
SAN GREGORIO CREEK

San Gregorio Creek

Dependant Population
40.1 IP-km of potential coho salmon habitat
Coho salmon and steelhead present

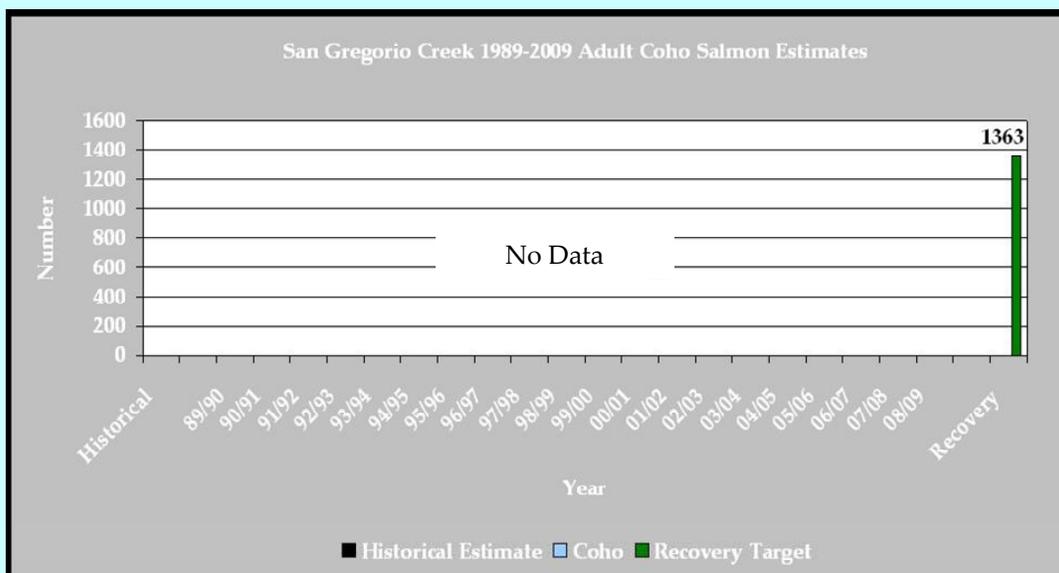
San Gregorio Creek drains approximately 52 square miles of the Santa Cruz Mountains in western San Mateo and Santa Cruz Counties. San Gregorio Creek enters the Pacific Ocean downstream of the small town of San Gregorio. About 39 percent of the San Gregorio Creek watershed is shrubland, about 32 percent coniferous forest, and about 23 percent of the watershed area is annual grassland. The San Gregorio Creek watershed has moderate erodibility after considering slope, precipitation, and the susceptibility of failure of underlying geology. The SWRCB listed the San Gregorio Creek as having water quality impaired for coliform and sediment in 2003. The water quality impairment listing determined that sediment and coliform was impairing habitats beneficial to coho salmon including migration, spawning and rearing habitats, and identified non-point sources as the probable cause. Ninety-eight percent of the San Gregorio Creek watershed is in private ownership; the remaining two percent is local-owned park lands. Housing development within the San Gregorio Creek watershed is low to moderate; approximately 1,007 housing units are present in the watershed. Of the 28 focus watersheds in the recovery plan, San Gregorio may have the most serious water diversion issues. NMFS has estimated that over 50 percent of the annual baseflow is diverted from the stream.



San Gregorio lagoon
Photo by Kristine Atkinson

The Watershed at a Glance

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



Increasing the survival of coho salmon

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

- Droughts
- Water Diversions and Impoundments
- Residential and Commercial Development
- Roads and railroads
- Storms and Flooding
- Climate Change
- Agricultural Practices
- Fire and Fuel Management

Preventing the extinction of coho salmon

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

- Improve baseflow
- Increase and improve the number off channel habitats
- Increase the amount of large wood in streams
- Decrease the number of roads near the stream and reduce impacts from remaining roads
- Improve pool habitat



Streambank erosion in San Gregorio Creek
Photo by Kristine Atkinson

Advancing recovery of coho salmon

in San Gregorio requires these priority **recovery actions**:

- Increase the frequency and functionality of off channel habitats.
- Implement, via technical assistance and/or regulatory action the flow bypass requirements sufficiently protective of all freshwater life stages.
- Promote efforts to protect riparian and floodplain areas.
- Promote supplemental programs to increase LWD recruitment to improve stream complexity, gravel retention, and pool frequency and depth.
- Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats.

... in this **core area**: Alpine Creek

Conservation Highlights

- Mid Peninsula Open Space District is performing sediment abatement programs
- Army US Army Corps of Engineers of Engineers is funding operation of a USGS installed flow gage.
- The County of San Mateo is developing water conservation development

