
WAGES CREEK

Wages Creek

Dependent Population
10 IP-Km of potential coho salmon habitat
Coho salmon, Chinook salmon, and steelhead present

Wages Creek drains about 13 square miles, in western Mendocino County, and enters the Pacific Ocean about one mile north of the town of Westport. About 79 percent of the Wages Creek watershed is redwood coniferous forest and about 13 percent of the watershed area is either montane or riparian hardwood forest. The entire Wages Creek watershed has moderately high erodibility after considering slope, precipitation, and the susceptibility of failure of underlying geology. Nearly the entire Wages Creek watershed is in private ownership; only 21 acres of the watershed is public park land. The dominant land use within the Wages Creek watershed is forestry. Within the past 10 years, about 29 percent of the Wages Creek watershed has been under a timber harvest plan. Housing development within the watershed is moderately low – about 90 homes are present in the watershed.

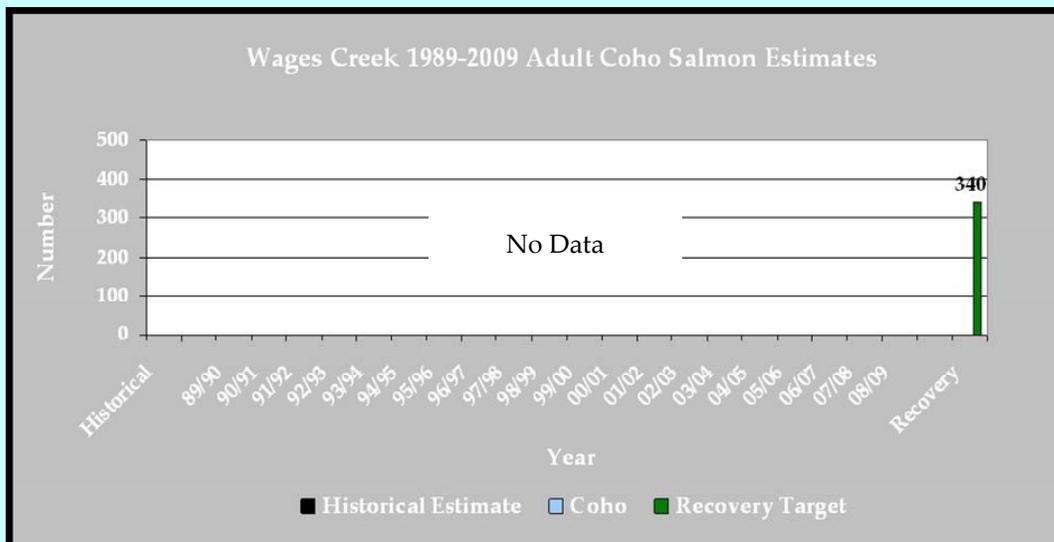


Wages Creek estuary and campground.

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The Watershed at a Glance

Spawning Quantity & Quality:	FAIR
Summer Water Temperatures:	VERY GOOD
Depth & Shelter of Pools:	POOR to FAIR
Large Wood Frequency:	POOR to FAIR
Riparian Canopy:	FAIR to GOOD
off channel/Floodplain Quality:	FAIR
Estuary Function:	FAIR



Increasing the survival of coho salmon

requires **protecting** all individuals from threats that are jeopardizing coho salmon. The highest ranked threats are:

- Logging and Wood Harvesting
- Roads and Railroads
- Storms and Flooding

Preventing the extinction of coho salmon

means **restoring** many key habitat attributes within the Wages Creek watershed that are in poor condition. The highest priorities for restoration are to:

- Improve estuary condition
- Improve pool complexity and increase number of pools
- Increase large wood in streams
- Increase the frequency of off channel habitat and floodplain connectivity
- Reduce the amount of roads in and near the riparian zone and throughout the watershed

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Wages Creek
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Advancing recovery of coho

salmon in Wages Creek requires these priority **recovery actions**:

- Install large wood, boulders, and other structures to increase stream complexity and gravel retention, and improve and improve pool frequency and depth.
- Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats. Improve floodplain connectivity.
- Improve the structure and composition of riparian areas to provide shade, large woody debris input, nutrient input, and bank stabilization.
- Discourage rezoning forestlands to rural residential or other land uses (e.g., vineyards).
- Conduct annual inspections of all roads prior to winter and repair or maintain roads to reduce sediment inputs to waterways.

