

Drainage tunnel near Mount St. Helens needs work to counteract flood risk

Most serious threat is at Spirit Lake

By **HAL BERNTON**
Seattle Times

SEATTLE — Long-term strategies are needed to deal with the risks of mudflows and flooding left behind by the 1980 Mount St. Helens eruption, according to a report by the National Academies of Sciences, Engineering and Medicine.

The most serious threat is at Spirit Lake, which the volcano left plugged by an unstable mass of debris that — if it gave way — would threaten some 50,000 southwest Washington residents who live downstream.

A drainage tunnel completed in 1985 reduces the chance that the makeshift dam could fail. But the report found that the aging structure — despite repeated repairs — “is not operating optimally,” and is still in need of expensive maintenance.

The scientists who put together the report suggest future engineering options, such as building a second tunnel, cutting a spillway through the debris dam or finding a way to drain the lake. They propose a collaborative effort that brings together federal and state agencies, the Cowlitz Tribe, downstream communities and others.

The 1980 eruption killed 57 people when it blew away the top of the mountain and unleashed a massive avalanche of debris — the largest in recorded history. The resculpting of the landscape prompted a \$1 billion, decade-long effort to deal with the aftermath of the eruption.

The work included massive dredging and construction — on the North Fork of the Toutle River — of a sediment retention structure to slow the downstream movement of sediment.

It also involved high-stakes work at Spirit Lake.

The eruption raised the water level by 210 feet and blocked its natural outlet with a mix of ash, earth, rock and other materials. With no way to drain, the water level could climb still higher. This would increase the chance of a breach of the debris dam, a potentially cataclysmic event that could send some 314,000 acre-feet of water and 2.4 billion cubic-yards of sediment surging down the Toutle, Cowlitz and Columbia rivers.

In 1982, a temporary pumping station was installed to lower water levels. This was followed by construction of the tunnel to divert water into South Coldwater Creek.



Damian Mulinix/For EO Media Group

Long Beach, Washington, fourth graders view a large tree trunk left behind during the Mount St. Helens eruption in 1980 at the Johnston Ridge Observatory during their class trip this year.

Since then, the nearly 1.6-mile-long tunnel has been subjected to repeated spot repairs. The most recent effort completed in March 2016 shored up a 30-foot section that had narrowed significantly due to ground pressures.

Meanwhile, the U.S. Army Corps of Engineers has worked on a long-term plan to limit sediments flowing into the Toutle, Cowlitz and Columbia

The Corps built the sediment retention structure, which resembles a dam, across the North Fork of the Toutle. In 2012 the spillway of the structure was raised by 7 feet, and it could be raised again in the future, according to Jeffrey Henon, a Corps spokesman in Portland.

The academies scientists note that new engineering projects have ripple effects throughout the drainage. While public safety remains a key concern, they say that other things should be considered, such as fisheries restoration and the intent of congressional legislation "to allow geologic forces and ecological succession to continue substantially unimpeded" in the 110,000-acre Mount St. Helens Volcanic National Monument.

The scientists also suggest re-examining the mind-

set behind the human intervention. In the early years after the eruption, the big push was to try to keep as much sediment as possible from moving downstream. But they said this material — sooner or later — would make its way downstream. So the focus might shift to trying to engineer an orderly and safe downstream movement of that material.

Some of the biggest decisions involve Spirit Lake and the future of the tunnel, which has an expected life span of about 50 years unless major renovations — costing tens of millions of dollars — are made.

The U.S. Forest Service participated in an emergency planning exercise in Cowlitz County this past spring that simulated flooding from Spirit Lake.

In the meantime, the Forest Service's work at Spirit Lake includes the installation of a structure to keep floating logs away from the tunnel outlet as well as sensors to help monitor flows.

The Forest Service also is considering opening up a route for all-terrain vehicles to reach Spirit Lake to assist with maintenance. That proposal has drawn concern from some research scientists who say it could disturb their studies within a sensitive area known as the Pumice Plain.

Carri LeRoy, a freshwater ecologist at The Evergreen State College, says the new route could seriously disrupt work there by her and other researchers.

"I am incredibly disappointed to learn that the Forest Service is continuing to push for motorized traffic across the Pumice Plain," LeRoy wrote in an October letter to the agency. Her research examines the formation of streams in the post-eruption landscape, and she urged the Forest Service to consider an alternative route to the lake.

Chris Strebig, the Spirit Lake project manager, said no final decision has been made on the motorized route.

US to enter into Columbia River Treaty renegotiation in 2018

By **EMILY SCHWING**
*Oregon Public
Broadcasting*

The U.S. Department of State and the Canadian government have announced that formal renegotiation of the Columbia River Treaty will begin in early 2018.

Fish, electric rates and flood protection are all part of the 53-year-old international treaty between the U.S. and Canada.