**We Need Your
Photo Here**

San Gregorio
Photo © Your Name Here, AFFIL

Recovery Partners

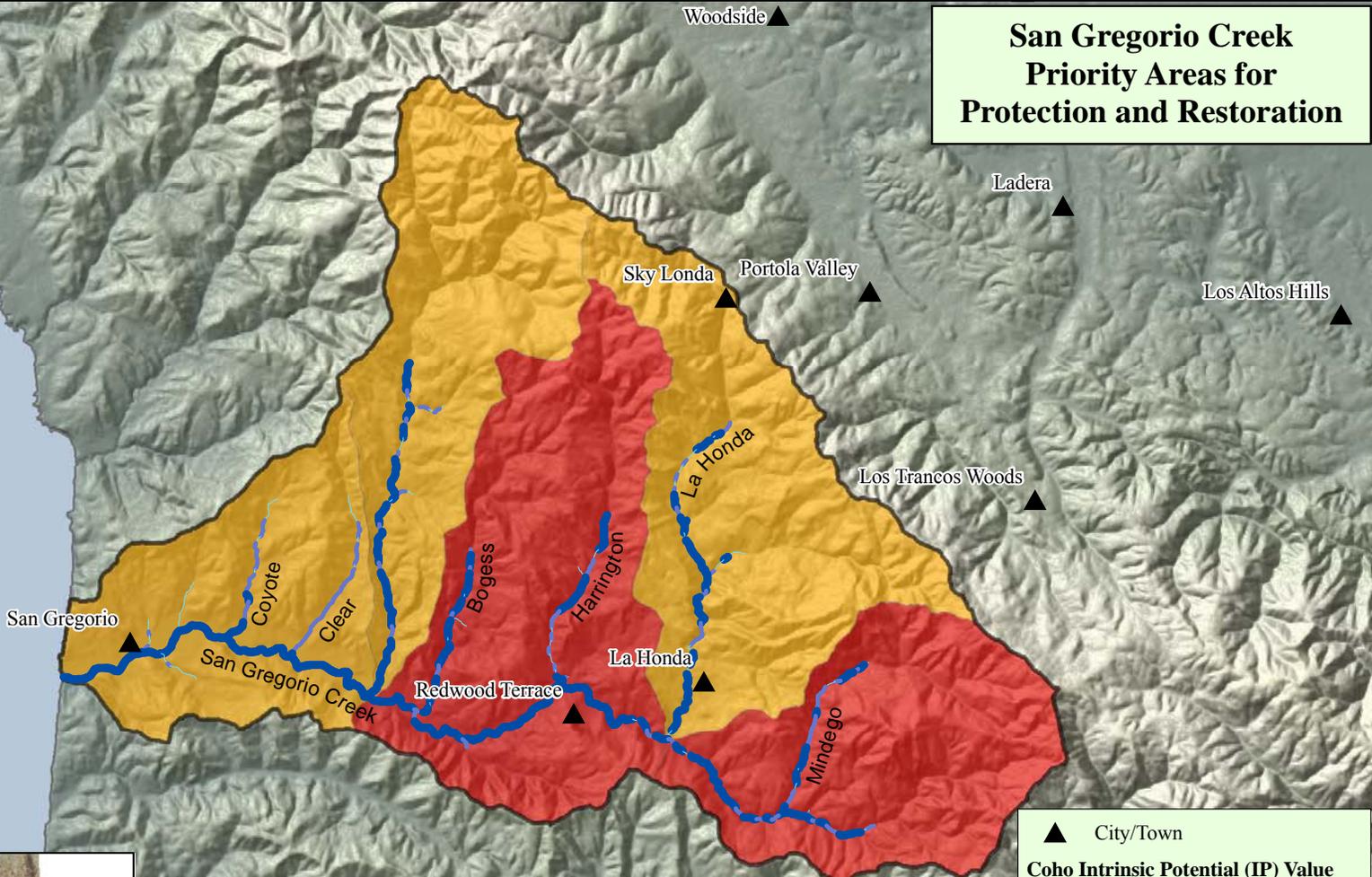
Mid-Peninsula Regional Open Space District
Coastal Watershed Council
US Army Corps of Engineers
Monterey Bay Sanctuary Citizen Watershed
Monitoring Network
Stillwater Sciences
Natural Heritage Institute
San Gregorio Environmental Resource Center
San Mateo RCD

Immediate Needs

Address allocation of instream flow ✓
Reduce sediment input ✓
Address lack of instream structures ✓



San Gregorio 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
San Gregorio 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	79%	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*	<200m ²	200-1800	1800-3600	>3600
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	Good	Good	Smolts	Estuary	Estuary				
Flow Panel	Decision Matrix	NA	NA	Smolts	Hydrology	Passage Flows	>75 (score)	51-75	35-50	<35
SEC	SWRCB	10.4 / 10 IP-km	Poor	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	<50%	Poor	Multiple Life Stages	Floodplain	Floodplain Connectivity	<50%	50-80%	>80%	not defined
NMFS	CDF CWHR	NA	Good	Multiple Life Stages	Hydrology	Stand Age			>40 years old	
SEC	NLCDB	0.29%	Very Good	Multiple Life Stages	Hydrology	Impervious Surfaces	>12.01% of WS by area	7.01-12%	3.01-7%	0-3%
SEC	FMMP	2.57%	Good	Multiple Life Stages	Land disturbance	Agriculture	>30% of WS by area	10-30%	0.1-10%	<0.1%
NMFS	CDF THP Dataset	0%	Very Good	Multiple Life Stages	Land disturbance	Timber Harvest	>35% of WS by area	25 - 35%	10 - 25%	<10%
SEC	Many Sources	1.2	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	55-69%	Good	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	≤ 69% density "D" across IP-km	70 -79%	> 80%	
NMFS	CDF THP Dataset	3 mi/sq.mi.	Fair	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	3.2 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	Fair	Fair	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/m2	Poor	Summer Rearing	Viability	Juvenile Density	<0.2 fish/m2	0.2-0.5 fish/m2	0.5-1.0 fish/m2	>1.0 fish/m2
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

San Gregorio 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	Very High	Medium	Very High	Medium	Very High	Medium	Very High
2	Water Diversion and Impoundment	High	High	Very High	Medium	Very High	Medium	Very High
3	Residential and Commercial Development	Very High	High	High	High	High	High	Very High
4	Roads and Railroads	Medium	High	Very High	Medium	High	Medium	High
5	Storms and Flooding	Medium	High	Medium	High	High	High	High
6	Climate Change	High	Medium	High	Medium	High	Medium	High
7	Agricultural Practices	High	Medium	Medium	Medium	High	Medium	High
8	Fire and Fuel Management	High	Medium	High	Medium	Medium	Medium	High
9	Fishing and Collecting	High	-	Medium	Low	Low	-	Medium
10	Recreational Areas and Activities	Medium	Medium	Medium	Medium	Medium	Medium	Medium
11	Livestock Farming and Ranching	Medium	Low	Medium	Medium	Medium	Medium	Medium
12	Channel Modification	Medium	Low	Medium	Medium	Low	Medium	Medium
13	Logging and Wood Harvesting	Medium	Low	Medium	Medium	Low	Medium	Medium
14	Hatcheries and Aquaculture	Medium	-	-	Low	Low	Low	Low
15	Disease, Predation, and Competition	-	-	-	-	Medium	-	Low
16	Mining	-	-	-	Low	-	-	Low
Threat Status for Targets and Project		Very High	High	Very High	High	Very High	High	Very High