... **throughout** the Wages Creek watershed.

Conservation Highlights

- Campbell Timberland Management has undertaken sediment remediation projects.
- The Wages Creek Monitoring Study Group, a collaborative effort, is conducting effectiveness monitoring to assess current conditions and long term trends in channel conditions.

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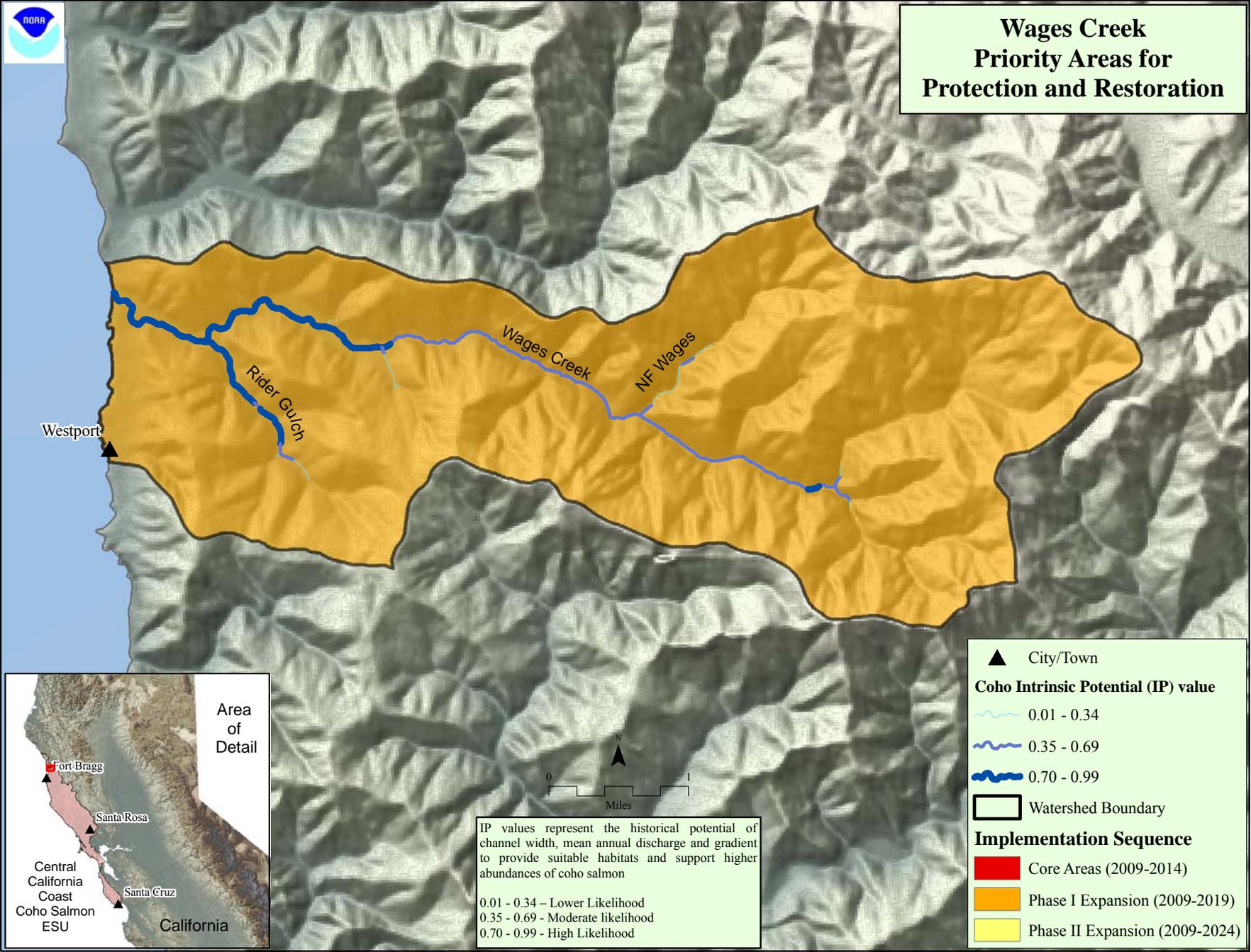
Wages Creek
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Immediate Needs

√ Identify and address sources of sediment input to streams from roads.

