

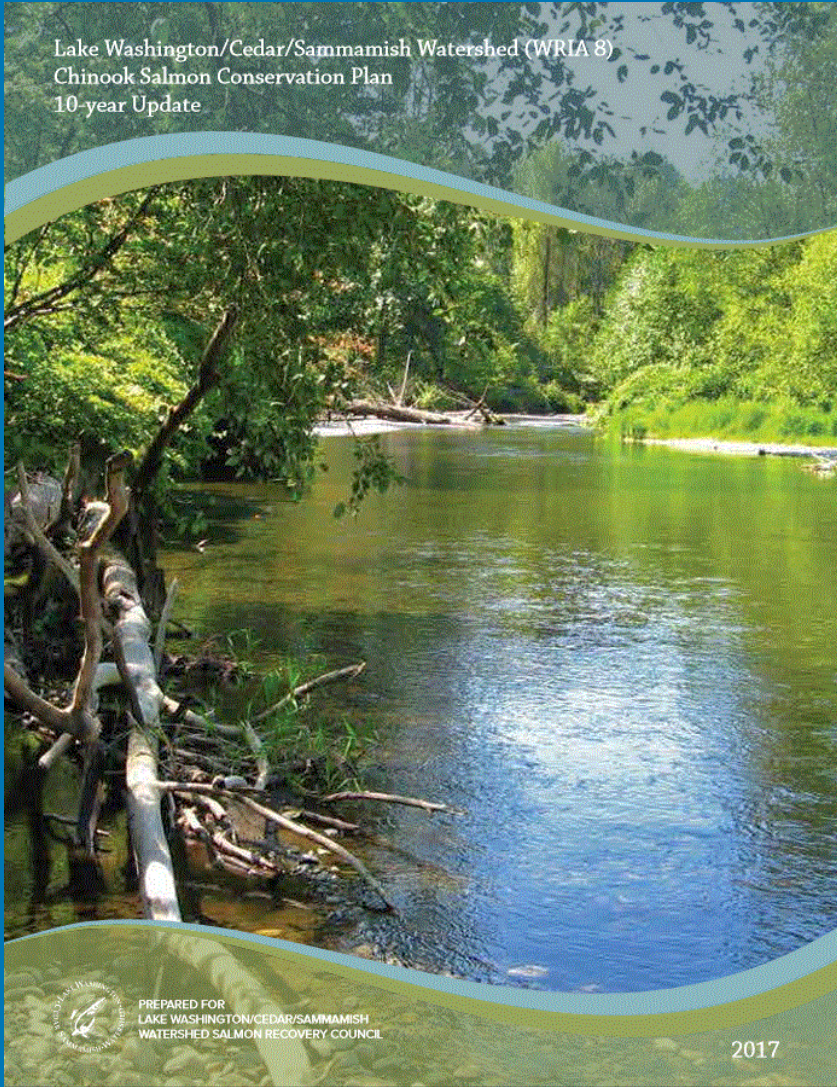
WRIA 8 Habitat Restoration Monitoring: Update on Goals and Baseline Information



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Lake Washington/Cedar/Sammamish Watershed (WRIA 8)
Chinook Salmon Conservation Plan
10-year Update



2017 Chinook Salmon Conservation Plan Update

Simple habitat goals were developed and must be tracked over time

Reporting interval: every 5 y
(2020, 2025 etc.)

Some goals required baseline data

- Wood
- Lakeshore condition



PREPARED FOR
LAKE WASHINGTON/CEDAR/SAMMAMISH
WATERSHED SALMON RECOVERY COUNCIL

2017



CHINOOK SALMON HABITAT STATUS

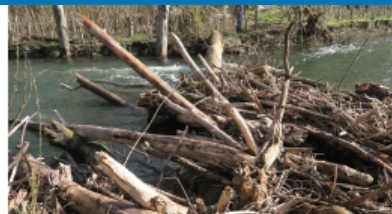
The condition of the watershed varies between lower elevations that have been intensively developed and higher elevations that are more pristine. Current stream habitat conditions in most areas inside the UGA boundary in WRIA 8 are degraded, largely because of land conversion and associated effects of human activities. Data on habitat status since 2005 includes a forest cover analysis (Vanderhoof et al., 2011) and a wadeable streams status and trends monitoring project (King County, 2015), as well as ongoing annual monitoring of water quality and macroinvertebrates (indirect indicators of habitat quality) conducted by King County and other jurisdictions. The wadeable streams project collected data on pools, wood in streams, sediment, riparian canopy cover, and many other metrics. Other studies in the watershed that provide valuable information on habitat status include a U.S. Geological Survey (USGS) longitudinal profile of the Cedar River (Konrad et al., in press), Bear Creek watershed planning research (King County, 2017), and high-resolution land cover mapping by NOAA using 2015 aerial photography (NOAA, 2017).