San Gregorio Creek (Santa Cruz Mountains) 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		
SGC-A-2.1	Objective	Floodplain	Improve over-winter survival by increasing the frequency and functionality of off-channel habitats.										
SGC-A-2.1.1	Recovery Action	Floodplain	Create flood refuge habitat, such as hydrologically connected floodplains with riparian forest.										
SGC-A-2.1.1.1	Action Step	Floodplain	Delineate reaches possessing both potential winter rearing habitat and floodplain areas.	2	5	CDFG, NMFS, Private Consultants, San Mateo County	10.00	10.00	10.00	10.00	10.00	50	Significant work has occurred in recent years in San Gregorio Creek and total costs could be reduced by leveraging existing information.
SGC-A-2.1.1.2	Action Step	Floodplain	Target habitat restoration and enhancement that will function between winter base flow and flood stage.	2	60	California Coastal Conservancy, NMFS, Private Consultants, Private Landowners						TBD	Costs cannot be determined at this time. Implementation will depend on landowner participation.
SGC-A-2.1.2	Recovery Action	Floodplain	Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats.	1	60	CDFG, NMFS, NOAA RC, San Mateo County, San Mateo RCD, USACE						TBD	Costs cannot be estimated at this time. Costs will vary depending on restoration action and total number of projects implemented.
SGC-A-2.1.3	Recovery Action	Floodplain	Existing areas with floodplains or off channel habitats should be protected from future urban development of any kind.	1	60	County of San Mateo, FEMA, Private Landowners, Public, USACE						0	
SGC-A-3.1	Objective	Hydrology	Improve survival at all life stages by restoring the historical spatial and temporal pattern of surface flows throughout spawning, rearing, and migration areas.										
SGC-A-3.1.1	Recovery Action	Hydrology	Patterns of water runoff, including surface and subsurface drainage, should match, to the greatest extent possible, the natural hydrologic pattern for the watershed in timing, quantity, and quality.										
SGC-A-3.1.1.1	Action Step	Hydrology	Work with SWRCB and landowners to re-establish natural flow regimes to improve adult migration to spawning habitats and smolt outmigration.	2	10	CDFG, NMFS, SWRCB						TBD	
SGC-A-3.1.1.2	Action Step	Hydrology	Work with SWRCB and landowners to improve over summer survival of juveniles by re-establishing summer baseflows (from July 1 to October 1) in rearing reaches that are currently impacted by water use.	1	20	CDFG, County of San Mateo, Farm Bureau, FishNet 4C, NMFS, NRCS, San Mateo RCD, SWRCB, Trout Unlimited						TBD	Costs cannot be determined at this time but may be significant and will require close coordination with NGOs, private landowners, regulatory and non regulatory agencies.
SGC-A-3.1.1.3	Action Step	Hydrology	Establish a comprehensive stream flow evaluation program to determine instream flow needs for coho salmon.	1	10	California Coastal Conservancy, CDFG, NMFS, SWRCB						TBD	Significant monitoring efforts are currently occurring in the San Gregorio watershed. Data from this monitoring effort should be evaluated and incorporated into the stream flow evaluation program as a means to reduce overall costs.
SGC-A-3.1.2	Recovery Action	Hydrology	Promote, via technical assistance and/or regulatory action, the reduction of water use affecting the natural hydrograph, development of alternative water sources, and implementation of diversion regimes protective of the natural hydrograph.										
SGC-A-3.1.2.1	Action Step	Hydrology	Promote off-channel storage to reduce impacts of water diversion (e.g. storage tanks for rural residential users).	2	20	Farm Bureau, Gold Ridge RCD, NRCS, Trout Unlimited						TBD	This recommendation should be incorporated into all future regulatory reviews of water rights applications and 1600 Agreements in the San Gregorio watershed.
SGC-A-3.1.2.2	Action Step	Hydrology	Evaluate requests for on-stream dams above coho migratory reaches for effects on the natural hydrograph and the supply of spawning gravel for recruitment downstream (DFG 2004).	3	60	CDFG, County of San Mateo, NMFS, SWRCB						0	This recommendation should be incorporated into all future regulatory reviews of water rights applications and 1600 Agreements in the San Gregorio watershed.

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							FY1	FY2	FY3	FY4	FY5		
SGC-A-3.1.2.3	Action Step	Hydrology	Encourage compliance with the most recent update of NMFS' Water Diversion Guidelines.	1	60	Coastside Land Trust, County of San Mateo, Farm Bureau, FishNet 4C, Mid Peninsula Open Space District, NMFS, NRCS, POST, Private Landowners, San Mateo RCD, SWRCB, Water Agencies						0	Cost associated with disseminating guidelines is minimal. Costs associated with compliance was not estimated.
SGC-A-3.1.2.4	Action Step	Hydrology	Support SWRCB in regulating the use of streamside wells and groundwater.	2	60	CDFG, County of San Mateo, Private Landowners, SWRCB, USFWS						0	
SGC-A-3.1.3	Recovery Action	Hydrology	Provide incentives to water rights holders willing to convert some or all of their water right to instream use via petition change of use and §1707 (DFG 2004).	1	60	California Coastal Conservancy, CDFG, County of San Mateo, Farm Bureau, NOAA RC, NRCS, POST, Private Landowners, SWRCB, USFWS						TBD	The price at which water is sold on environmental water markets is determined by negotiations between landowners and purchasing entities. The aggregate fiscal cost of water acquisition will depend on the quantity of water acquired and whether water rights will be permanently transferred or purchased for single periods.
SGC-A-3.1.4	Recovery Action	Hydrology	Encourage the use of native vegetation in new landscaping to reduce the need for watering and application of herbicides, pesticides, and fertilizers.	3	60	County of San Mateo, Farm Bureau, NOAA RC, NRCS, POST, Private Landowners, San Mateo RCD, USACE, USEPA, USFWS						0	
SGC-A-3.2	Objective	Hydrology	Require streamflow gauging devices to determine the level of impairment to natural flow.										
SGC-A-3.2.1	Recovery Action	Hydrology	Continue to fund the maintenance and operation of the San Gregorio gauge.	2	5	SWRCB, USACE, USGS	20.00	20.00	20.00	20.00	20.00	100	
SGC-A-5.1	Objective	Passage	Identify and remove existing passage barriers.										
SGC-A-5.1.1	Recovery Action	Passage	Identify high priority barriers and restore passage per NMFS' Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001a).	3	20	California Coastal Conservancy, CDFG, County of San Mateo						0	Existing passage assessments should prove adequate for this recommendation.
SGC-A-5.1.2	Recovery Action	Passage	Systematically work to restore coho salmon passage at county facilities (DFG 2004) and other facilities and infrastructure that create impediments to passage.	3	30	California Coastal Conservancy, CalTrans, CDFG, County of San Mateo, NRCS, POST, Private Landowners, San Mateo RCD, USACE, USFWS						TBD	Most of the existing blockages and impediments have been identified in the San Gregorio watershed. Costs will vary depending on proposed passage solutions. Caltrans (DFG 2004) estimated culvert replacement cost, with an upgrade in flow capacity, would range from \$30,000 to \$2 million.
SGC-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.										
SGC-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).	1	60								