The headwaters of the Columbia are in Canada, and that country controls how much water is released downstream and when. In exchange for smoothing hydropower operations across the border, Northwest American electricity con-

sumers pay Canada hundreds of millions of dollars annually, under a provision in the treaty.

In November, congressional members from Oregon and Washington state sent a letter to David McNaughton, the Canadian ambassador in Washington, D.C. They argued those payments are too high.

Separately, tribes and environmental groups are looking for an update to the treaty that includes goals for restoring salmon runs above the Grand Coulee Dam.

Interested parties in the Northwest have been asking for a renegotiation for four years. The current Columbia River Treaty was ratified in 1964.

Snake River salmon and steelhead plan released

By **KEITH RIDLER**
Associated Press

BOISE, Idaho — Authorities have released recovery plans for federally pro-

protected Snake River Chinook salmon and steelhead with the goal of making sure each species is self-sustaining in the wild.

The plans released today by National Oceanic and Atmospheric Administration Fisheries include spring and summer Chinook, fall Chinook and steelhead. Authorities listed the three runs as threatened in the 1990s.

Strategies in the 366-page fall Chinook plan include reintroducing them above Idaho Power's Hells Canyon Complex of hydroelectric dams.


The 284-page recovery plan for spring and summer Chinook and steelhead include protecting existing tributary habitat and restoring degraded habitat.

Salmon and steelhead are important as both a commercial and sport fishery, and are also important to tribes in the region that hold treaty rights concerning salmon and steelhead.

