



Oregon

Kate Brown, Governor

March 15, 2019

Christian Saxe
City of Silverton
306 S. Water Street
Silverton, OR 97381

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CITY OF SILVERTON
PUBLIC WORKS

Water Resources Department

725 Summer St NE, Suite A

Salem, OR 97301

(503) 986-0900

Fax (503) 986-0904

Re: Silver Creek Dam (S- 66) – Inspection Summary

This dam was inspected on August 15, 2018. I performed the inspection with State Engineer Keith Mills, Dam Safety intern Arden Babb, and Travis Sperle. The Water Resources Department conducts routine inspections of the dams' exterior surfaces to identify conditions that might affect the safety of the dam. Dams are assigned a hazard rating based on downstream hazard to people and property, not on the condition of the dam. Silver Creek Dam is classified as a high hazard dam. High hazard dams are inspected annually.

Results of Inspection:

Results of the inspection are summarized in the table below. Detail regarding the inspection can be found in the following photos and text. Where work is needed, additional information can also be found in the section below. Any aspects of the dam that did not present a dam safety concern are not discussed in this letter.

Category	Inspected	Result
Access	<input checked="" type="checkbox"/>	Maintenance
Reservoir	<input checked="" type="checkbox"/>	Adequate
Spillway	<input checked="" type="checkbox"/>	Maintenance
Conduit	<input checked="" type="checkbox"/>	Adequate
Embankment	<input checked="" type="checkbox"/>	Adequate
Emergency Action Plan	<input checked="" type="checkbox"/>	Adequate
Seepage/Leakage	<input checked="" type="checkbox"/>	Adequate

Details & Recommendations:

- This inspection did not include a review of the design drawings and specifications for this dam. This inspection also did not include a review of data collected by instrumentation on the dam.
- The reservoir level was a few feet below the emergency spillway invert at the time of the inspection. The minimum freeboard was greater than 14 feet, which is excellent.

Access

There is no direct access to the dam due to the spillway location. This increases the time it would take to address an emergency situation and limits the maintenance that can be performed on the dam. An access road to the other side of the dam needs to be developed.



Inspection of the patched concrete repairs

Spillway

The cracks at the spillway slab joint were patched last year. It is important to monitor the patched areas for any changes after heavy flow events. Patching concrete is not a permanent fix and can last for a year up to several years. Eventually these areas will need to be repaired rather than just patched. The repair consists of cutting around the affected areas of the concrete and chiseling this area to below the rebar (the rebar needs to remain intact). New concrete is then poured to complete the repair work. If done properly, the repair work should be permanent. We will continue to monitor the spillway concrete during our inspections as conditions permit.



Dam Safety Inspection Form

State of Oregon
Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1271
(503) 986-0900

Name of Dam: Silver Creek File #: S - 66

Height: 65 ft. Storage: 1300 ac. ft. Permit: _____ NID #: OR- 00622

High Hazard Dam Inspector(s): Mills, Janicek Babb District: 16

Others on site: Travis Sperle

Date: 8/ 15 /2018 Temperature 70-80 F Dry Rain Snow Now Recently

Prior Inspection Date: 8/ 8 /2017 Issues from prior inspection: _____

*Rating Criteria: 5-Exemplary; 4-Adequate 3-Maintenance or minor repair needed
2-Serious repair needed; 1- Urgent dam safety issue – action now - Contact owner and dam safety directly*

General		Rating
Vehicle access	<input type="checkbox"/> All weather road <input checked="" type="checkbox"/> Dirt road <input type="checkbox"/> Cross country	3
Access Control	<input checked="" type="checkbox"/> Gate <input checked="" type="checkbox"/> Locked and secured <input checked="" type="checkbox"/> Fencing <input checked="" type="checkbox"/> Signage <input type="checkbox"/> Other _____	4
Detail:		

Reservoir	Pool level: <u>See Detail</u>	Point of Reference:	Rating
Minimum freeboard	Vertical distance from debris line to lowest place on crest <u>>14</u> ft.		4
Condition	<input type="checkbox"/> Floating Debris/Trash <input type="checkbox"/> Log Boom <input type="checkbox"/> Unusual Conditions (see "Detail")		4
Detail:	Pool level was few feet below spillway invert		

Spillway	<input type="checkbox"/> Earth <input type="checkbox"/> Rock <input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Other	Rating
Capacity	<input type="checkbox"/> Reduced by feature not on design Sized for PMF: Y <input type="checkbox"/> N <input type="checkbox"/> Unknown <input type="checkbox"/>	-----
Approach Channel	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Trees/brush <input type="checkbox"/> Debris <input type="checkbox"/> Erosion	4
Control Section	<input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Rock <input type="checkbox"/> Soil <input type="checkbox"/> Culvert <input type="checkbox"/> Unstable	4
Spillway dimensions	Width: _____ ft Depth: _____ ft Gradient: _____ <input type="checkbox"/> Survey Attached	NA
Flashboards/Gate	<input type="checkbox"/> None <input type="checkbox"/> In place <input type="checkbox"/> Operational <input type="checkbox"/> Deteriorated	-----
Discharge Channel	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Trees/brush <input type="checkbox"/> Leakage <input type="checkbox"/> Headcutting (_____ feet from spillway control section, depth _____ feet.)	3
Stilling basin	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Functional <input type="checkbox"/> Minor Erosion <input type="checkbox"/> Severe Erosion/Undercutting	4
Aux. Spillway	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (use "Detail" below)	-----
Detail:		