San Gregorio Creek (Santa Cruz Mountains) 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		
SGC-A-6.1.1.1	Action Step	Pool Habitat	Identify historic CCC coho salmon habitats lacking in channel complexity, and promote restoration projects designed to create or restore complex habitat features that provide for localized pool scour, velocity refuge, and cover. Prioritize Core areas first followed by Phase I areas.	1	30	California Coastal Conservancy, CDFG, County of San Mateo, FEMA, FishNet 4C, NOAA RC, NRCS, Private Consultants, San Mateo County, San Mateo RCD, USACE, USEPA, USFWS						TBD	Costs cannot be determined at this time.
SGC-A-6.1.1.2	Action Step	Pool Habitat	Incorporate large woody material into stream bank protection projects, where appropriate. Do not use aqua logs (cylindrical concrete rip rap).	2	60	CDFG, FEMA, NMFS PRD, NRCS, POST, Private Consultants, Private Landowners, RWQCB, San Mateo County, San Mateo RCD, USACE						TBD	Project costs cannot be estimated at this time because the number of future stream bank protection projects is unknown and cannot be reasonably predicted. Costs can vary significantly depending on access and type of project.
SGC-A-6.1.1.3	Action Step	Pool Habitat	Educate landowners, land managers, and County and municipal staffs on the importance of LWD to coho survival and recovery, and watershed processes.	1	5	CalFire, CalTrans, CDFG, Coastside Land Trust, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, NMFS, NRCS, POST, Private Consultants, Private Landowners, RWQCB, San Mateo County, San Mateo RCD, State Parks, Trout Unlimited, USACE, USFWS	3.00	3.00	3.00	3.00	3.00	15	Information and priorities in the recovery plan can serve as a source of information and future guidance.
SGC-A-6.1.1.4	Action Step	Pool Habitat	Implement a large woody debris supplementation program.	1	20	California Coastal Conservancy, CalTrans, CDFG, Coastside Land Trust, County of San Mateo, NMFS, NRCS, San Mateo RCD, Trout Unlimited, USACE	100	100	100	100	100	2,000	This is a high priority for the San Gregorio watershed. Overall costs may be reduced by assessing and leveraging past surveys and ongoing assessment in the watershed to prioritize key areas. However, due to the urbanized nature of the watershed and flooding concerns, it is anticipated that most LWD structures will require engineering.
SGC-A-6.1.2	Recovery Action	Pool Habitat	Encourage landowners to implement woody debris restoration projects as part of their ongoing operations in stream reaches where large woody debris is lacking.	1	60	CalFire, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, Mid Peninsula Open Space District, NMFS, NRCS, POST, San Mateo County, San Mateo RCD, USACE, USFWS						0	Costs should be minimal. This recommendation should be adopted as a recurring recommendation for all restoration projects by individuals, agencies, and organizations that permit and fund restoration and enhancement projects.
SGC-A-8.1	Objective	Sediment	Improve habitat conditions at multiple life stages by reducing sediment inputs to the stream at the watershed scale.										
SGC-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.										