Recovery Partners

NMFS
DFG
Campbell Timberland Management
Westport Water District
Board of Forestry Monitoring Study Group
Ballard Forestry



**Wages Creek
Priority Areas for
Protection and Restoration**



IP values represent the historical potential of channel width, mean annual discharge and gradient to provide suitable habitats and support higher abundances of coho salmon

0.01 - 0.34 - Lower Likelihood
 0.35 - 0.69 - Moderate likelihood
 0.70 - 0.99 - High Likelihood

- ▲ City/Town
- Coho Intrinsic Potential (IP) value**
- 0.01 - 0.34
- 0.35 - 0.69
- 0.70 - 0.99
- Watershed Boundary
- Implementation Sequence**
- Core Areas (2009-2014)
- Phase I Expansion (2009-2019)
- Phase II Expansion (2009-2024)

**CCC Coho Salmon
Wages Creek
CAP Viability Table Results**

Analyst	Source	Result	Rating	Target	Habitat Attribute	Indicator	Poor	Fair	Good	Very Good
Flow Panel	Decision Matrix	NA	NA	Spawning Adults	Hydrology	Passage Flows	>75 (score)	51-75	35-50	<35
SEC	PSMFC Database	100%	Very Good	Spawning Adults	Passage	Physical Barriers	<50% of IP-km	50-70% of IP-km	70-90% of IP-km	>90% of IP-km
NCWAP	Decision Matrix	60-90 days	Good	Spawning Adults	Passage	Passage at Mouth	<30 days	30-60 days	60-90 days	>90 days
SEC	CDFG HAB 8	NA	NA	Spawning Adults	Sediment	Amount of Gravel*	<100m ²	100-500	500-900	>900
NMFS	Best Prof. judgment	<5%	Good	Spawning Adults	Viability	Freshwater Harvest	>10% of pop.	5-10%	<5%	
Flow Panel	Decision Matrix	NA	NA	Eggs	Hydrology	Instantaneous Condition	>75 (score)	51-75	35-50	<35
Flow Panel	Decision Matrix	NA	NA	Eggs	Hydrology	Redd Scour	>75 (score)	51-75	35-50	<35
SEC	Many Sources	NA	Fair	Eggs	Sediment	Gravel Quality	>17% 0.85mm and or >30% 6.3mm	15-17% 0.85	12-14% 0.85mm and or <30% 6.3mm	<12% 0.85
SEC	CDFG HAB 8	NA	NA	Eggs	Sediment	Gravel Quality (Embeddedness)	<25% of scores 1s&2s	25-50% of scores 1s&2s	>50% of scores 1s&2s	
Flow Panel	Decision Matrix	NA	NA	Summer Rearing	Hydrology	Baseflow	>75 (score)	51-75	35-50	<35
SEC	CDFG HAB 8	NA	NA	Summer Rearing	Pool Habitat	Shelter Rating	<60 avg. rating	60-80	80-100	>100
SEC	CDFG HAB 8	NA	NA	Summer Rearing	Pool Habitat	Primary Pools	<30% pools by length	30-40%	40-50%	>50%
SEC/NMFS	Many Sources	NA	Fair	Summer Rearing	Water Quality	Temperature	>30% of IP > 17 C MWMt	Does not meet Good or Very Good	30-60% of IP < 15C MWMt	>60% of IP < 15C MWMt
SEC	CDFG HAB 8	Poor	Poor	Winter Rearing	Floodplain	Complex Habitat**	<50% Connected	50-80% connected	>80% connected	
