



October 16<sup>th</sup>, 2019

Ryan Beckly  
Winchester Water Control District  
P.O. Box 661  
Winchester, OR 97495

**Re: Winchester Dam (W-1) – Inspection Summary**

This dam was inspected on October 11, 2019. I performed the inspection with Civil Engineering Specialist Arden Babb. Additionally, a site visit was made by State Engineer Keith Mills on April 11<sup>th</sup>. 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. Winchester Dam is classified as a high hazard dam. High hazard dams are inspected annually.

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. Based on the results of this inspection, the dam's condition rating has been downgraded from FAIR to POOR and may be downgraded further if the dam safety issues detailed below are not addressed in a timely manner.

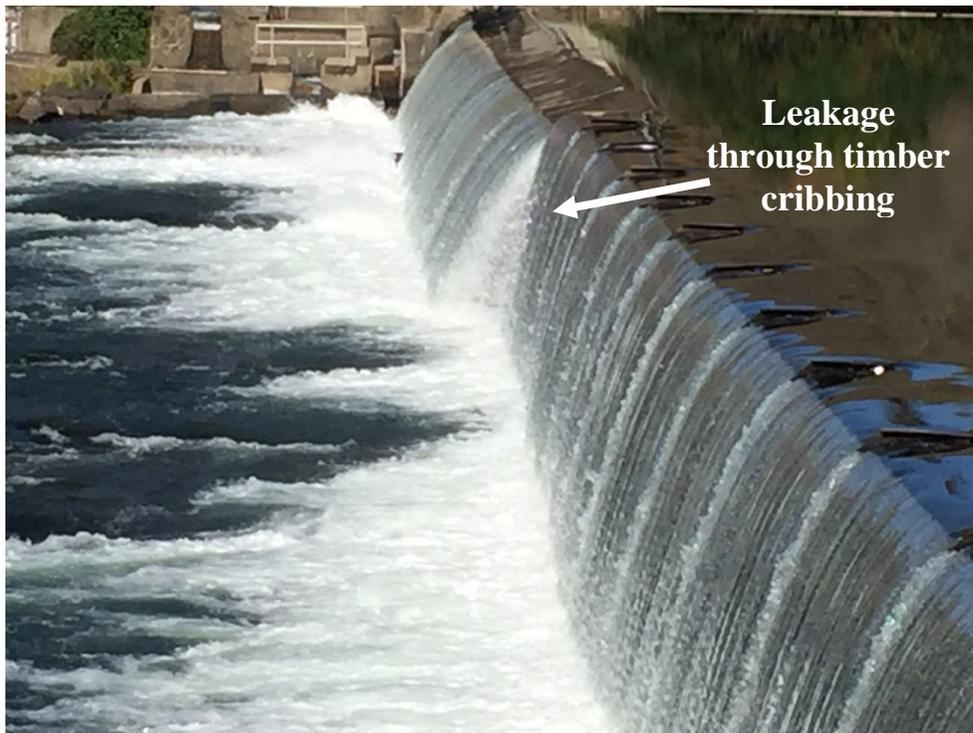
Category	Inspected	Result
Access	<input checked="" type="checkbox"/>	Adequate
Reservoir	<input checked="" type="checkbox"/>	Repair
Spillway	<input checked="" type="checkbox"/>	Run of river
Gates	<input checked="" type="checkbox"/>	Adequate
Structure	<input type="checkbox"/>	Unable to Inspect
Seepage/Leakage	<input checked="" type="checkbox"/>	Deficient
Emergency Action Plan	<input checked="" type="checkbox"/>	Deficient

**Details & Recommendations:**

**Reservoir:** During the inspection, we observed a whirlpool near the old power house. The location of the whirlpool was a few feet upstream from where the sink hole was observed during the 2018 inspection that led to the October 2018 repair work. It was difficult to discern but it appears that the leakage from this whirlpool is coming out just downstream of the dam in the same area as it had previously prior to the repairs last October.



**Location of sink hole near the old power house**



**Leakage through timber cribbing near the transition at the crest**

**Structure:** We were unable to inspect the structure of the dam because water was flowing over the dam. However, leakage through the timber cribbing can be seen at various points throughout the structure as shown in the photo above and the photo below. The timber cribbing and tie rods have a finite lifespan and portions need to be replaced from time to time. Based on our records, the structural steel and timber cribbing have not been inspected since 1987. Given the time since the last special inspection and the recommendations from that last inspection to re-examine the tie rods, a structural inspection is needed very soon. The routine inspections by this department are not intended for such detailed inspections.