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							FY1	FY2	FY3	FY4	FY5		
SGC-A-8.1.1.1	Action Step	Sediment	NMFS and other stakeholders will work with RCD or NRCS to encourage hiring of consultants to conduct road assessments (first for subwatersheds in Core areas, then for Phase I areas).	2	5	CalFire, California Coastal Conservancy, CalTrans, CDFG, NOAA RC, NRCS, POST, Private Consultants, RWQCB, San Mateo RCD, USACE	100	100	100	100	100	500	Some road assessments have already been conducted for San Gregorio Creek and the overall cost estimate may be less than predicted.
SGC-A-8.1.2	Recovery Action	Sediment	Address sources from trails, road networks, agricultural fields, and other sources that deliver sediment and runoff to stream channels.										
SGC-A-8.1.2.1	Action Step	Sediment	Locations for sediment catchment basins should be identified, developed and maintained, where appropriate.	3	60	CalFire, CalTrans, County of San Mateo, Farm Bureau, FishNet 4C, Mid Peninsula Open Space District, NRCS, POST, Private Landowners, RWQCB, San Mateo RCD						TBD	Cost cannot be estimated at this time. Ongoing maintenance is critical to the success of this recovery action.
SGC-A-8.1.2.2	Action Step	Sediment	Restoration projects that upgrade or decommission high risk roads in Core areas should be considered an extremely high priority for funding (e.g., PCSRF). Where no Core areas are designated, apply this action to Phase I areas.	2	30	CalFire, CalTrans, CDFG, NMFS, NRCS, San Mateo County, San Mateo RCD						TBD	Cost could not be estimated at this time.
SGC-A-8.1.3	Recovery Action	Sediment	Work with landowners to assess the effectiveness of erosion control measures throughout the winter period.	3	60	California Coastal Conservancy, CDFG, Farm Bureau, NMFS, NRCS, Private Landowners, San Mateo RCD						TBD	This program should be implemented with the close coordination of local watershed groups.
SGC-A-8.1.3.1	Action Step	Sediment	Permitting agencies (State, Federal, and local) should evaluate all authorized erosion control measures during the winter period.	2	60	CalFire, Campbell Timberland Management, FEMA, NMFS PRD, NRCS, RWQCB, USACE, USEPA, USFWS						0	While costs are involved in this recommendation, inspections should be considered a standard business practice by all regulatory agencies and this action should not be considered as an additional cost.
SGC-A-8.1.4	Recovery Action	Sediment	Solicit cooperation from NRCS, RCDs, Farm Bureau, and others to devise incentive programs and incentive-based approaches to encourage and support landowners who conduct operations in a manner compatible with CCC coho salmon recovery priorities.	3	60	California Coastal Conservancy, CDFG, Farm Bureau, NMFS, NRCS, Private Landowners, San Mateo RCD						TBD	
SGC-A-9.1	Objective	Viability	Develop and implement a monitoring program to evaluate the performance of recovery efforts.										
SGC-A-9.1.1	Recovery Action	Viability	Measure or estimate the condition of key attributes across the watershed.										
SGC-A-9.1.1.1	Action Step	Viability	Develop standardized watershed assessments within sub-watersheds to define limiting factors specific to those areas. Encourage all major landowners to develop similar assessment methods.	2	15	California Coastal Conservancy, CDFG, FishNet 4C, NMFS, NRCS, Private Consultants, San Mateo County, San Mateo RCD, Trout Unlimited, USFWS						TBD	All assessments should use standardized methods. Methods should be consistent across the CCC ESU or at a minimum the Santa Cruz Mountains Diversity Stratum. Results from past assessments can be used in some circumstances to jump start restoration actions and need not necessarily wait upon completion of a standardized assessment protocol.

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							FY1	FY2	FY3	FY4	FY5		
SGC-A-9.1.2	Recovery Action	Viability	Monitor population status for response to recovery actions.	3	12	California Coastal Conservancy, CDFG, NMFS						TBD	Primary emphasis for monitoring should be placed on adult assessments.
SGC-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.										
SGC-A-10.1.1	Recovery Action	Water Quality	Implement actions to maintain and restore water temperatures to meet habitat requirements for CCC coho salmon in specific streams (DFG 2004).										
SGC-A-10.1.1.1	Action Step	Water Quality	Implement education programs and modify policies and procedures to improve riparian corridor protection, maintain channel integrity, implement alternatives to hard bank protection, and retain large woody debris.	2	10	CalFire, California Coastal Conservancy, County of San Mateo, Farm Bureau, FishNet 4C, NMFS PRD, NOAA RC, NRCS, Private Landowners, RWQCB, San Mateo RCD	25.00	25.00	25.00	25.00	25.00	250	
SGC-A-10.1.1.2	Action Step	Water Quality	Encourage County of San Mateo to establish wider riparian buffers in residential and urban areas.	2	10	CDFG, FishNet 4C, NMFS, Private Landowners, RWQCB, USEPA, USFWS	5.00	5.00	5.00	5.00	5.00	50	Costs are a rough estimate and may vary depending on County approach to adopting the recommendation. This will likely be a sensitive issue for many landowners with property located next to riparian areas.
SGC-A-10.1.1.3	Action Step	Water Quality	Plant native vegetation to promote streamside shade.	3	60	CalFire, California Coastal Conservancy, CDFG, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, NMFS, NRCS, POST, Private Consultants, Private Landowners, San Mateo RCD, USACE, USEPA, USFWS						TBD	The fiscal costs of riparian revegetation or planting depend on the complexity of the project undertaken, the remoteness of the parcel of land to be treated, and the degree of site preparation needed. According to DFG 2004, Evergreen Funding Consultants suggest a budget of between 5,000 dollars and 135,000 dollars per acre.
SGC-A-11.1	Objective	Agricultural Practices	Promote agricultural practices that protect and restore habitats for CCC coho salmon.										
SGC-A-11.1.1	Recovery Action	Agricultural Practices	Promote dry-land farming instead of irrigated crops to reduce impacts of water diversions.	3	60	CDFG, Farm Bureau, NMFS, NRCS, SWRCB						TBD	
SGC-A-11.1.2	Recovery Action	Agricultural Practices	Work within the agricultural community to educate landowners to enhance practices that provide for properly functioning watershed processes.	2	20	California Coastal Conservancy, CDFG, County of San Mateo, Farm Bureau, FishNet 4C, San Mateo RCD, Trout Unlimited, UC Extension	2.00	2.00	2.00	2.00	2.00	40	Existing templates could be used in San Mateo County, which would significantly minimize costs. Costs are a rough estimate of ongoing education and outreach to landowners.
SGC-A-11.1.3	Recovery Action	Agricultural Practices	Implement programs similar to the Sotoyome Resource Conservation District's Fish Friendly Farming practices (DFG 2004).	2	60	County of San Mateo, Farm Bureau, FishNet 4C, NRCS, San Mateo RCD, UC Extension, USFWS						TBD	Existing templates could be used in San Mateo County, which would significantly minimize costs. Sotoyome program provides a number of minimization measures to reduce impacts to listed salmonids and their habitats. However, these measures are not the equivalent of no-take standards.