NMFS	NCWAP	Fair	Fair	Smolts	Estuary	Estuary				
Flow Panel	Decision Matrix	NA	NA	Smolts	Hydrology	Passage Flows	>75 (score)	51-75	35-50	<35
SEC	SWRCB	3/10 IP-km	Fair	Smolts	Passage	# of Diversions**	>5 / 10 IP km	1.1-5	0.01-1	0
SEC	CDFG HAB 8	NA	NA	Multiple Life Stages	Pool Habitat	Shelter Rating	<60 avg. rating	60-80	80-100	>100
NMFS	Best Prof. judgment	>80%	Good	Multiple Life Stages	Floodplain	Floodplain Connectivity	<50%	50-80%	>80%	not defined
NMFS	CDF CWHR	NA	Fair	Multiple Life Stages	Hydrology	Stand Age			>40 years old	
SEC	NLCDB	0.20%	Very Good	Multiple Life Stages	Hydrology	Impervious Surfaces	>12.01% of WS by area	7.01-12%	3.01-7%	0-3%
SEC	FMMP	0.00%	Very Good	Multiple Life Stages	Land disturbance	Agriculture	>30% of WS by area	10-30%	0.1-10%	<0.1%
NMFS	CDF THP Dataset	29%	Fair	Multiple Life Stages	Land disturbance	Timber Harvest	>35% of WS by area	25 - 35%	10 - 25%	<10%
SEC	Best Prof. judgment	NA	Poor	Multiple Life Stages	Pool Habitat	LWD Freq. (BFW 0-10)	<4key pcs/100m	4-6/100m	6-11/100m	>11/100m
SEC	Best Prof. judgment	NA	Poor	Multiple Life Stages	Pool Habitat	LWD Freq. (BFW 10-100)	<1/100m	1-1.3/100m	1.3-4/100m	>4/100m
NMFS	CDF CWHR	>50%	Good	Multiple Life Stages	Riparian Veg.	Species Composition	<25%	25-50%	>50%	Historical Conditions
NMFS	CDF CWHR	40-54%	Fair	Multiple Life Stages	Riparian Veg.	DBH	<39% Class 5 and 6	40-54%	55-69%	>69%
SEC	CDFG HAB 8	70-80%	Fair	Multiple Life Stages	Riparian Veg.	Canopy Cover	<45 % avg. over IP-km	75-85%	85-95%	>95%
NMFS	CDF THP Dataset	5.9 mi/sq.mi.	Poor	Multiple Life Stages	Sediment Transport	Road Density	>3 miles/sq. mile	3 to 2.5	2.5 to 1.6	<1.6
NMFS	CDF THP Dataset	5.7 mi/sq.mi.	Poor	Multiple Life Stages	Sediment Transport	Road density 100	>1 miles/sq. mile	1-0.5	0.5-0.1	<0.1
NMFS	Many Sources	Good	Good	Multiple Life Stages	Water Quality	Toxicity	Acute	Sublethal or Chronic	No Acute or Chronic	No evidence of toxins or Contaminants
NMFS	Best Prof. judgment	<1 per IP-km	Poor	Spawning Adults	Viability	Adult Density	<1 per IP-km	1-20 per IP-km	20-40 per IP-km	>40 per IP-km
NMFS	Best Prof. judgment	<0.2 fish/m ²	Poor	Summer Rearing	Viability	Juvenile Density	<0.2 fish/m ²	0.2-0.5 fish/m ²	0.5-1.0 fish/m ²	>1.0 fish/m ²
NMFS	Best Prof. judgment	<20% IP-km occupied	Poor	Summer Rearing	Viability	Juvenile Distribution	<20% IP-km occupied	20-34%	35-50%	>50%

See Appendix C for a full description of the analysis methods for the Viability Table Reports

