

Levee Vegetation: Frequently Asked Questions about the USACE Rehabilitation and Inspection Program (RIP) Vegetation Management Requirements and PL 84-99 Levee Repair Funding

How many trees were removed to partner with the Corps on repairs in 2008-9?

River	Number Removed	Assumptions
Green River	461	Based on USACE inspections of ineligible facilities Rate is 0.014 trees/linear foot, or <u>74 trees per mile</u>
Snoqualmie and Raging Rivers	51	
Total Riparian Trees Removed	512	

What are the estimated removal and mitigation costs associated with the 2008-9 tree removal?

Estimated Cost	Assumptions
\$300,000	<ol style="list-style-type: none"> 1 Removal of 512 Trees (assumes stumps will not need to be removed at this time) 2 Mitigation at 4 trees planted for every 1 removed; one piece of large wood for each riverward tree removed. Mitigation required by WDFW under RCW and WAC; also required by SEPA DNS and local shoreline exemptions. Project mitigation required by NMFS and USFWS includes tree planting and large wood placement. 3 DNRP Large Wood Protocol Compliance, 5 Public Meetings, based on 2010 Expenses for Cedar Rapids project. 4 Land Acquisition Necessary for Mitigation Sites on the Green River, Based on Appraisal.
\$2,269,000	
\$140,000	
\$2,500,000	
\$5,209,000	Total Costs of RIP Compliance, Actuals + Estimates

How many additional trees would need to be removed to comply with the existing Regional Variance?

River	Low Estimate	High Estimate	Assumptions
Green	600	600	<ol style="list-style-type: none"> 1 Low Tree Removal Rate based on actual removal rates in 2008-9 combined with 2010 Corps Inspections to date of Eligible Facilities. Rates for the Cedar and Sammamish assumed to be the same as the Snoqualmie. Rate is 0.045 trees/linear foot or <u>238 trees per mile</u>. 2 2010 Corps inspections of eligible facilities apply a strict interpretation of the existing Regional Variance and do not thus far employ engineers discretion as allowed under the variance. As a result, the estimated tree removal rate is nearly 4 times that applied to ineligible facilities in 2008-9. It appears that the flexible interpretation of the variance applied in 2008-9 will not be repeated, meaning that 2008-9 tree removal rates are likely low compared to future expectations from the Corps. 3 Green River based on actual rates to date due to very limited vegetative cover. This rate will be adjusted as 2010 inspections are completed. 4 High Tree Removal Rate based on 2010 Corps inspection rates of Eligible facilities (0.103 trees/linear foot, or <u>544 trees per mile</u>). This rate is over 7X greater than the 2008-9 rate.
Snoqualmie	3,600	8,200	
Cedar	1,200	2,700	
Sammamish	3,300	7,500	
Total Trees Removed	8,700	19,000	

How many trees would need to be removed to bring levees into compliance with the National Standard?

River	Low Estimate	High Estimate	Assumptions
Green	2,000	3,000	1 Low tree removal rate based on application of national standard to the Tukwila 205 levee by King County staff, resulting in an additional 116 trees per mile in addition to the removal rate necessary to meet regional variance above.

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Snoqualmie	5,000	14,200	2 High removal rate adds 20% to the Tukwila 205 estimate. The differential to reach the national standard increases from 116 trees per mile to 139 trees per mile, and this is added to the tree removal rate necessary to reach the regional variance to generate the total amount.
Cedar	1,700	4,740	3 Low removal rate likely conservative because the 15 feet landward of the levee crest on the Tukwila 205 is
Sammamish	4,900	13,380	4 Includes tree removal necessary to meeting Regional Variance
Total Trees Removed	13,600	35,320	

NOTE: Vegetation removal projections will continue to be updated as the 2010 Corps inspections proceed. This may result in slight adjustments of the numbers presented here.

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What are the estimated removal and mitigation costs if we comply with the regional variance?