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Evening listings
TUESDAY

A - Charter Astoria/ Seaside - L - Charter Long Beach

DECEMBER 12

TUESDAY EVENING

A	L	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30
2	KATU	(2) KATU News at 6 (N)		Jeopardy! (N)	Wheel Fortune (N)	The Middle (N)	Fresh Off-Boat (N)	Black-ish (N)	The Mayor (N)	Saves the World "Probably" (N)	KATU News (N)	(35) Jimmy Kimmel	
5	KOMO	(4) KOMO 4 News (N)		Wheel Fortune (N)	Jeopardy! (N)	The Middle (N)	Fresh Off-Boat (N)	Black-ish (N)	The Mayor (N)	Saves the World "Probably" (N)	KOMO 4 News (N)	(35) Jimmy Kimmel	
5	KING	(5) NBC News (N)	KING 5 News (N)	KING 5 News (N)	Evening	The Voice "Live Semi-Final Results" (N)	Gwen Stefani (N)			Chicago Med "Naughty or Nice" (N)	KING 5 News (N)	(35) Tonight Show	
6	KOIN	(7) KOIN Local 6 (N)	Evening News (N)	Extra	Ent. Tonight	NCIS "Double Down" (N)	Bull "Home for the Holidays" (N)			NCIS: Los Angeles "Mirror, Mirror" (N)	KOIN 6 News (N)	(35) Colbert	
5	KIRO	(7) KIRO 7 News (N)	Evening News (N)	KIRO 7 News (N)	Ent. Tonight	NCIS "Double Down" (N)	Bull "Home for the Holidays" (N)			NCIS: Los Angeles "Mirror, Mirror" (N)	KIRO News (N)	(35) Colbert	
9	KGW	(7) KGW News at 6:00 p.m. (N)		Live at 7 (N)	Inside Edition	The Voice "Live Semi-Final Results" (N)	Gwen Stefani (N)			Chicago Med "Naughty or Nice" (N)	KGW News (N)	(35) Tonight Show	
9	KRCW	(3) Modern Family	Modern Family	The Goldbergs	The Goldbergs	Holiday Commercials (N)	To Be Announced			News at 10 (N)	Mom	Two and a Half	Two and a Half
10	KOPB	(10) Ask-Old House	Business (N)	PBS NewsHour (N)		Finding/ Roots "Southern Roots" (N)	A.Experience "Ripley: Believe It or Not"			Frontline "Putin's Revenge" Pt. 1 of 2	Independent Lens "What Was Ours"		
12	KPTV	(12) 6 O'Clock News (N)		Family Feud	Family Feud	Lethal Weapon "Wreck the Halls" (N)	Brooklyn 99 (N)	Brooklyn 99 (N)		10 O'Clock News (N)		Page Six TV	
13	KPDx	(13) Mike & Molly	Mike & Molly	Big Bang Theory	Big Bang Theory	FOX 12's News (N)	9 O'Clock News (N)	Family Guy		American Dad!	The Game	The Game	
13	KCPQ	(13) Modern Family	Modern Family	Big Bang Theory	Big Bang Theory	Lethal Weapon "Wreck the Halls" (N)	Brooklyn 99 (N)	Brooklyn 99 (N)		Q13 News at 10 (N)	Q13 News (N)	The Simpsons	
20	TBS	(20) Friends	Friends	Friends	Big Bang Theory	Big Bang Theory	Big Bang Theory	Big Bang Theory		Joker's Wild (N)	Drop the Mic (N)	Conan (N)	
2	KZJO	(22) Friends	Friends	The Goldbergs	The Goldbergs	Modern Family	Modern Family	Q13 News at 9 (N)		Big Bang Theory	Big Bang Theory	Two and a Half	Two and a Half
29	ESPN	(29) (4:00) NBA Basketb.	NBA Basketball San Antonio Spurs at Dallas Mavericks Site: American Airlines Center -- Dallas, Texas (L)			SportsCenter (N)	Baseball Tonight (L)			Jalen & Jacoby (N)	The Fantasy Show	NBA Basketball L.A. Lakers vs New York	
30	ESPN2	(30) NCAA Basketball Michigan at Texas (L)				SportsCenter (N)	Baseball Tonight (L)			Jalen & Jacoby (N)	The Fantasy Show	NBA Basketball L.A. Lakers vs New York	
31	NICK	(31) Henry Danger	Santa Hunters '14, Family Breanna Yde, Benjamin Flores Jr..			Full House	Full House	Full House		Fresh Prince	Fresh Prince	Friends	Friends Pt. 1 of 2
32	DISN	(32) Jessie	Bunk'd	Bunk'd	Raven's Home	Andi Mack 2/2	Stuck in Middle	Bizaardvark		★★★ Full-Court Miracle '03 Richard T. Jones, Alex D. Linz.		(45) Raven's Home	
34	FAM	(34) Movie	(40) ★★★ The Polar Express '04 Voices of Leslie Zemeckis, Tom Hanks.			(40) ★★★ The Santa Clause (1994, Comedy) Judge Reinhold, Wendy Crewson, Tim Allen.						The 700 Club	
35	FMC	(35) (20) Anchorman 2: The Legend Continues '13, Comedy) Steve Carell, Christina Applegate, Will Ferrell.				(40) FXM Presents	★★★ Kick-Ass 2 '13 Chloe Moretz, Aaron Taylor-Johnson.			(45) FXM Presents		Kick-Ass 2 '13 Aaron Taylor-Johnson.	
36	LIFE	(36) Grey's Anatomy		Dance Moms		★★★ The Holiday (2006, Romance) Kate Winslet, Jack Black, Cameron Diaz.						Dance Moms	
38	ROOT	(38) Mark Faw	Press Pass	UEFA Soccer Champions League		UEFA Soccer Champions League						Poker Heartland Tour	
39	FS1	(39) 89 Blocks		100,000 Cameras		Speak for Yourself		TMZ Sports (N)	Skip and Shannon: Undisputed Opinions on the biggest sports topics of the day.			UFC Knockouts	
43	SPIKE	(43) Ink Master: Angels "Steel City Shadow"	Ink Master "Keep Austin Inked"			Ink Master: Angels "Music City Ink"		Ink Master "Angels in the Big Easy"		Ink "Angels of the Inner Harbor" (N)		Tattoo Nightmares	Tattoo Night.
44	COM	(44) Futurama	Tosh.0	Tosh.0		Tosh.0	Tosh.0	Tosh.0		Tosh.0		The Daily Show (N)	The Opposition (N)
45	HIST	(45) Forged in Fire	Forged in Fire	Forged in Fire		(40) Forged in Fire: Cutting Deeper Enhanced episodes of "Forged in Fire."						(40) Forged in Fire	
46	A&E	(46) The First 48 "Jacked/ Fallen Idol"	The First 48 "Bad Medicine"			The First 48 "Deadly Lies Stay Down"		The First 48: Kill "Murder in Treme" (N)		Tupac "Death Row Takeover" (N)		(40) Tupac "Devil in a Red Suit"	
47	TLC	(47) Hodges Half Dozen	To Be Announced			To Be Announced		To Be Announced		Hodges Half Dozen (N)		To Be Announced	
48	DISC	(48) Moonshiners "Shine in the Sky"	Moonshiners "Lightning Strikes"			Moonshiners: Cuts "Risky Whiskey"		Moonshiners "Second Chances" (N)		Bushcraft Build "Hunting Season" (N)		Moonshiners "Second Chances" (N)	
49	NGEO	(49) Inside Combat "This is a Nightmare"	Inside Combat "The Last Stand" The final			stages of Operation Enduring Freedom.		Long Road "A City Called Heaven"		Long Road Home "Abandon Hope" (N)		The Long Road Home "Abandon Hope"	
50	TNT	(50) Bones "The Gunk in the Garage"	Bones "The Tiger in the Tale"			M.Crimes "Conspiracy Theory: Part 1"							