11th Annual North Santiam Summit

May 6, 2021 9:00 am - 11:30 pm

CITY OF Salen



Pathways to Recovery



Agenda

- 9:00 Meeting Protocols & Agenda
- 9:02 Welcome
- **9:05** Who's in the Room? Zoom Polling
- 9:10 USACE Update and Q&A
- **9:50** Fire Updates and Pathways to Fire Recovery
- **10:50** Panel Q&A
- **11:10** Additional Basin Updates
- **11:20** Closing and Thank You
- 11:30 Adjourn



Welcome to 11th Annual North Santiam Summit Kevin Cameron County Commissioner, Marion County

Fire Updates and Pathways to Recovery







US ARMY CORPS OF ENGINEERS UPDATE





Erik Petersen

Portland District

06 May 2021

US Army Corps of Engineers

Willamette Valley Project





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WILLAMETTE VALLEY MULTI-PURPOSE DAMS



































DETROIT DAM NORTH SANTIAM RIVER IN MARION & LINN COUNTIES, OR



General

- Completed in 1953
- Concrete Gravity
- Gated spillway w/ 6 Tainter Gates 176,000 cfs
- Normal evacuation rate 10,000 cfs
- Maximum evacuation rate 17,000 cfs
- Capacity of one spillway gate open at full pool – 24,290 cfs
- 4 RO gates (26,110 cfs)
- 2 Francis Turbines (120 MW)

Dam Safety Action Classification

- Moderate Risk (2016 PA)
- Spillway Tainter Gates (Trunnion Friction)
- Spillway Tainter Gates & Anchorage (Seismic)
- Internal Stability (Seismic)



Key Statistics

- Height 450 ft
- Length 1,457 ft
- Drainage Area 438 sq mi
- Storage at Full Pool 472,800 acre-ft
- Flood Storage 357,800 acre-ft

DETROIT DAM – WATER CONTROL DIAGRAM



DAM SAFETY RISK ASSESSMENT

- USACE Dam Safety:
- Inspections,
- Performance monitoring,
- Emergency action planning, and
- Risk assessments to ensure life safety risk is understood

Risk assessments:

- Assesses how well a dam will function in future scenarios, from likely to very unlikely
- Estimate the:
 - Hazards that might occur at the dam,
 - Performance of the dam given those hazards, and
 - **Consequences** resulting from a potential breach
- Help prioritize dams on a national basis and identify:
 - Unacceptable levels of risk, and
 - Actions to reduce the risk to tolerable levels







PURPOSE AND NEED

The purpose of this IRRM action is to allow Detroit Dam to continue to perform its authorized project purposes, while making the needed **reduction in dam safety risk** to tolerable levels until a permanent solution is developed.

There is a **low probability of a large earthquake that could result in breach of the spillway**. However, a breach would result in a potentially catastrophic flood if it occurred, and **risk is high enough to warrant immediate actions**.

Additional work targeted at better understanding the dam safety risks will be continued under the Issue Evaluation Study (IES). Permanent modifications will be evaluated under a Dam Safety Modification Study (DSMS).





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PROJECT TIMELINE



RISK IDENTIFIED AT DETROIT DAM

The risk for Detroit is driven by the potential for extreme seismic (earthquake) loadings that might occur at the same time summer conservation pool elevations are the highest. For this scenario the risks are a function of:

- likelihood, magnitude, and duration of earthquake ground motions;
- height of the spillway gates above the foundation of the dam;
- level of water being held back by the gates at the time of an earthquake; and
- number of **people and structures** in the potential inundation area **downstream**.





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ALTERNATIVES





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ENVIRONMENTAL ASSESSMENT



Available to the public at: www.nwp.usace.army.mil/





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ALTERNATIVES: NO ACTION = "BASE", ACTION = "ALT"



ENVIRONMENTAL ASSESSMENT CONCLUSION

No effects

 Flood Risk Management, Water Supply, Fish and Wildlife, Water Quality, Hydropower and Cultural Resources - not significant.

Not significant effects

- Effects from the preferred alternative to Public Infrastructure/Recreation: moderate effects that that do not rise to the level of significance.
 - Seven of nine boat ramps will be unavailable for an additional week or less in 50% of years while State Park boat ramp will experience a greater increase in unavailability.
 - > Some impacts on marinas, late in the season.











