

1998 Database Table - Historically Active Landslides

Slide Name	Documented Activity	Potential Impact	Type	Remediation / Slope Hazard Rating*	I <sup>(1)</sup>	References
Slope north of powerhouse (Dam No. 2)	Ongoing	Diversion Pool	Rockfall			<ul style="list-style-type: none"> <li>• Shannon &amp; Wilson, 1981</li> <li>• Cornforth Consultants, Jan. 1994</li> <li>• Cornforth Consultants, Dec. 1996</li> </ul>
Lab Building Slides (north of river)	1990s	River	Debris flow			<ul style="list-style-type: none"> <li>• Interview, G. Mickelson, Feb. 1998</li> </ul>
Headworks Bridge Slide	November 28, 1995	Conduits 2 & 4	Slump and flow	Rock infill / Low	✓	<ul style="list-style-type: none"> <li>• Landslide Technology, Nov. 30, 1995</li> <li>• Landslide Technology, Feb. 1996</li> <li>• Cornforth Consultants, Dec. 1996</li> </ul>
Slope south of spillway pool	1960, smaller slide in 1970s	Plunge pool	Slump	Grouted rock infill, slope flattening / Moderate	✓	<ul style="list-style-type: none"> <li>• Shannon &amp; Wilson, 1963, 1981</li> <li>• The Perron Partnership, May 20, 1974</li> <li>• Cornforth Consultants, Jan. 1994</li> </ul>
West Spillway Slumps		River	Slump			
South Slope Complex		Conduit 3	Debris flow			
Quarry debris flow	1995-96	Road	Debris flow	Removal of debris / Moderate		<ul style="list-style-type: none"> <li>• Interview, G. Mickelson, Feb. 1998</li> <li>• Cornforth Consultants, reconnaissance, 1998</li> </ul>
S-10 Bridge Slide East		Conduits 2 & 4	Translational and flow			
S-10 Bridge Slide		Conduits 2 & 4	Translational and flow			
East Larson Bridge Slide		-	Slump			
Larson Bridge Slide	Early 1960s 1955	Conduits 2 & 4	Slump and flow	Removal of debris, regarding / High		<ul style="list-style-type: none"> <li>• DOGAMI, Geological Hazard of the Bull Run Water Shed, 1974</li> <li>• Interview, G. Mickelson, Feb. 1998</li> </ul>

\*See Report Section 3 for discussion of slope hazard rating

<sup>(1)</sup>I=Investigation, ✓=Geotechnical Investigation, ✓✓=Instrumentation

1998 Database Table - Historically Active Landslides (cont'd)

Slide Name	Documented Activity	Potential Impact	Type	Remediation / Slope Hazard Rating*	I <sup>(1)</sup>	References
West Larson Bridge Slide Complex		Conduits 2, 3 & 4; Road	Slump and flow, debris flow			
Little Sandy River Slide Complex		Conduits 2, 3 & 4; Road	Slump, debris flow			
Little Sandy River Slide	February 1956	Conduit 2, Road	Slump, debris flow	Bin wall with rockfill / Moderate	✓	<ul style="list-style-type: none"> <li>• Shannon &amp; Wilson, Apr. 1965</li> <li>• DOGAMI, Geologic Hazard of the Bull Run Water Shed, 1974</li> <li>• Elliott, 1989</li> </ul>
Soapstone Slide Complex		Conduits 3 & 4	Translational			
Bowman Bridge Slide	March 18, 1997	Conduits 2, 3, & 4; Road and Bridge	Debris flow	Rock infill / Low	✓✓ ✓	<ul style="list-style-type: none"> <li>• Landslide Technology, Mar. 1997</li> <li>• Landslide Technology, Apr. 4, 1997</li> </ul>
West Bowman Bridge Slide	March 18, 1997 Previous	Conduit 3, Road	Slump, possible flow years earlier	Rock infill / Low	✓✓ ✓	<ul style="list-style-type: none"> <li>• Interview, G. Mickelson, Feb. 1998</li> <li>• Landslide Technology, Apr. 10, 1997</li> </ul>
East Soapstone Slide	1974	Conduit 3	Translational	Trench drains / High		<ul style="list-style-type: none"> <li>• The Perron Partnership, Mar. 18, 1974</li> </ul>
Soapstone Hill Slide	Pre-1965	Road	Debris flow?	Bin walls with rockfill / High	✓	<ul style="list-style-type: none"> <li>• Shannon &amp; Wilson, Apr. 1965</li> <li>• DOGAMI, Geologic Hazard of the Bull Run Water Shed</li> </ul>
River Bend Slide		Conduits 2 & 4	Slump, debris flow			
Phelps Road Slide	Mid-1990s		Debris flow	Rockfill / Low		<ul style="list-style-type: none"> <li>• Interview, G. Mickelson, Feb. 1998</li> </ul>

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Ditch Camp Slide	1890s	Damage to Conduit 1				• DOGAMI, Geologic Hazard of the Bull Run Water Shed, 1974
	1965	Conduits 2 & 4, Road, 1½ feet of movement	Translational	Rockfill to replace road excavation	✓ ✓✓	• Shannon & Wilson, Apr. 1965
	1985	Conduit 4 break	Translational	Special pipeline couplings	✓	• Cornforth Consultants, Nov. 1985
	1995-96	Conduits 2 & 4	Translational	Horizontal drains 1997-98 / Moderate	✓ ✓✓	• Landslide Technology, Jan. 1989 • Landslide Technology, unpublished
Penstock Slide	1961-65	1 inch of movement			✓	• Shannon & Wilson, 1965
	January 1980	Break in penstock, 0.11 feet of movement	Translational	Minor regrading, special pipeline couplings / Moderate	✓ ✓✓	• Shannon & Wilson, Aug. 1980 • Portland General Electric, 1998
Bull Run River Road Slides	1990s	Conduit 3	Slump and flow			• Cornforth Consultants reconnaissance, 1998
Camp Namanu Road Slide	1995-96	Conduit 3	Slump and debris flow		✓ ✓✓	• Cornforth Consultants, Dec. 20, 1996
West Camp Namanu Road Slide	1995-96	Conduit 3	Debris flow			• Cornforth Consultants, reconnaissance, 1998
North Bull Run River Slide		Conduit 3	Translational			
Lusted Road culvert	Ongoing	Conduits 2, 3 & 4	Culvert outlet erosion			• Fujitani Hilt & Associates, Jul. 1991

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