



Charles P. Johnson & Associates, Inc.

Civil and Environmental Engineers • Planners • Landscape Architects • Surveyors

1751 Elton Rd., Ste 300 • Silver Spring, MD 20903 • 301.434.7000 • Fax: 301.434.9394 • www.cpja.com

March 26, 2009

Ms. Amy Hofstra
City of Greenbelt
Department of Planning and Community Development
15 Crescent Road
Greenbelt, Maryland 20770-1886

and

Mr. Hal Van Aller
Dam Safety Division
Maryland Department of the Environment
1800 Washington Boulevard, Suite 440
Baltimore, Maryland 21230-1708

RE: Dam Safety Inspection for Greenbelt Lake Dam (MD Dam No. 8)

Dear Ms. Hofstra and Mr. Van Aller,

Charles P. Johnson & Associates, Inc. (CPJ) completed an inspection for Greenbelt Lake dam on March 11, 2009. CPJ inspectors were Brian Davila and Jeff Blass as well as a three-man confined space inspection crew for inspection of the lake drain manhole (the CPJ inspector was German Cortes). Kenny Hall from City of Greenbelt Department of Public Works and Amy Hofstra from City of Greenbelt Department of Planning and Community Development were also present. Inspection items are addressed within this letter. Hand-written inspection forms are not supplied, but are available upon request. All "right" and "left" references are facing downstream. Results are as follows:

Greenbelt Lake Dam

Items Found:

Structural Items to be Repaired:

1. There is a leak in the left hand side wall in the lake drain manhole depositing saturated sediment into the manhole (approximately 10" in depth). Pump out the lake drain manhole and remove sediment deposits. Patch the hole in the left hand side wall with hydro-expanding epoxy grout.
2. Several structural cracks exist in the outlet spillway and wall on the left hand end of the dam. Grout these cracks using hydro-expanding epoxy grout.
3. There are sections of concrete missing from the base of the wall at the outlet spillway on both the upstream and downstream sides. Patch the wall with concrete to replace the missing sections.
4. There is a construction joint with a large gap in it between two sections of concrete swale in the outlet spillway. Install flexible joint filler in the concrete swale construction joint.
5. In several locations along the concrete swale between the weir wall and the bridge, the Shot-Crete finish has deteriorated exposing the wire mesh reinforcement. Repair the swale by installing new Shot-Crete per the manufacturer's instructions.

6. At approximately 70 LF downstream of the bridge, on the left side of the concrete swale, there is a severe amount of undercutting of the side of the swale. Repair the undercutting by patching the swale with concrete.

Non-Structural Items to be Repaired:

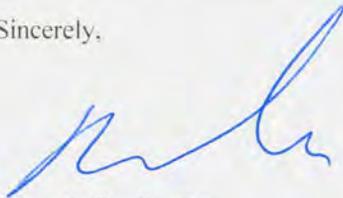
7. The dam is not level from one end to the other. Low points currently exist in the center and far right hand portions of the dam. Level the top of dam (the roadbed) to one constant elevation by adding gravel dust over gravel so possible overtopping flows will not concentrate in one area of the top of dam.
8. There are significant plants growing along the shoreline on the upstream side of the dam. Remove vegetation from along the shoreline on the upstream side of the dam. In general, the tree and plant roots do not need to be excavated unless specified otherwise. The upstream side of the dam should be re-inspected once this item has been addressed.
9. There is a stand of trees and vegetation in the center of the downstream slope of the dam. Remove vegetation from downstream face of dam in the center between Observation Well #3 and the W.S.S.C. vault.
10. There is a stand of trees and vegetation adjacent to the bridge at the left end of the dam as well as growth of small plants, trees, roots, moss and algae in the concrete spillway. Remove vegetation from along the concrete swale at the outlet on the left end of the dam within five feet of the edges of the swale as well as adjacent to bridge on the downstream side of the dam.
11. At least one animal burrow was found in the stand of vegetation located in the center of the downstream slope of the dam. Once the vegetation has been cleared in all areas, repair any animal burrows found by humanely removing any animals from the burrows and filling the burrows with low slump concrete.
12. Re-grade the downstream "fill area" in the area of seepage to maintain positive drainage towards the concrete swale downstream of the dam.

Structural Items to be Monitored:

13. Efflorescence exists on the walls of the lake drain manhole. Monitor the efflorescence on the walls of the lake drain manhole for cracks.
14. The downstream end of the 24" C.M.P. /D.I.P. lake drain has completely deteriorated to be non-existent for the last 12 LF. The left toe drain along the lake drain is also non-existent and the right toe drain is filled with sediment. Perform a CCTV inspection of the 24" C.M.P. /D.I.P. lake drain to determine the condition of the remaining pipe. The lake drain should either be slip-lined or replaced depending on the results of the CCTV inspection so it can continue to function.
15. Water levels were measured at observation wells #1 (10.3 feet – Elev. 103.1), #2 (15.8 feet – Elev. 95.8), and #3 (6.2 feet – Elev. 102.2). Observation well #4 could not be measure due to structural damage to the well. Wells #1, 2, and 3 should be periodically monitored for changes in water level.

If requested, CPJ can submit a proposal for preparing remedial design plans that can be utilized for MDE permit processing and for obtaining contractor bids. If you have any questions, please call me at (301) 434-7000.

Sincerely,



Brian K. Davila, P.E.
Public Sector Division Manager
Charles P. Johnson & Associates, Inc.



cc: City of Greenbelt Department of Public Works – Kenny Hall
CPJ File No. 38-146



Figure 1. Overview of Greenbelt Lake.