DROUGHT CONDITIONS



21



Map released: Thurs. April 22, 2021

Data valid: April 20, 2021 at 8 a.m. EDT

Intensity:

None

- **D0** (Abnormally Dry)
- D1 (Moderate Drought)
- **D2** (Severe Drought)
- D3 (Extreme Drought)
- **D4** (Exceptional Drought)
- No Data

Author(s):

Richard Heim, NOAA/NCEI



CLIMATE OUTLOOK

HTTPS://WWW.NWRFC.NOAA.GOV/CLIMATE/CLIMATE_FCST.CGI







Detroit Forebay Elevations





23







DETROIT LAKE Elevation NWRFC 28 Apr 2021 Forecast (Median)



Long term forecast as of 28 April 2021

- Coordination through Flow Management and Water Quality Team (FMWQT)
- Reduced spawning flows (1,300 cfs vs 1,500 cfs BiOp).
- Continued coordination with partners to optimize storage for multiple purposes.

WILLAMETTE BASIN REVIEW, OREGON – REALLOCATION STUDY

Background

- 1.59 MAF of conservation storage capacity
- Increasing urbanization & demand for M&I supply
- Federal action needed to protect instream flows
- Reallocation from joint to specific flows

Milestones

- Feasibility Cos-Share Agreement in 2015
- Agency Decision Milestone in 2018
- Biological Opinion in June 2019
- Chief's Report signed in December 2019
- NEPA / FONSI signed in March 2021

Benefits

- Balancing future demands equitably
- Annual determinations for all sectors
- No impacts to flood risk management

Allocations

- Fish & wildlife, 1.1 MAF, 69% of conservation storage
- M&I Water Supply, 0.159 MAF, 10% of conservation storage
- Agricultural irrigation, 0.327 MAF, 21% of conservation storage

Status

- FONSI posted on USACE website soon
- Implementation upon request from state or M&I interest



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WILLAMETTE O&M EIS / CONSULTATION RE-INITIATION / FISH PASSAGE

Goal

• Continued O&M of the system, meeting ESA obligations

Background

- Willamette Environmental Impact Statement (EIS) completed in 1980
- Biological Opinion completed in 2008
- Structural passage/temp control measures not implemented on schedule
- USACE litigated in March 2018
- December 2019 Public Scoping completed
- Willamette Notice of Intent for EIS in April 2020
- Court found for plaintiffs and ordered remedy hearings in August 2020 – will likely have a decision soon

Alternatives

- Wide array of alternatives being considered
- "No action" alternative is a standard consideration
- Other alternatives framed-up are largely operational changes, while some are largely structural changes
- Advantages and disadvantages to both

Projected Milestones (subject to change)

- June 2022 Draft EIS available for public comment
- August 2022 Corps Draft Biological Assessment (BA) to services
- April 2023 Corps receives Draft Biological Opinion (BiOp)
- July 2023 revise Final EIS
- August 2023 Corps receives Final BiOp
- December 2023 Final EIS waiting period
- March 2024 Record of Decision

Implications

- EIS will inform BiOp
- Region needs more alignment to move forward
- Structural fish passage is currently unfunded. Previous NEPA processes will inform the ongoing EIS.

For More

https://www.nwp.usace.army.mil/ Locations/Willamette-Valley/ System-Evaluation-EIS/







SUMMARY



"Essayons"



US Army Corps of Engineers ® Portland District





US Forest Service Shawn Rivera

Post-Fire Conditions and Pathway to Recovery



- Beachie Creek: 50,999
 Forest Service Acres
 Burned
- Lionshead: 105,992
 Forest Service Acres
 Burned
- Total Acres Burned on Detroit Ranger District – 156,991





- Personnel
- Workload



- 1312 Miles of Fire Affected Streams
 - Turbidity
 - Majority of soils looking pretty good

Miles of Soil Burn Severity by NHD Stream Class					
Stream				Unburned/	
Class	High	Moderate	Low	Underburned	Total
1	0	8	18	3	29
2	2	24	27	2	56
3	37	135	127	30	328
4	112	371	317	99	898
Total	151	538	490	134	1312





Top Priorities/Concerns

Public and Employee Safety

- Danger Tree Abatement
- BAER Work
- Water Monitoring
- Lake Sweeping
- Restoration
- Access



Pathways to Recovery

- Temporal Scale
 - Decades versus years
- Short Terms Restoration
- Long Term Restoration



