Engineering & Planning (S. Mason)



Gardom Pond Dam – Valve chamber at downstream. Drain pipe should be installed to keep chamber dry and to monitor seepage into the chamber.



Gardom Pond Dam – Ruts in the road on the dam crest should be filled. Upstream face should be brushed to facilitate inspection.



Gardom Pond Dam – Remove vegetation on upstream face.



Gardom Pond Dam – Downstream face



Gardom Pond Reservoir Water Level Gauge – To be replaced at suitable location.



Gardom Pond Spillway Outlet – Remove vegetation leading up to channel.



Gardom Pond Spillway Channel – Brush and remove vegetation in channel leading up to road culvert.