**Photo A showing leakage from sink hole (photo B) on the upstream side of the dam near the fish ladder. Both photos show the recent attempts to mitigate leakage.**

The structural condition of the timber cribbing and steel tie rods need to be inspected by a qualified structural engineer. A letter was sent to you regarding this matter this past August (dated August 15<sup>th</sup>, 2019) and we have yet to hear from you. As was mentioned in the letter, if you need the name of the engineer that has performed this work for the Winchester Water Control District in the past, we can provide you with that information.

Once you retain the services of an engineer to perform this work, please have the engineer contact us prior to beginning the work. If possible, we would like to meet with you and the engineer at the dam for the engineer's inspection. It is pertinent that this inspection be set up as soon as possible as the engineer will be able to determine an appropriate time frame to complete the work to address the safety issues on the dam. Also note that you should routinely monitor these leakage issues for any changes to ensure that conditions are not worsening. If conditions worsen, contact us immediately.

**Leakage:** There is significant leakage through the timber cribbing to the downstream side of the dam. The leakage was interfering with the operation of the fish ladder until the recent attempts to mitigate the leakage were undertaken. There is still water leaking from this area but it seems to have slowed since the work has been completed. Based on our observations during the 2018 inspection and the April 2019 site visit, this sink hole has grown significantly over the last year. Although the sand bags that were placed into the sink hole seem to have slowed the erosion of material, it is only a temporary measure and this issue needs to be addressed on a more permanent basis.

An inspection by a structural engineer will provide more information on how best to address the issue. Please note, that laws governing dam repair work have changed and prior approval by Oregon Water Resource Department (OWRD) Dam Safety may be required. Also, you may need approval and/or permits from other State and/or Federal agencies prior to starting any work. Please contact us prior to starting any work you plan to do on the dam so that we may discuss the requirements.

**Emergency Action Plan:** The emergency action plan (EAP) is out of date. Based on the version of the EAP we have on file, it was last updated in 1987. Note that Oregon Revised Statute 540.353 requires all High hazard dams to have an up-to-date EAP. Please update any aspect of the EAP that is out of date and send the updates to us as soon as possible.

### **Summary:**

Safety issues to be address are as follows:

1. Have a Professional Engineer registered in the State of Oregon that is licensed to practice structural engineering, inspect the dam structure. Contact us with the name of the engineer so that we can coordinate our next dam safety inspection with the engineer's structural inspection.
2. Routinely monitor the areas where leakage is occurring and monitor the whirlpool near the old power house for any changes. If the conditions worsen, contact us immediately.

3. Develop a plan to repair the dam, in a timely manner, based on the Engineers findings and submit the plan to us prior to starting any work on the dam.
4. Update the EAP and send the updates to us as soon as possible.

The dam's condition rating has been downgraded to **POOR** and may be downgraded further to **UNSATISFACTORY** if the dam safety issues are not addressed in the very near future. Please note, that an **UNSATISFACTORY** condition rating may result in Administrative Action by OWRD Dam Safety. If we do not hear from you by **December 1<sup>st</sup>, 2019** we will be re-evaluating the condition rating of the dam in light of the lack of essential structural inspection information.

We use a standard inspection form, and a copy of the field inspection sheet for this dam is attached. We do appreciate the action taken to improve safety. Please let me know if you have any questions about this inspection. We look forward to future inspections of this dam.

Sincerely,

A handwritten signature in black ink, appearing to read "Tony Janicek". The signature is written in a cursive style with a large, stylized "T" and "J".

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

C (via email): Susan Douthit, Watermaster District 15  
Timothy Walters, Oregon Fish & Wildlife  
David Waltz, Oregon Department of Environmental Quality  
C: Dam Safety File W-1



# Dam Safety Inspection Form

Name of Dam: Winchester File #: W-1  
 Height: 17 ft. Storage: 700 ac. ft. Permit:            NID #: OR00263  
**High Hazard Dam** Condition Assessment: Poor\* District: 15  
 Date: Oct 10, 2019 Weather:  Dry  Rain  Snow  Now  Recently Prior Inspection Date: Oct 03, 2018  
 Inspector(s): Tony Janicek  
 Others on site: Babb  
 Issues from prior inspection: leakage near power house (repair attempted 10/2019)

*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 checked="" type="checkbox"/> All weather road <input type="checkbox"/> Dirt road <input type="checkbox"/> None	4
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: LOW-below gage <input type="checkbox"/> Approximated <input checked="" type="checkbox"/> Measured <input type="checkbox"/> Crest <input checked="" type="checkbox"/> Gage	Rating
Minimum freeboard	Vertical distance from debris line to lowest place on crest --- ft.	N/A
Condition	<input type="checkbox"/> Floating debris/trash <input type="checkbox"/> Log boom <input checked="" type="checkbox"/> Unusual condition <input type="checkbox"/> Other-	2-
Detail:	~3-4 inch diameter whirlpool on left hand side looking downstream, near recent repairs but a few feet further upstream. Also sink hole ~3 feet x 1.5 feet adjacent to fish ladder on upstream side.	