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							FY1	FY2	FY3	FY4	FY5		
SGC-A-11.1.4	Recovery Action	Agricultural Practices	Maintain intact and properly functioning riparian buffers to filter and prevent fine sediment input from entering streams.										
SGC-A-11.1.4.1	Action Step	Agricultural Practices	Maintain and enhance riparian stream buffer areas near agricultural activities that allow functional riparian areas to develop.	2	10	CDFG, Coastside Land Trust, Conservation Fund, County of San Mateo, Farm Bureau, FishNet 4C, Mid Peninsula Open Space District, NMFS, NRCS, POST, RWQCB, San Mateo RCD						TBD	Costs of maintaining existing buffers would result in minimal expenditures. However, taking agricultural land adjacent to streams in order to establish a buffer would result in a financial constraint to the landowner. Lands that are in organizations such as land trusts or other entities should be able to implement this recommendation more readily.
SGC-A-11.1.4.2	Action Step	Agricultural Practices	Work with landowners to assess the effectiveness of erosion control measures throughout the winter period.	2	3	Farm Bureau, NRCS, POST, RWQCB, San Mateo RCD	16.67	16.67	16.67			50	
SGC-A-15.1	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.										
SGC-A-15.1.1	Recovery Action	Droughts	Identify and eliminate depletion of summer base flows from unauthorized water uses.										
SGC-A-15.1.1.1	Action Step	Droughts	Encourage SWRCB to bring illegal water diverters and out-of-compliance diverters into compliance with State law.	1	60	SWRCB						TBD	This should be considered an ongoing business practice but due to the constraints of the SWRCB from lack of staffing an indeterminate cost is associated with this recommendation.
SGC-A-15.1.2	Recovery Action	Droughts	Implement water conservation strategies that provide for drought contingencies without relying on interception of surface flows or groundwater depletion.	3	20	California Coastal Conservancy, RWQCB, San Mateo County, SWRCB						TBD	Costs associated with this alternative are significant and may be infeasible in a small watershed like San Gregorio.
SGC-A-15.1.2.1	Action Step	Droughts	Develop and implement critical flow levels for stream reaches impacted by water diversions.	1	10	CDFG, NMFS HCD, NMFS PRD, RWQCB, San Mateo County, SWRCB, USACE						TBD	Significant monitoring efforts are currently occurring in the San Gregorio watershed. Data from this monitoring effort should be evaluated and incorporated into the stream flow evaluation program as a means to reduce overall costs. Particular focus of this effort should be directed at stream reaches with high IP values and significant diversions. Of all the watersheds targeted in this recovery plan, San Gregorio is most heavily over allocated.
SGC-A-15.1.2.2	Action Step	Droughts	Critical flow values should include minimum bypass flow requirements to support upstream adult migration during winter months and juvenile rearing in the summer and fall months.	1	10	CDFG, NMFS HCD, NMFS PRD, SWRCB, Trout Unlimited, USACE						0	
SGC-A-15.1.2.3	Action Step	Droughts	If predicted flows are below a level considered critical to maintain viable rearing habitat for salmonids, measures to reduce water consumption should be initiated by municipal water suppliers and other users in the watershed through conservation programs.	1	60	San Mateo County, SWRCB						TBD	Costs can be estimated when critical flow values are established.
SGC-A-15.1.3	Recovery Action	Droughts	Investigate feasibility of desalination to prevent stream dewatering and ensure a more stable source of water overtime.	3	20	California Coastal Conservancy, RWQCB, San Mateo County, SWRCB						TBD	Costs associated with this alternative are significant and may be infeasible in a small watershed such as San Gregorio Creek.
SGC-A-15.1.4	Recovery Action	Droughts	Increase enforcement patrols by DFG and NMFS OLE in sensitive spawning and rearing areas.	2	60	CDFG, NMFS OLE	1.67	1.67	1.67	1.67	1.67	100	Cost is a rough estimate of increased enforcement efforts in the San Gregorio watershed.
SGC-A-16.1	Objective	Fire and Fuels Management	Develop measures protective of salmonids during fire fight actions.										

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SGC-A-16.1.1	Recovery Action	Fire and Fuels Management	Establish fire contingency plan developed by experts from CalFire, local fire districts, San Mateo RCD, and regulatory agencies with expertise in fisheries issues.	2	3	CalFire, County of San Mateo, FishNet 4C, NMFS, San Mateo RCD, USFWS	33.33	33.33	33.33			100	Cost may be significantly reduced if existing plans and protocols are adopted (e.g. USFS protocols). Costs may be higher if site specific constraints and agency and community reluctance to adopt existing NMFS and USFWS approved protocols exists.
SGC-A-16.1.1.1	Action Step	Fire and Fuels Management	Disseminate plan to all local fire fighting agencies.	2									
SGC-A-16.1.1.2	Action Step	Fire and Fuels Management	Encourage CalFire to provide plan to all non-County fire fighters when providing fire fighting assistance in the San Gregorio Creek watershed (and all other watersheds in the County).	2	3	CalFire, San Mateo County, San Mateo RCD	0.17	0.17	0.17			1	
SGC-A-16.1.1.3	Action Step	Fire and Fuels Management	In the event of a wildfire, we recommend CalFire Resource Advisors request ESA consultation (or technical assistance) from the resource agencies regarding the incident. The resource agencies can provide guidance regarding critical resources in the area that may be affected by fire fighting actions.	2	60	CalFire, CDFG, NMFS PRD, USFWS						0	Some minor costs will be associated with requesting staff time, but the costs should be offset by savings from post fire remediation requirements.
SGC-A-16.1.1.4	Action Step	Fire and Fuels Management	Immediately implement appropriate sediment control measures following completion of fire suppression while fire fighters and fire fighting equipment are on site.	1	60	CalFire						0	This should be considered a standard business practice for all fire fighting agencies and will result in a long term cost savings.
SGC-A-16.1.1.5	Action Step	Fire and Fuels Management	Implement sedimentation reduction techniques in concert with prescribed fire techniques to minimize sediment impacts to various coho salmon life stages.	2	60	CalFire, NRCS						0	This should be considered a standard business practice.
SGC-A-16.1.2	Recovery Action	Fire and Fuels Management	Disseminate NMFS' October 9, 2007, jeopardy biological opinion on the use of fire retardants to local fire fighting agencies and CalFire.										
SGC-A-16.1.2.1	Action Step	Fire and Fuels Management	Avoid use of aerial fire retardants and foams within 300 feet of riparian areas throughout the current range of CCC coho salmon.	2	60	CalFire							This recommendation should be adopted in areas where life and infrastructure and not endangered by fire.
SGC-A-16.1.2.2	Action Step	Fire and Fuels Management	Develop guidance that directs CalFire and other agencies and organizations using fire retardants to conduct an assessment of site conditions following wildfire where fire retardants have entered waterways, to evaluate the changes to on site water quality and the structure of the biological community.	2	60							TBD	Guidance could include informing CalFire of sensitive biological resources in the watershed as well as recommendations regarding sensitive water source location (e.g., San Gregorio lagoon).
SGC-A-16.2	Objective	Fire and Fuels Management	Identify historical fire frequency, intensities and durations and manage fuel loads in a manner consistent with historical parameters.										
SGC-A-16.2.1	Recovery Action	Fire and Fuels Management	Conduct fuel load monitoring and compare the results to estimated historical fuel loads.										
SGC-A-16.2.1.1	Action Step	Fire and Fuels Management	Review prescribed fire plans to ensure they provide adequate protection for riparian corridors.	2	5	CalFire, CDFG, NMFS, USFWS	2.00	2.00	2.00	2.00	2.00	10	
SGC-A-16.2.1.2	Action Step	Fire and Fuels Management	Work with County planners to define future impacts of proposed urban and infrastructure development on fire suppression and fuel load buildup.	3	60	CalFire, County of San Mateo						TBD	
SGC-A-23.1	Objective	Residential and Commercial Development	Improve stream maintenance practices to protect instream complexity, hydrologic processes and riparian functions.										
SGC-A-23.1.1	Recovery Action	Residential and Commercial Development	Assess efficacy and necessity of ongoing stream maintenance practices and evaluate, avoid, minimize and/or mitigate their impacts to rearing and migrating CCC coho salmon.	3	10	County of San Mateo, Private Landowners, Public, San Mateo RCD						TBD	Little organized and systematic stream maintenance is believed to occur in San Gregorio. However, periodic maintenance (often unpermitted) likely occurs in the watershed and its impact should be evaluated.