Important locations lacking in recent data include the lake shorelines, where information on bulkheads, docks, and lakeshore conditions is necessary to track improvements or degradation. Other habitat status and trends monitoring needs are outlined in the Monitoring and Assessment Plan (Appendix A).

RIVERS AND STREAMS

Cedar River and Tributaries (Tier 1)

The Cedar River contains the highest priority spawning and rearing areas in WRIA 8 and (with its tributaries) is the sole spawning and rearing stream for the Cedar River Chinook salmon population. The river supports the largest number of natural-origin Chinook salmon in the basin, and contains the primary spawning areas for Lake Washington



sockeye and steelhead. A fish passage facility installed at the Landsburg water supply diversion dam in 2003 substantially increased the extent of Chinook salmon spawning and rearing habitat by over 17 miles in the watershed, and reconnected the full historical extent of migratory habitat. The river upstream of the Landsburg Diversion Dam is protected by a 50-year HCP administered by Seattle Public Utilities, and is used annually by a substantial proportion of Chinook salmon returning to the watershed. The river upstream from Landsburg Diversion Dam to the natural barrier at Cedar Falls was reclassified to Tier 1 habitat status in 2017. Aside from some service roads, this area is unconfined by levees or other artificial structures, and the riparian zone is dominated by second-growth conifer forest.

Of the 1,419 acres in the moderate CMZ below Landsburg Diversion Dam as of 2015, approximately 380 acres (26 percent) are behind levees, revetments, or other hard structures. (WRIA 8 uses the moderate CMZ as a proxy for its floodplain metric.) Between 2005 and 2015, approximately 65 acres of floodplain were reconnected through levee setbacks and floodplain restoration.

Using a recent remote-sensing product (NOAA, 2015), the TC estimates the instream area of woody debris in the Cedar River between RM 4 and Landsburg as 5.2 m²/100 m. If the typical jam is assumed to be 2 meters tall, the estimated wood volume would be 10.4 m³/100 m (WRIA 8 TC, unpublished GIS data; King County, 2015). This value is substantially below regional benchmarks for rivers of this size (Fox and Bolton, 2007) and the TC considers this value to reflect poor condition (well below the 25th percentile for rivers 30 meters bankfull width or greater).

Using a high-resolution (1 meter) land cover product (NOAA, 2017), the WRIA 8 TC estimated the 2015 forest cover within 200 feet of the channel centerline as 70 percent outside the UGA boundary and 39 percent inside the UGA (WRIA 8 TC, unpublished data). Impervious cover extent was estimated at 4 percent outside the UGA and 18 percent inside.

Habitat status was described in the plan



Habitat Goals (1)

Habitat Component	2025 Goals
Cedar River	<ul style="list-style-type: none">• Cedar floodplain acres will be 1,170 acres by 2025. (increase by 130 acres)• Increase average wood volume to 42 m³/100 m or more by 2025
Sammamish River	<ul style="list-style-type: none">• Increase riparian cover by 10% by 2025• Add two thermal refuges (cool water areas) by 2025
Streams (Bear/Cottage Lake, Issaquah, Evans, Kelsey, Little Bear, North creeks)	<ul style="list-style-type: none">• Increase riparian cover by 10% by 2025• Double average wood volume over current conditions by 2025.



Habitat Goals (2)

Habitat Component	2025 Goals
Lakes	<p>Double the amount of natural lake shoreline south of I-90 (Lake Washington) and throughout Lake Sammamish over 2015 conditions by 2025.</p> <p>Double the amount of natural riparian vegetation within 25 feet of shoreline south of I-90 (Lake Washington) and throughout Lake Sammamish over 2015 conditions by 2025.</p>
Nearshore (Pocket Estuaries)	Reconnect two stream mouth pocket estuaries by 2025.