River	Category	Low Estimate	High Estimate	Assumptions
Green	Removal	\$1,552,000	\$1,552,000	1 Tree removal costs based on 2009 actuals (\$586/tree). 2 Stump removal and backfill costs based on Roads estimate (\$2,000/stump) .
	Mitigation	\$2,659,000	\$2,659,000	
Snoqualmie	Removal	\$9,309,000	\$21,205,000	3 Mitigation costs based on Tukwila 205 mitigation work at Foster Golf (\$4,431 per tree removed). 4 Mitigation determined by WDFW at 4 trees planted for each removed; placement of one piece of large wood for every tree removed on the riverward side of the levee.
	Mitigation	\$15,951,000	\$36,334,000	
Cedar	Removal	\$3,103,000	\$6,982,000	5 Compliance with DNRP Large Wood Protocols based on actual public meeting costs of \$28,000. 6 Does not include additional land if needed for mitigation sites.
	Mitigation	\$5,317,000	\$11,964,000	
Sammamish	Removal	\$8,534,000	\$19,395,000	7 Equates to \$1.3 to \$2.9 million per mile over 46 miles of levees
	Mitigation	\$14,622,000	\$33,232,000	
Total to Comply with Regional Variance		\$61,047,000	\$133,323,000	

What are the estimated removal and mitigation costs if we comply with national standard?

River	Category	Low Estimate	High Estimate	Assumptions
Green	Removal	\$5,172,000	\$5,896,000	1 Tree removal costs based on 2009 actuals (\$586/tree). 2 Stump removal and backfill costs based on Roads estimate (\$2,000/stump).
	Mitigation	\$8,862,000	\$10,103,000	
Snoqualmie	Removal	\$12,929,000	\$25,549,000	3 Mitigation costs based on Tukwila 205 mitigation work at Foster Golf (\$4,431 per tree removed). 4 Mitigation determined by WDFW at 4 trees planted for each removed; placement of one piece of large wood for every tree removed on the riverward side of the levee.
	Mitigation	\$22,154,000	\$43,778,000	
Cedar	Removal	\$4,396,000	\$8,534,000	5 Compliance with DNRP Large Wood Protocols based on actual public meeting costs of \$28,000. 6 Does not include additional land if needed for mitigation sites.
	Mitigation	\$7,532,000	\$14,623,000	
Sammamish	Removal	\$12,672,000	\$24,360,000	7 Equates to \$4 to \$4.7 million per mile over 46 miles of levees
	Mitigation	\$21,711,000	\$41,739,000	
Total to Comply with National Standard		\$95,428,000	\$174,582,000	

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What is the estimated annual cost to maintain compliance with the national standard?

Low Estimate	High Estimate
\$600,000	\$1,000,000

Cost based on mowing and site management of 46 miles of levees

What was the total cost and the actual cost-share with the Corps for the 2008-9 repairs, reflecting all project costs?

	USACE	King County	Total Cost	King County's Share of Total Costs
Total	\$25,056,726	\$10,474,328	\$35,531,054	29%
Snoqualmie	\$357,204	\$591,925.22	\$949,129	62%
Green	\$24,699,522	\$9,882,403	\$34,581,925	29%
Federal Levees (Horseshoe and Tukwila 205s)	\$11,421,988	\$3,291,794	\$14,713,782	22%
Non-Federal Levees	\$13,634,738	\$7,182,534	\$20,817,272	35%
Tree Removal, Mitigation, Acquisition of Mitigation Site	\$0	\$5,209,000	\$5,209,000	100%

1 Mitigation costs estimated; all other costs are actuals.

How much would these projects have cost using County designs and contractors?

	Est. Cost of King Co Designs	Actual Cost to King County 2008-9	Actual Cost to USACE 2008-9	Actual Cost to Public 2008-9
Snoqualmie Basin	\$1,948,333	\$591,925.22	\$357,204	\$949,129
Green River	\$18,007,959.19	\$9,882,403	\$24,699,522	\$34,581,925
Total	\$19,956,292.53	\$10,474,327.93	\$25,056,726	\$35,531,053.93
Unit cost	\$2.00	\$1.05	\$2.51	\$3.55

1 Est. Cost based on actual costs at similar levees (Briscoe and Stuck River Drive)

How much money is available to the Corps Seattle District via the PL 84-99 Program, and how much has King County received?

Federal funding is only available following a federal disaster declaration from FEMA; since 1990 King County has experienced federal disaster declarations on average every two years.

\$ 71,500,000		Total distributed since 2004 by USACE Seattle District over WA, OR, ID Average amount available through Seattle District per Federal Disaster Declaration Range of funding available to Seattle District Average USACE funding to King County per disaster since 1990 Average USACE funding to King County per year since 1990 Range of USACE funding received by King County since 1990
\$ 12,000,000		
\$2,000,000 Low	High \$ 26,500,000	
	\$ 2,700,000	
	\$ 1,350,000	
\$35,000 Low	High \$ 20,300,000	

Federal funding is only available following a federal disaster declaration from FEMA; since 1990 King County has experienced federal disaster declarations on average every two years.