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SGC-A-23.1.2	Recovery Action	Residential and Commercial Development	Maintain current LWD, boulders, and other structure-providing features to maintain current stream complexity, pool frequency, and depth (DFG 2004).	1	60	California Coastal Conservancy, CalTrans, CDFG, FEMA, NMFS PRD, NRCS, POST, Private Consultants, Private Landowners, RWQCB, San Mateo County, San Mateo RCD, State Parks, USACE						0	This should be considered a standard business practice for all organizations involved in bank stabilization activities.
SGC-A-23.1.2.1	Action Step	Residential and Commercial Development	Remove logs and debris from streams only as a "last resort" (i.e., failure to remove them will certainly cause the loss of an essential facility) after consultation with a hydrologist and/or qualified fisheries biologist.	1	60	CalTrans, CDFG, County of San Mateo, NMFS PRD, NRCS, POST, Private Consultants, Private Landowners, Public, RWQCB, San Mateo RCD, USACE						TBD	Costs may be highly variable depending on water year and flooding. Years of lower rainfall will likely have less need for site by site evaluations and costs will be less (or even non-existent) in those years. Costs will be significantly greater in wet years.
SGC-A-23.1.2.2	Action Step	Residential and Commercial Development	Develop a mitigation policy that requires in-kind replacement of removed large woody debris at a 3:1 ratio.	2	5	CalTrans, County of San Mateo, Public, RWQCB						0	Costs for this recommendation were assessed for the Pescadero watershed. These same costs could be applied on a County-wide basis.
SGC-A-23.1.3	Recovery Action	Residential and Commercial Development	Thoroughly investigate the ultimate cause of channel instability prior to engaging in site specific channel modifications and maintenance. Identify and target remediation of watershed process disruption as an overall priority.	1	60	California Coastal Conservancy, CalTrans, CDFG, FEMA, NMFS PRD, NRCS, POST, Private Consultants, Private Landowners, RWQCB, San Mateo County, San Mateo RCD, State Parks, USACE						0	This should be considered a standard business practice for all organizations involved in bank stabilization activities.
SGC-A-23.2	Objective	Residential and Commercial Development	Maintain and restore hydrologic function, protect riparian and floodplain areas, and minimize adverse effects to water quality and instream rearing habitats resulting from commercial and urban development.										
SGC-A-23.2.1	Recovery Action	Residential and Commercial Development	Encourage the State Water Resources Control Board to evaluate water rights compliance in all sub-watersheds where new development is proposed.	1	60	SWRCB						0	
SGC-A-23.2.2	Recovery Action	Residential and Commercial Development	As mitigation for hydrograph consequences, municipalities and counties should investigate funding of larger detention devices in key watersheds with ongoing channel degradation or in sub-watersheds where impervious surface area > 10 percent.	2	60	RWQCB, San Mateo County, USEPA						TBD	
SGC-A-23.2.3	Recovery Action	Residential and Commercial Development	Existing areas with floodplains or off channel habitats should be protected from future urban development of any kind.										Floodplains provide essential over-wintering habitat. Costs of implementing many of the following recommendations will be significant. However, benefits to this critical lifestage will likely be very significant.
SGC-A-23.2.3.1	Action Step	Residential and Commercial Development	Land use zoning should be appropriate to the site and be tolerant to anticipated conditions (e.g., tolerant to frequent flooding).	1	60	County of San Mateo, FEMA, Private Landowners, Public, USACE						0	
SGC-A-23.2.3.2	Action Step	Residential and Commercial Development	Encourage San Mateo County to develop a property easement acquisition funds and acquire grant monies to purchase, through a buyout program, eroding private properties in riparian corridors or properties subject to frequent flooding.	3	60	County of San Mateo, FEMA						TBD	