Future Coordination

- Continue to build capacity from the Partners of the North Santiam
 - Keep the flow communication flowing
 - Increase Collaboration
- Partner Across State and Federal Agencies





Oregon Department of Forestry Ryan Gordon



Labor Day Fires: State & Private Lands Recovery
Overview

- State-Level: Natural & Cultural Resources Recovery Task Force
- Santiam State Forest Recovery
- Private Lands Recovery



Ryan Gordon Family Forestland Coordinator Oregon Department of Forestry <u>Ryan.P.Gordon@oregon.gov</u> 503-945-7393











Recovery Priorities



- Address areas of high erosion potential, particularly associated with potential debris torrents and public safety
- Ensure drinking water sources are prioritized for recovery and restoration
- Identify critical streams for aquatic habitat and prioritize investments in active restoration
- In coordination with the tribes, identify and protect cultural resources at risk

Assessments



- Burned Area Emergency Response (BAER) – USFS
- Emergency Stabilization and Rehabilitation (ESR) – BLM
- Erosion Threat Assessment/Reduction Threat (ETART) & Water Quality/Drinking Water Supply Resource Report – State Agencies & FEMA
- Overall Assessment Synthesis across 10 fires

Funding Needs - \$86M

- Roads, Warnings/Closures, Hazard Trees/Navigational Hazards, and Geo-Technical Analysis: \$6.75 million
- Soil Stabilization, and Riparian, Upland and Floodplain Restoration and Reforestation: \$56.75 million
- Tree Seedling/Nursery Capacity: \$5 million
- Drinking Water Intake Repair/Protection, Water Quality Monitoring, and Septic Repair/Replacement: \$16.25 million
- Cultural Resources Assessments: \$1.25 million



Next Steps

- Continue to engage with tribes about NCR issues of particular concern;
- Work with local partners to track new natural resources impacts as they evolve;
- Work with local, state, tribal and federal partners to identify high-priority actions that are underway or completed; and
- Match needed actions with available funding programs.



STATE FOREST	Santiam State Forest Restoration		
Santiam Horse Camp	Restoration	 Best available science Monitoring & adaptive management Long-term plan 	
	Recovery	 Revised IP Refines Research Needs Updated Annual Operating Plan 	
	Assessment	 Forest impacts Recreation impacts Road impacts 	

Santiam State Forest Restoration

Value







Private Lands Recovery

- State & Federal Assistance
- Local Partners
- Opportunities & Challenges
 - Coordination



- Technical Assistance & Planning
- Dynamic Funding Portfolio
- Seedlings & Plant Materials
- Sector Capacity
- Resilient Forests





ODFW North Santiam Karen Hans

Beachie Creek and Lionshead Fires: Impacts to Fish During the Fires and into the Future



How Fire Affects Fish

- Is wildland fire bad for fish?
 - Yes
- So, wildland fire is bad for fish?
 - No
- So, fire is good for fish?
 - Yes
 - No
 - Its complicated.....



Photo by Don Myron Salem Statesman Journal

How Fire Affects Fish – Its All About Intensity

- Immediate Effects During the Fire
 - Water temperature
 - Water Chemistry
- Short Term Effects
 - Sediment Debris Flow
 - Water Chemistry
 - Water volume
 - Salvage logging
- Long Term Effects
 - Sediment
 - Landslides
 - Water Chemistry
 - Water volume



Immediate Effects During the Fire

Water Temperature

- High intensity fires can raise water temperatures to lethal levels for fish and other aquatic life. However, water is dense and holds temperature.
 - It is unlikely the North Santiam, Breitenbush, and Little North Fork heated to lethal salmonid water temperatures.
 - Smaller streams like Elkhorn and Whitewater Creeks likely did heat to lethal temperatures where there was severe fish intensity
- Water Chemistry
 - Increased Phosphorus from ash
 - Toxic levels of ammonium



Immediate Effects During the Fire

- Smoke on the water*
 - Research from Northern California concluded smoke on the water can reduce solar input and keep water cooler.
 - Can also alter water chemistry
 - Increased Nitrogen and ammonium
 - Decreased Oxygen



Photo by Bend Bulletin

*apologies to everyone over 50 that now has that song stuck in their head....