* = watershed specific numbers

** = Ratings defined by the distribution of results

Wages Creek Threats Across Targets		Spawning Adults	Eggs	Summer Rearing Juveniles	Winter Rearing Juveniles	Smolts	Multiple Life Stages	Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	
1	Droughts	Medium	Medium	High	Medium	Very High	Medium	High
2	Roads and Railroads	High	High	High	Medium	Medium	High	High
3	Logging and Wood Harvesting	High	High	Medium	Medium	Medium	High	High
4	Storms and Flooding	High	Medium	Medium	Medium	Medium	Medium	High
5	Recreational Areas and Activities	Medium	Low	Medium	Medium	High	Medium	Medium
6	Disease, Predation, and Competition	Medium	-	High	-	Medium	-	Medium
7	Climate Change	Medium	Medium	Medium	Medium	Medium	Medium	Medium
8	Fire and Fuel Management	Medium	Medium	Medium	Medium	Medium	Medium	Medium
9	Residential and Commercial Development	Medium	Medium	Medium	Medium	Medium	Medium	Medium
10	Agricultural Practices	Medium	Low	Medium	Medium	Medium	Medium	Medium
11	Livestock Farming and Ranching	Medium	Low	Medium	Medium	Medium	Medium	Medium
12	Water Diversion and Impoundment	Medium	Low	Medium	Medium	Medium	Medium	Medium
13	Channel Modification	Medium	Low	Low	Medium	Medium	Medium	Medium
14	Fishing and Collecting	Medium	-	Medium	-	Medium	-	Medium
15	Hatcheries and Aquaculture	Medium	-	-	-	Medium	-	Medium
16	Mining	-	-	-	-	Low	-	Low
Threat Status for Targets and Project		High	High	High	High	Very High	High	High

Wages Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
WagC-A-6.1	Objective	Pool Habitat	Improve summer rearing, winter rearing, and smolt survival by increasing instream channel complexity in potential rearing and migration reaches. Additionally, improve egg survival by reducing redd scour in streams characterized by high bedload mobility.										
WagC-A-6.1.1	Recovery Action	Pool Habitat	Encourage the development and implementation of large woody debris supplementation programs to increase stream complexity and gravel retention, and improve pool frequency and depth (DFG 2004).										
WagC-A-6.1.1.1	Action Step	Pool Habitat	Increase LWD frequency in mainstem reaches of Wages Creek.	1	10	Campbell Timberland Management, CDFG, Private Landowners	30.00	30.00	30.00	30.00	30.00	300	Costs may be higher in Wages Creek than in some of the other watersheds in the Lost Coast Diversity Stratum due to the presence of rural residences in the lower portion of the watershed. Due to the presence of these structures, additional engineering may be required.
WagC-A-6.1.2	Recovery Action	Pool Habitat	Encourage landowners to implement restoration projects as part of their ongoing operations in stream reaches where large woody debris is lacking.	2	60	CalFire, Campbell Timberland Management, CDFG, NMFS, Private Landowners						0	Cost of encouraging implementation of restoration projects is likely to be low.
WagC-A-7.1	Objective	Riparian Vegetation	Improve the structure and composition of riparian areas to provide shade, large woody debris input, nutrient input, bank stabilization, and other CCC coho salmon needs.										
WagC-A-7.1.1	Recovery Action	Riparian Vegetation	Promote streamside conservation measures, including conservation easements, setbacks, and riparian buffers (DFG 2004).										
WagC-A-7.1.1.1	Action Step	Riparian Vegetation	Promote the re-vegetation of the native riparian plant community within inset floodplains and riparian corridors to ameliorate instream temperature and provide a source of future large woody debris recruitment.	2	60	CalFire, California Coastal Conservancy, Campbell Timberland Management, CDFG, NMFS, NOAA RC, Private Landowners						TBD	Most of the land is used for forest management, so most of this cost will be absorbed as part of on going forestry practices.
WagC-A-7.1.2	Recovery Action	Riparian Vegetation	Conduct conifer release to promote growth of larger diameter trees where appropriate.	2	60	Campbell Timberland Management, Private Landowners						TBD	Cost is expected to be minimal and would likely be included as part of ongoing forest management in the watershed.
WagC-A-8.1	Objective	Sediment	Improve habitat conditions at multiple life stages by reducing sediment inputs to the stream at the watershed scale.										
WagC-A-8.1.1	Recovery Action	Sediment	Re-establish natural sediment delivery processes by assessing sediment delivery sources at the sub-watershed scale and prioritizing sediment reduction activities.										
WagC-A-8.1.1.1	Action Step	Sediment	Identify areas at increased risk of mass wasting and elevated fine sediment load, and decrease sediment from transportation projects and land management activities in those areas (DFG 2004).	2	5	CalFire, Campbell Timberland Management, Private Landowners						TBD	
WagC-A-8.1.2	Recovery Action	Sediment	Address sediment and runoff sources from road networks and other actions that deliver sediment and runoff to stream channels.										
WagC-A-8.1.2.1	Action Step	Sediment	Locations for sediment catchment basins should be identified, developed and maintained, where appropriate.	2	60	CalFire, Campbell Timberland Management, Private Landowners	50.00	50.00	50.00	50.00	50.00	3,000	This estimate was taken from the Ten Mile Creek watershed. Ongoing maintenance will likely occur as part of a yearly evaluation prior to the winter period. Maintenance costs were estimated at \$50,000/yr.
WagC-A-8.1.2.2	Action Step	Sediment	All roads alongside inner gorge areas or in potentially unstable headwall areas should be removed, if feasible.	2	30	CalFire, Campbell Timberland Management, Private Landowners						TBD	TBD- difficult to estimate cost because assessments for the magnitude of the problem were not available. Additionally, many inner gorge roads have been addressed - often through the timber harvest process - and these costs should be considered an ongoing operation expense.