Seepage/Leakage		Rating
Serious conditions	<input type="checkbox"/> Leakage <input type="checkbox"/> Piping <input type="checkbox"/> Discolored water <input type="checkbox"/> Boils <input type="checkbox"/> Other <input checked="" type="checkbox"/> None	-----
Locations	<input checked="" type="checkbox"/> No evidence <input type="checkbox"/> Center <input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> Around pipe <input type="checkbox"/> On dam _____	4
Instrumentation & Monitoring	Instrumentation Type: _____ Condition: _____ Monitoring Frequency: _____ Access: _____	-----
Flow	<input type="checkbox"/> Wet vegetation <input type="checkbox"/> Spongy <input type="checkbox"/> Standing water <input type="checkbox"/> Flow _____ gpm	4
Toe drains	<input type="checkbox"/> None <input checked="" type="checkbox"/> Working <input type="checkbox"/> Damaged <input type="checkbox"/> Buried <input type="checkbox"/> Other: _____	4
Detail:		

Conduit	Control: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Power <input type="checkbox"/> Other <input type="checkbox"/> Conduit Control missing	Rating
Inlet	<input checked="" type="checkbox"/> Submerged <input type="checkbox"/> Debris on Trash Rack <input type="checkbox"/> Deterioration	-----
Control/Stem	<input checked="" type="checkbox"/> Operable <input type="checkbox"/> Damaged <input type="checkbox"/> Missing <input type="checkbox"/> Inoperable <input type="checkbox"/> Unknown	4
Valve(s) cycling	<input type="checkbox"/> Frozen <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> Past year <input type="checkbox"/> Frequent	4
Principal conduit	Diameter/Size: <u>42"</u> Material <u>Concrete Encased</u> Condition <u> </u>	4
Primary outlet	<input type="checkbox"/> Overgrown <input checked="" type="checkbox"/> Clean <input type="checkbox"/> Pressurized <input type="checkbox"/> Leaking <u> </u> gpm	4
Other outlet(s)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type(s) <u> </u> Diameter(s) <u> </u>	-----
Detail:		

Structure of dam	<input checked="" type="checkbox"/> Earth <input type="checkbox"/> Rock <input type="checkbox"/> Concrete <input type="checkbox"/> Other:	Rating
Distress	<input type="checkbox"/> Cracks - offset <u> </u> <input type="checkbox"/> Landslide(s) <input type="checkbox"/> Sinkhole(s) <input type="checkbox"/> Crest Settlement <input type="checkbox"/> Narrow crest <input type="checkbox"/> Wave erosion <input type="checkbox"/> Trampling <input type="checkbox"/> Surface erosion <input checked="" type="checkbox"/> None	4
Locations		
Other	Describe: <u> </u>	
Aux. dike (s)	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> over 5	-----
Seismic	Designed for EQ: <u> </u> Liquification/deformation potential: <u> </u> Priority for analysis <input type="checkbox"/>	4
Animals	Type:	Rating
Burrows	<input type="checkbox"/> Observed max diameter: <u> </u> max depth: <u> </u> <input type="checkbox"/> Trails <input checked="" type="checkbox"/> None	4
Locations		
Vegetation		Rating
Cover	<input checked="" type="checkbox"/> Low grass <input type="checkbox"/> high grass <input type="checkbox"/> brush <input type="checkbox"/> blackberries <input type="checkbox"/> small trees <input type="checkbox"/> large trees	4
Locations		
Impairs inspection	<input type="checkbox"/> toe seepage <input type="checkbox"/> conduit outlet <input type="checkbox"/> spillway <input type="checkbox"/> upstream face <input type="checkbox"/> downstream face	-----
Monitoring		
Instrumentation & Monitoring	Instrumentation Type: <u> </u> Condition: <u> </u> Monitoring Frequency: <u> </u> Access: <u> </u>	-----
Detail:		

Emergency Action Plan		Rating
	Created: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Revision Year: <u> </u> Location: <u>Unkown</u>	4

Expedited Re-inspection Needed: Next Inspection Date:

Other Issues or Additional Detail Needed:

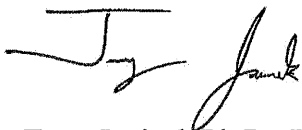
Summary:

1. Develop an access road so that equipment can get to the dam if the spillway is flowing.
2. Monitor the repaired spillway joints for new cracking.

This dam is well maintained and operated and is in Satisfactory condition. Please continue the excellent operation and maintenance of this dam. Also note that the condition rating does not reflect the seismic stability of this dam as an analysis has not been completed. As a result, an analysis may be needed in the near future.

We use a standard inspection form, and a copy of the field inspection sheet for this dam is attached. Thanks again for meeting with us. Please let me know if you have any questions about this inspection. We look forward to future inspections of this dam.

Sincerely,



Tony Janicek Ph.D., P.E.
Dam Safety Program Coordinator
(503) 986-0839

C: Keith Mills, P.E., State Engineer
Joel Plahn, Watermaster District 16
Dam Safety File S -66