Short Term Effects After the Fire

- Short Term Effects
 - Sediment Debris Flow
 - Some increase in fine and small course sediment is expected
 - Highly dependent on rainfall and ground cover
 - For the North Santiam, Little North Fork, and Breitenbush, there was not a significant increase in turbidity
 - Water Temperature
 - Likely to increase, especially in tributary streams due to lack of shade
 - Water Chemistry
 - Copper, Aluminum, and other chemical from burned vehicles and buildings (insulation, drywall, wiring) are toxic to fish
 - DEQ and City of Salem did some water quality monitoring and detected a high Aluminum level in the North Santiam at the City of Salem water intake
 - Aluminum is toxic to fish in acidic water



Short Term Effects After the Fire

- Water Volume
 - There is usually increase in stream/river flows in the first months after a fire
 - This is caused by increase runoff and decrease demand from trees and shubs
 - Using Quartzville Creek for comparison, the USFS detected a significant increase in flows in the LNF during the first rainfall event after the Beachie Creek Fire.
- Salvage Logging
 - Lots of research on salvage logging after fires
 - Lack of riparian buffer will increase sediment compared to normal logging with buffers.
 - Most of increased sediment is from roads



Long Term Effects After the Fire

- Long Term Effects
 - Sediment debris flow
 - Some increase over the winter with rains and snow melt
 - Will likely decrease through time as ground vegetation returns
 - Water Chemistry
 - Increases in nitrogen, phosphorus from ash are expected to decrease overtime
 - Water Volume
 - Water flows will stay higher until trees regrow and begin to tap groundwater



Long Term Effects After the Fire

Landslides

- Many variables determine likelihood of landslides;
 - Slope, soil type, geology, aspect, severity
- Usually takes 3 5 years and peaks 8 10 years after fire
- Catastrophic for fish in the short term
 - Initial slide will bury fish

Photo by Physic.org

- Large sediment loads will bury redds and increased turbidity could suffocate fish
- Slides could block upstream passage for many years especially in smaller rivers/stream
- Stupendous for fish in the long term
 - Supply large trees and woody debris for log jam
 - Supply coarse sediment for fish/macroinvertebrate habitat, fish redds, gravel bars (subsurface water flows), and pools around log jams.
 - Watershed process Geofluvial Morphological Process is disturbance driven

Fire and Fish: The Good News

- Fish in the North Santiam, Little North Fork, and Breitenbush Rivers were likely ok during the Beachie Creek and Lionshead Fires
- Turbidity did not increase to a harmful level during the winter rains and snow melt
- Increased river/stream flows fish need water
- Increases in Nitrogen & Phosphorus will drive lower trophic level of food chain
- Future landslides will, in the long term provide high quality fish habitat



Fire and Fish: The Bad News

- Fish in tributaries likely did not fair well if the fire burned through at a high intensity – however should return with in a few years
- Contaminants from burned houses, vehicles likely entered the rivers/streams possibly harming fish
- Lack of shade could cause higher water temperatures
- Landslide could have immediate catastrophic harm to fish and other aquatic life





State of Oregon Department of Environmental Quality Aaron Borisenko

State of Oregon Department of Environmental Quality

> *Post wildfire monitoring: Working together to provide monitoring data*

Monitoring timelines post fire





Post fire monitoring questions

- What is the extent, severity and type of wildfire damage in the area?
- What are immediate public safety and public health concerns?
- What do we know about water quality impacts from previous studies?
- What do initial water quality data collection results show?
- What are the potential mid and long-term impacts to beneficial uses of water? **HABs**?
- What data collection and analytical resource do we have at our disposal?
- What are the information needs and who needs it?
- What other factors should be considered like weather effects?
- We can't forget about potential impacts to groundwater.
-and ???



https://www.oregon.gov/odf/fire/documents/odf-siege-map.pdf



Governor's Wildfire Science Team

- Develop a catalogue of monitoring activities.
- Develop a monitoring playbook for the future.
- Identify monitoring gaps.
- Bring the monitoring data together.
- Hold a symposium on lessons learned.



2020 Wildfire Monitoring Maps

Home マ 2020_Wildfire_Monitoring_Map_February_25_2021 ∥

Open in new Map Viewer New Map ▼ Create Presentation Aaron





North Santiam <u>Water</u> Monitoring Collaborators

- Kurt Carpenter and Chauncey Anderson -USGS
- Jana Compton -EPA
- Brandin Hilbrandt, Lacey Goeres-Priest City of Salem
- Norm Buccola USACE
- Mike Mulvey DEQ
- Public Water Providers
- Others?