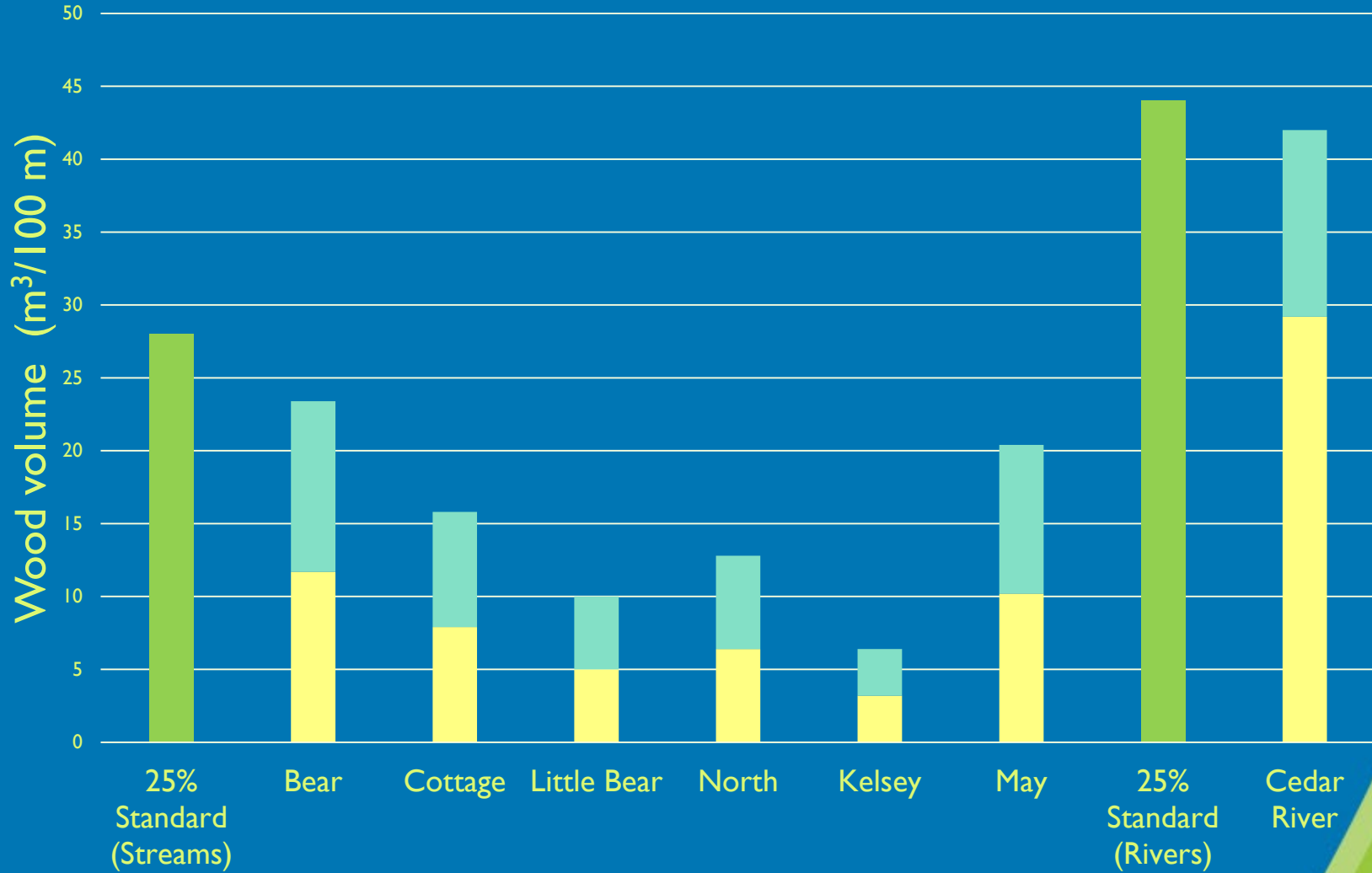
Wood data

Habitat Component	2025 Goals	Baseline/2018 Status	2020 Trigger (50%)
Cedar River	Average wood volume will be at least 42 m ³ /100 m by 2025	Average wood volume 29.2 m ³ /100 m	Average wood volume <21 m ³ /100 m
Streams (Bear/ Cottage Lake, Issaquah, Evans, Kelsey, Little Bear, North creeks)	Average wood volume will double over current basin conditions by 2025.	Average wood volume baseline: Bear Creek: 11.7 m ³ /100 m Cottage Creek: 7.9 m ³ /100 m Issaquah Creek: (TBA) Little Bear Cr: 5.0 m ³ /100 m North Creek: 6.4 m ³ /100 m Kelsey Creek: 3.2 m ³ /100 m May Creek: 10.2 m ³ /100 m	Wood volume increase <50%



Wood Volume Comparisons

■ 2018 Conditions ■ 2025 Goal



Lakeshore armoring baseline data

Habitat Component	2025 Goals	Baseline/2018 Status	2020 Trigger (50%)
Lakes	Natural lake shoreline south of I-90 (Lake Washington) and throughout Lake Sammamish will double over 2015 conditions by 2025.	Lake Washington baseline acquired (2015): <ul style="list-style-type: none">• 8.4 miles unarmored (length of armored lakeshore: 21.4 miles) Lake Sammamish baseline acquired (2015): <ul style="list-style-type: none">• 12.9 miles unarmored (length of armored lakeshore: 6.8 miles)	Natural lake shoreline < 50% increase from baseline assessment





Armored versus unarmored shoreline

Next Steps (2020 Milestone)



Assess and report on progress toward habitat goals

- Wood
- Floodplain Connectivity
- Cold Water Refuges
- Riparian Cover
- Lake Shoreline
- Pocket Estuaries
- Are we on track for 2025?
(Adaptive Management checkpoint)

Report on status of other indicators:

- B-IBI
- Water Quality
- Land Cover Trends





Thank you

WRIA 8 Staff
King County
Seattle Public Utilities
WDFW