Wages Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
WagC-A-8.1.2.3	Action Step	Sediment	Where restricting winter access to unpaved roads is not feasible, encourage measures such as rocking to prevent sediment from reaching coho salmon streams (DFG 2004).	2	60	CalFire, Campbell Timberland Management, Private Landowners, RWQCB						TBD	Minimal- difficult to estimate cost because assessments for the magnitude of the problem were not available. Additionally, many roads have been rocked - often through the timber harvest process - and these costs should be considered an ongoing operation expense.
WagC-A-9.1	Objective	Viability	Develop and implement a monitoring program to evaluate the performance of recovery efforts.										
WagC-A-9.1.1	Recovery Action	Viability	Measure or estimate the condition of key attributes across the watershed.										
WagC-A-9.1.1.1	Action Step	Viability	Implement standardized assessment protocols (i.e., DFG habitat assessment protocols) to ensure ESU-wide consistency.	3	60	Campbell Timberland Management, CDFG, NMFS, Private Landowners						TBD	A large proportion of the watershed has likely been habitat typed by Campbell Timber. New habitat assessment methods may have future (unknown) costs.
WagC-A-10.1	Objective	Water Quality	Improve summer rearing survival by reducing instream temperatures in potential rearing reaches. See also strategies for restoring and enhancing riparian vegetation.										
WagC-A-10.1.1	Recovery Action	Water Quality	Plant native vegetation to promote streamside shade.	2	60	CalFire, Campbell Timberland Management, Private Landowners, RWQCB						tbd	Majority of this effort should be focused in the lower watershed where the original forest cover was removed.
WagC-A-14.1	Objective	Disease, Predation, and Competition	Implement regulatory, abatement, and education measures to prevent the invasion of exotic species, (including exotic plants).	3	60	CDFG, Mendocino County, NMFS, Private Landowners						TBD	Cost is dependent on measures chosen.
WagC-A-15.1	Objective	Droughts	Work with land owners or public agencies to acquire water that would be utilized to minimize effects of droughts.										
WagC-A-15.1.1	Recovery Action	Droughts	Pursue opportunities to acquire or lease water, or acquire water rights from willing sellers, for coho salmon recovery purposes. Develop incentives for water right holders to dedicate instream flows for the protection of coho salmon (DFG 2004)(Water Code § 1707).	3	60	CDFG, NOAA RC, Private Landowners						TBD	The price at which water is sold on environmental markets is determined by negotiations between landowners and purchasing entity. Cost will vary depending on water availability and landowner participation. It is unknown if this program will gain widespread acceptance in the watershed and therefore costs cannot be estimated. It is recommended that the equations used in the State Coho Plan for socioeconomic cost be utilized when more information regarding landowner participation is gathered.
WagC-A-15.2	Objective	Droughts	Minimize water use and seek alternatives during droughts.										
WagC-A-15.2.1	Recovery Action	Droughts	DFG, SWRCB, RWQCB, CalFire, and other agencies and landowners, in cooperation with NMFS, should evaluate the rate and volume of water drafting for dust control in streams or tributaries and where appropriate, minimize water withdrawals that could impact coho salmon. These agencies should consider existing regulations or other mechanisms when evaluating alternatives to water as a dust palliative (including EPA-certified compounds) that are consistent with maintaining or improving water quality (DFG 2004).	2	60	CalFire, Campbell Timberland Management, CDFG, Private Landowners, RWQCB, SWRCB						TBD	Cost is expected to be minimal.
WagC-A-15.3	Objective	Droughts	All Federal, State and local, planning should include considerations and allowances that ensure continued operations during droughts while also providing for CCC coho salmon recovery needs.										
WagC-A-15.3.1	Recovery Action	Droughts	Identify and work with water users to minimize depletion of summer base flows from unauthorized water uses.	2	20	CDFG, NMFS, SWRCB						TBD	Estimating cost is difficult at this time.
WagC-A-20.1	Objective	Logging and Wood Harvesting	Maintain and expand California's working forestlands and forestlands held by the State, and prevent future conversion of forestlands to agriculture or other land uses.										