Water Quality Parameters of concern

- Continuous monitoring: Water temperature, Turbidity, pH, FDOM, Specific conductance, Total chlorophyll, Phycocyanin
- Volatile Organic Compounds (VOC's)
- Dissolved Organic Carbon (DOC)
- Nutrients Nitrogen and Phosphorus
- Priority metals Total and dissolved
- Sediment
- Toxics- legacy chlorinated pesticides, current-use pesticides, priority pollutant metals such as copper and arsenic, industrial chemicals, flame retardants, combustion by-products, pharmaceuticals and other personal care products.



Early signs of a busy HAB season?

- April 2021 may be the driest on record.
- Some evidence that 2021 may be a busy HAB season
 - Elevated pH in Clackamas River (diel swings of ~2.5 pH units!)
 - Similar reports in North Umpqua basin









HABs: 2019 vs. 2020 vs 2021?



DEO

2020-2021 – qPCR Drinking Water Monitoring

EPA Multipurpose grant:

- 56 facilities participated; monitoring early June mid-August
- Extended monitoring at 31 facilities

Phytoxigene Cyano dTec kits

- mcyA/nodF for MY
- cyrA for CYN
- stxA for STX
- 16S (total cyanobacteria)

<u>In 2021 –</u>

28 facilities in or near to wildfire impacted areas6 events each

Thank you!!!





Real Time PCR / quantitative PCR (qPCR)

2020 – 2021 qPCR Innovation Project

- Two sites: Detroit Lake & North Fork Reservoir
 - Lacey Goeres-Priest and Brandin Hilbrandt at City of Salem
 - Tracy Triplett at Clackamas River Water
- Focused on method development
 - Field vs. lab filtration
 - Swin-Lok vs. Sterivex filters
- Season shortened due to wildfires
- qPCR analysis in progress

<u>In 2021-</u>

Working with City of Salem and Clackamas River Water: Thank you!



Sterivex (left) vs. Swin-lok filters (right)



2020 – Recreational HABs response (2021?)







State of Oregon Department of Environmental Quality



Bear Creek at Bear Creek Greenway Bridge, Medford Bear Creek at Kirtland Road (Central Point) North Umpqua River at S Swiftwater Access Rd, Idleyld Park Reese Creek at Hwy 62 bridge McKenzie River at Goodpasture Boat Ramp near Vida North Santiam at Mehama Bridge Clackamas River at Hwy 224, Carter Bridge

DEQ Toxics Monitoring Program:

DEQ toxics monitoring locations added to help inform the 2020 wildfire impacts.

Bear Creek at Kirkland Road, Central Point

S Oberchain/ Rogue

Medford

Bear Creek at Greenway Bridge

Google Earth

DEO

Volatile Organic Compounds testing (VOC's)

			System	Reported Samples
Water System Name	Connections	Burned Structures	Blue River Water District	7
Plue Piver Water District	06	70	Breitenbush Hot Springs	4
	50	70	Cedarhurst Improvement Club	3
Hiland WC - Echo Mountain	140	100	City of Gates	30
Hiland WC - Riverbend	80	2	Detroit Water System	18
			Finn Ranch Water District	3
Panther Creek Water District	355	117	Hiland WC - Echo Mountain	35
Salmon River Mobile Village	38	36	Hiland WC - Riverbend	3
Lyons Mehama Water District	890	42	Lyons Mehama Water District	4
			ODFW Klamath Hatchery	3
City of Gates	240	90	Panther Creek Water District	87
Detroit Water System	<mark>400</mark>	<mark>295</mark>	Salmon River Mobile Village	3
			Taylors Grove Water Works	3
			Whispering Pines MH Village	23
Whispering Pines Mobile Home Village	63	46	Wyatt Water Works - McKenzie Palisades	3
Bear Creek Mobile Home Park	70	68	Total	229


Thank you and questions

Thank you to all the federal, state, municipal and water district for working together to provide Needed information to support fire recovery efforts.

Aaron Borisenko <u>Aaron.N.Borisenko@deq.state.or.us</u> 503-693-5723









Panel with All Presenters

Additional Basin Updates



Adjourn—Thank You!