Spillway	<input type="checkbox"/> Earth <input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Culvert <input type="checkbox"/> Rock <input type="checkbox"/> Trick le tube <input type="checkbox"/> Other	Rating
Approach Channel	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Trees/brush <input type="checkbox"/> Debris <input type="checkbox"/> Erosion <input type="checkbox"/> Other	4
Control Section	<input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Rock <input type="checkbox"/> Soil <input type="checkbox"/> Culvert <input type="checkbox"/> Other <input type="checkbox"/> Unstable	4
Spillway dimensions	Width: ft. Depth: ft. <input type="checkbox"/> Survey Attached	
Flashboards/Gate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> In place <input type="checkbox"/> Operational <input type="checkbox"/> Deteriorated	N/A
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.)	4
Stilling basin	<input checked="" type="checkbox"/> None <input type="checkbox"/> Functional <input type="checkbox"/> Minor Erosion <input type="checkbox"/> Severe Erosion <input type="checkbox"/> Undercutting	N/A
Aux. Spillway	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (use "Detail" box below)	N/A
Detail:		

Seepage/Leakage		Rating
Serious conditions	<input type="checkbox"/> Seepage <input checked="" type="checkbox"/> Leakage <input type="checkbox"/> Piping <input type="checkbox"/> Discolored water <input type="checkbox"/> Boils <input type="checkbox"/> Other	2-
Locations	<input type="checkbox"/> Center <input checked="" type="checkbox"/> Left <input checked="" type="checkbox"/> Right <input type="checkbox"/> Around pipe	
Monitoring	<input type="checkbox"/> Instrumentation <input type="checkbox"/> Monitoring	N/A
Flow	<input type="checkbox"/> Wet vegetation <input type="checkbox"/> Spongy <input type="checkbox"/> Standing water <input checked="" type="checkbox"/> Flow - significant leakage near fish ladder	2-
Toe drains	<input checked="" type="checkbox"/> None <input type="checkbox"/> Working <input type="checkbox"/> Damaged <input type="checkbox"/> Buried <input type="checkbox"/> Other-	N/A
Detail:	Leakage through dam form sink hole near fish ladder, leakage from whirlpool near power downstream of the dam, leak through cribbing at crest transition toward the right abutment	

Conduit		Rating
Control	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Power <input type="checkbox"/> None	4
Inlet	<input checked="" type="checkbox"/> Submerged <input type="checkbox"/> Debris on trash rack <input type="checkbox"/> Deterioration	N/A
Control/Stem	<input type="checkbox"/> Missing <input checked="" type="checkbox"/> Operable <input type="checkbox"/> Damaged <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: Material: Condition:	N/A
Primary outlet	<input type="checkbox"/> Overgrown <input type="checkbox"/> Clean <input type="checkbox"/> Pressurized <input type="checkbox"/> Leaking gpm	N/A
Other outlet(s)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
Detail:	2 slide gates operational	

Structure of dam	<input type="checkbox"/> Earth <input type="checkbox"/> Rock <input checked="" type="checkbox"/> Concrete <input checked="" type="checkbox"/> Other Wood, steel	Rating
Distress	<input type="checkbox"/> Cracks	N/A
	<input type="checkbox"/> Landslide(s)	N/A
	<input checked="" type="checkbox"/> Sinkhole(s)	2-*
	<input type="checkbox"/> Crest Settlement	N/A
	<input type="checkbox"/> Narrow Crest	N/A
	<input type="checkbox"/> Wood Structure	**
	<input type="checkbox"/> Surface Erosion	N/A
Detail:	*sink hole near the fish ladder **Water was flowing over the dam; as a result, the structure was not inspected	
Aux. dike (s)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Animals	<input type="checkbox"/> Trails <input type="checkbox"/> Burrows <input type="checkbox"/> Deep burrows <input checked="" type="checkbox"/> No evidence	
Detail:		
Vegetation		Rating
Cover	<input 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	N/A
Locations		
Impairs inspection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
Detail:		

**Expedited Re-inspection Needed:** Re-inspect early in 2020 Next Inspection Date: early 2020

**Emergency Action Plan:** Exists: Yes Onsite: No

**Other Issues or Additional Detail Needed:**