Figure 2. Item #1 - Remove sediment from the bottom of the lake drain manhole and patch the leak in the left hand wall of the manhole.



Figure 3. – Item #2 – Grout cracks in weir wall adjacent to the spillway using hydro-expanding epoxy grout.



Figure 4. Item #3 – Patch the weir wall adjacent to the spillway with concrete to replace the missing sections.



Figure 5. Item #4 – Install flexible joints between the sections of the concrete swale.



Figure 6. Item #5 – Repair the exposed wire mesh by installing new Shot-Crete.



Figure 7. Item #6 – Repair the undercutting at approximately 70 LF downstream from the bridge under the bridge by patching the swale with concrete.



Figure 8. Item #7 – Level the dam out to one constant elevation.

Item #8 – Remove the vegetation from the along the shoreline on the upstream side of the dam.



Figure 9. Item #9 – Remove the vegetation from the center downstream face of the dam.

Item #11 – Repair animal burrows as necessary.



Figure 10. Item #10 - Remove the vegetation from along the concrete swale as well as adjacent to the bridge.



Figure 11. Item #12 – Re-grade downstream face of dam in “fill area” to maintain positive drainage towards concrete swale.



Figure 12. Item #13 – Monitor efflorescence on the walls of the lake drain manhole for cracks.

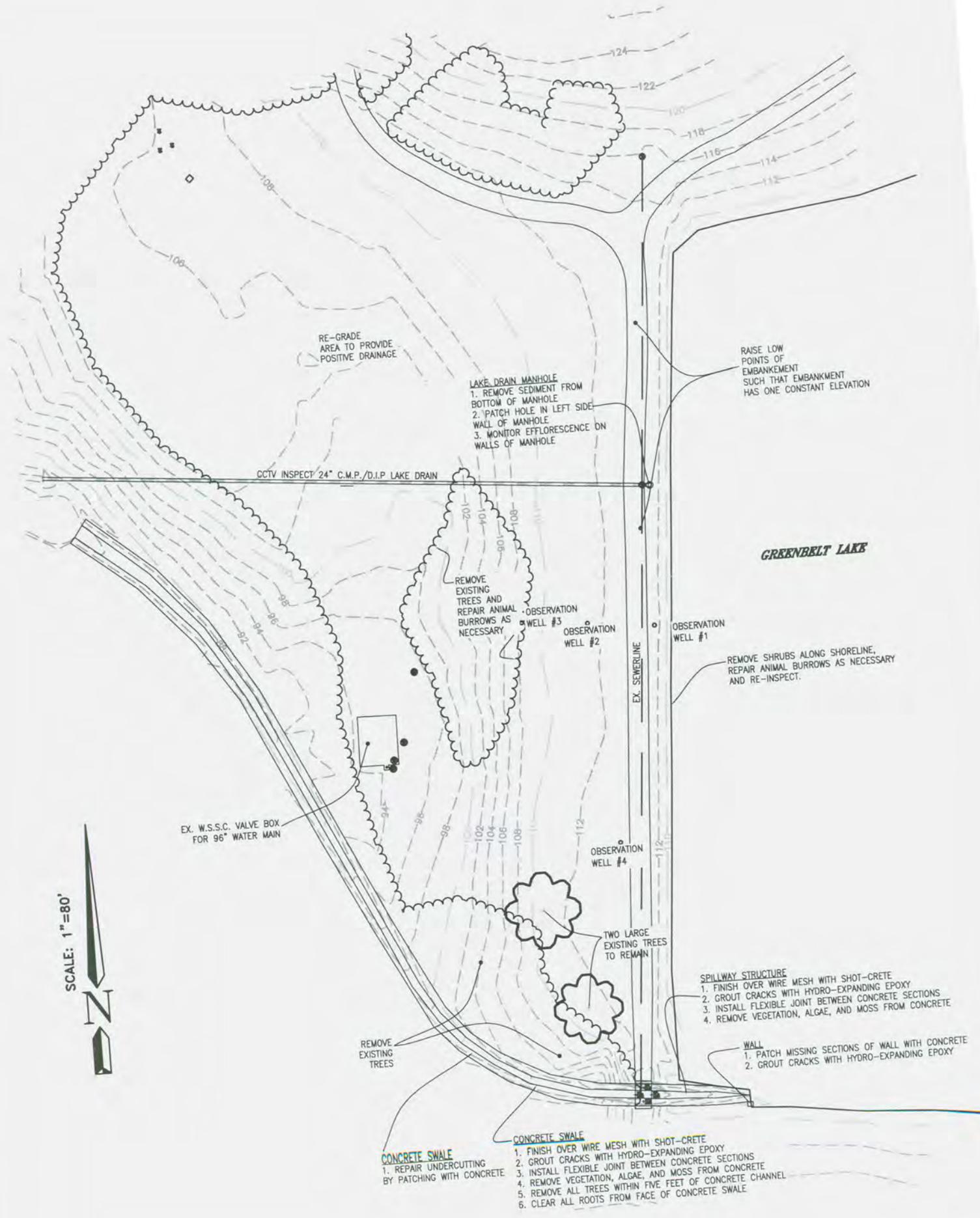


Figure 13. Item #14 - Perform a CCTV Inspection of the 24" C.M.P. /D.I.P. lake drain.



Figure 14. Item #15 – Monitor water levels in observation wells #1, 2, and 3.

Figure 15. Inspection Map



SCALE: 1"=80'