Wages Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
WagC-A-20.1.1	Recovery Action	Logging and Wood Harvesting	Coordinate with the agencies that authorize conversions to minimize conversions in key watersheds and discourage forestland conversions.										
WagC-A-20.1.1.1	Action Step	Logging and Wood Harvesting	Discourage rezoning forestlands to rural residential or other land uses (e.g., vineyards).	1	5	CalFire, California Coastal Conservancy, Mendocino County, NMFS, Private Landowners, USEPA, USFWS						0	Cost is expected to be the result of focused staff time directed at Mendocino BOS and various land use organizations.
WagC-A-20.2	Objective	Logging and Wood Harvesting	Provide for properly functioning watershed processes (e.g., cycles of wood, water and sediment) by promoting long term sustainable forestry practices that support coho salmon habitats.	2	30	Campbell Timberland Management, CDFG, NMFS, NOAA RC, Private Landowners						0	cost is expected to be minimal.
WagC-A-20.2.1	Recovery Action	Logging and Wood Harvesting	Minimize sediment-related effects to coho salmon habitat from road building and other soil-disturbing activities.										
WagC-A-20.2.1.1	Action Step	Logging and Wood Harvesting	Map unstable soils and use that information to guide land use decisions, road design, THPs, and other activities that can promote erosion.	3	60	CalFire, Campbell Timberland Management, CDFG						TBD	TBD - As most of the land is used for forest management most of this cost will be absorbed as part of on going forestry practices.
WagC-A-20.2.1.2	Action Step	Logging and Wood Harvesting	Extend the monitoring period and upgrade THP road maintenance after harvest.	3	60	CDFG, NMFS, Private Landowners, SWRCB						TBD	Cost is predicated on related strategies located above.
WagC-A-20.2.1.3	Action Step	Logging and Wood Harvesting	New THPs should identify problematic legacy roads within WLPZ's, decommission them, and revegetate the area with appropriate native species.	1	60	CalFire, California Coastal Conservancy, Campbell Timberland Management, CDFG, Private Landowners, RWQCB						0	
WagC-A-20.2.1.4	Action Step	Logging and Wood Harvesting	Encourage tree retention on the axis of headwall swales. Any deviations should be reviewed and receive written approval by a licensed engineering geologist.	3	60	Campbell Timberland Management, CDFG, Private Landowners, RPFs, RWQCB							
WagC-A-20.2.2	Recovery Action	Logging and Wood Harvesting	Manage riparian areas for their site potential composition and structure.										
WagC-A-20.2.2.1	Action Step	Logging and Wood Harvesting	Conserve and manage forestlands for older forest stages.	2	60	CalFire, Campbell Timberland Management, Private Landowners						TBD	TBD- the cost of this action may be minimal depending on the harvest philosophy of the landowner.
WagC-A-20.2.2.2	Action Step	Logging and Wood Harvesting	Allow trees in riparian areas to age, die, and recruit into the stream naturally.	2	60	CalFire, Campbell Timberland Management, CDFG, Private Landowners						0	
WagC-A-20.3	Objective	Logging and Wood Harvesting	Improve existing coordination and oversight of timber operations by regulatory agencies.										
WagC-A-20.3.1	Recovery Action	Logging and Wood Harvesting	Establish greater oversight and post-harvest monitoring by the permitting agency of operations within Core, Phase I and Phase II CCC coho salmon areas.										
WagC-A-20.3.1.1	Action Step	Logging and Wood Harvesting	Assign NMFS staff to conduct THP reviews of the highest priority areas using revised "Guidelines for NMFS Staff when Reviewing Timber Operations: Avoiding Take and Harm of Salmon and Steelhead" (NMFS 2004).	3	10	NMFS						0	Cost would likely be minimal in the Wages Creek watershed and consist of overview by an already funded position engaged in THP review. Cost are estimated in Ten Mile and pertain to the entire Lost Coast Diversity stratum.
WagC-A-20.3.2	Recovery Action	Logging and Wood Harvesting	Provide information to BOF regarding CCC coho salmon priorities and recommend upgrading relevant forest practices.	2									

Wages Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
WagC-A-20.3.2.1	Action Step	Logging and Wood Harvesting	Discourage all activities (e.g., roads, harvest, yarding, etc.) in unstable areas (e.g., steep slopes, headwall swales, inner gorges, streambanks, etc.) unless a detailed geological assessment is performed by a certified engineering geologist that shows there is no potential for increased sediment delivery to a watercourse as a result.	2	60	CalFire, Campbell Timberland Management, CDFG, NMFS						TBD	
WagC-A-24.1	Objective	Roads and Railroads	Minimize sediment input from existing road networks into the aquatic environment.										
WagC-A-24.1.1	Recovery Action	Roads and Railroads	Conduct actions that hydrologically disconnect roads in Core areas within ten years (from 2010).										
WagC-A-24.1.1.1	Action Step	Roads and Railroads	Reduce road densities by 10 percent over the next 10 years, prioritizing high risk areas in historical habitats or Core CCC coho salmon watersheds.	2	60	CalFire, Campbell Timberland Management, CDFG, Private Landowners						TBD	Initial focus should be directed in steeper portions of the upper watershed.
WagC-A-24.1.2	Recovery Action	Roads and Railroads	Use available best management practices for road construction, maintenance, management and decommissioning (e.g. Hagans & Weaver, 1994; Sommarstrom, 2002; Oregon Department of Transportation, 1999).	3	5	Campbell Timberland Management, Mendocino County, Private Landowners						TBD	
WagC-A-24.1.2.1	Action Step	Roads and Railroads	Licensed engineering geologists should review and approve grading on inner gorge slopes.	2	60	CalFire, California Department of Mines and Geology, Campbell Timberland Management, Private Landowners						tbd	
WagC-A-24.1.3	Recovery Action	Roads and Railroads	Minimize sediment delivery from roads during the winter period.										
WagC-A-24.1.3.1	Action Step	Roads and Railroads	Limit winter use of unsurfaced roads and recreational trails by unauthorized individuals and impacting uses to decrease fine sediment loads.	2	60	CalFire, Campbell Timberland Management, Private Landowners						0	
WagC-A-24.1.3.2	Action Step	Roads and Railroads	Conduct annual inspections of all roads prior to winter. Correct conditions that are likely to deliver sediment to streams. Hydrologically disconnect roads.	1	60	Campbell Timberland Management, Private Landowners						0	This is part of ongoing maintenance requirements. Correct conditions that are likely to deliver sediment to streams, otherwise roads will be hydrologically closed/disconnected (fills and culverts removed, natural hydrology of hillslope largely restored).
WagC-A-24.1.4	Recovery Action	Roads and Railroads	Reduce sediment sources from road networks and other actions that deliver sediment to stream channels through improved or new laws and policy.										
WagC-A-24.1.4.1	Action Step	Roads and Railroads	Establish a moratorium on new road construction within floodplains, riparian areas, unstable soils or other sensitive areas until a watershed specific and/or agency/company specific road management plan is created and implemented.	2	20	CalFire, Campbell Timberland Management, CDFG, Mendocino County Department of Public Works, RWQCB						0	
WagC-A-24.2	Objective	Roads and Railroads	Ensure all existing and new road crossings allow upstream and downstream passage for coho salmon.										
WagC-A-24.2.1	Recovery Action	Roads and Railroads	Identify high priority barriers and restore passage per NMFS' Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001a).	2	20	California Department of Mines and Geology, Campbell Timberland Management, CDFG, Private Landowners						tbd	