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SGC-A-23.2.3.3	Action Step	Residential and Commercial Development	Design new development to allow streams to meander in historical patterns, Protecting riparian zones and their floodplains or channel migration zones averts the need for bank erosion control in most situations.	1	60	CalTrans, County of San Mateo, FEMA, Private Landowners, USACE						0	Costs should be minimal if this concept is adopted early in the planning process for all new development.
SGC-A-23.2.3.4	Action Step	Residential and Commercial Development	Maintain intact and properly functioning riparian buffers to filter and prevent fine sediment input from entering streams.	1	60	CalFire, CalTrans, County of San Mateo, Farm Bureau, Mid Peninsula Open Space District, POST, Private Landowners, RWQCB, USACE						0	
SGC-A-23.2.4	Recovery Action	Residential and Commercial Development	Avoid, or at a minimum regulate, the use of commercial and industrial products (e.g. pesticides) with high potential for contamination of local waterways.										
SGC-A-23.2.4.1	Action Step	Residential and Commercial Development	Encourage increased oversight by appropriate regulatory agencies of activities that use hazardous commercial and industrial products in the watershed.	3	60	County of San Mateo, RWQCB, USEPA						TBD	
SGC-A-23.2.5	Recovery Action	Residential and Commercial Development	Sediment from existing and future commercial and urban development should be reduced to magnitudes appropriate to the geological setting of the watershed, resulting in no net increase in sedimentation over natural limits.										
SGC-A-23.2.5.1	Action Step	Residential and Commercial Development	Design new developments to avoid unstable slopes, wetlands, areas of high habitat value, and similarly constrained sites that occur adjacent to a CCC coho salmon watercourse.	1	60	CalFire, County of San Mateo, FEMA, Mines and Geology, NRCS, POST, Private Landowners, San Mateo RCD, USACE						0	Stringent review by permitting and oversight agencies is anticipated to reduce cost associated with poorly planned and improperly located developments.
SGC-A-23.2.5.2	Action Step	Residential and Commercial Development	Disperse discharge from new or upgraded commercial and residential areas into a spatially distributed network rather than a few point discharges, which can result in locally severe erosion and disruption of riparian vegetation and instream habitat.	2	60	CalFire, County of San Mateo, FEMA, HUD, NRCS, Private Landowners, USACE							
SGC-A-23.3	Objective	Residential and Commercial Development	Minimize rate, and subsequent adverse affects, of land conversion to residential and commercial development.										
SGC-A-23.3.1	Recovery Action	Residential and Commercial Development	Coordinate with the agencies that authorize conversions to minimize conversions in key watersheds and discourage forestland conversions.	2	60	CalFire, CDFG, County of San Mateo							
SGC-A-23.3.2	Recovery Action	Residential and Commercial Development	Discourage Counties from rezoning forestlands to rural residential or other land uses (e.g., vineyards).										
SGC-A-23.3.2.1	Action Step	Residential and Commercial Development	Discourage home building or other incompatible land use in areas identified as timber production zones (TPZ).	2	60	CalFire, CDFG, County of San Mateo, NMFS, San Mateo County						0	
SGC-A-23.3.2.2	Action Step	Residential and Commercial Development	Encourage infill and high density developments over dispersal of low density rural residential in undeveloped areas.	3	60	County of San Mateo, Public						0	
SGC-A-23.3.3	Recovery Action	Residential and Commercial Development	Encourage the use of native vegetation in new landscaping to reduce the need for watering and application of herbicides, pesticides, and fertilizers.	3	60	County of San Mateo, FishNet 4C, NRCS, POST, San Mateo RCD, USACE, USFWS						0	Incentives and alternative could vary depending on receptiveness of local landowners and the availability of financial resources and local expertise.

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SGC-A-23.3.4	Recovery Action	Residential and Commercial Development	Identify areas at high risk of conversion, and develop incentives and alternatives for landowners that discourage conversion.	3	60	California Coastal Conservancy, Coastside Land Trust, Conservation Fund, County of San Mateo, Farm Bureau, Mid Peninsula Open Space District, POST, San Mateo RCD						TBD	Incentives and alternative could vary depending on receptiveness of local landowners and the availability of financial resources and local expertise.
SGC-A-23.3.5	Recovery Action	Residential and Commercial Development	Encourage all permitting agencies to evaluate projects during construction, including erosion controls during the winter period for permitted projects in Core areas, emphasizing areas with friable/sandy soils.	2	60	CDFG, County of San Mateo, FEMA, NMFS, RWQCB, SWRCB, USACE, USEPA, USFWS						0	This recommendation should be considered a standard business practice for all agencies involved in regulatory oversight.
SGC-A-23.3.6	Recovery Action	Residential and Commercial Development	New development in all historic CCC coho salmon watersheds should meet a zero net increase in storm-water runoff, changes in duration, or magnitude of peak flow.	1	60	County of San Mateo, NRCS, RWQCB, USEPA						TBD	Cost could be relatively inexpensive or add significant expenses to a project depending on project size, location, site specific constraints, and detention techniques.
SGC-A-23.3.7	Recovery Action	Residential and Commercial Development	Standards and recommendations regarding development should apply to all jurisdictions, including school districts and other special districts not subject to county and/or state related ordinances or policies.	1	60	County of San Mateo, FEMA, RWQCB, USACE, USEPA						TBD	
SGC-A-24.1	Objective	Roads and Railroads	Identify and remove existing passage barriers.										
SGC-A-24.1.1	Recovery Action	Roads and Railroads	Adopt NMFS Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001a) and appropriate barrier databases when developing new or retrofitting existing road crossings.	2	60	CalFire, California Coastal Conservancy, California Department of Mines and Geology, CalTrans, CDFG, County of San Mateo, FEMA, FishNet 4C, Mid Peninsula Open Space District, NMFS HCD, NOAA RC, NRCS, POST, RWQCB, San Mateo RCD, USACE						TBD	Replacement of culverts/bridges to NMFS standards will result in increased cost for materials and construction but will likely result in structures that can withstand large storm events better than existing structures. Long term durability and stability will result in long-term cost savings in many circumstances.
SGC-A-24.1.1.1	Action Step	Roads and Railroads	Educate county policy staff and Board of Supervisors on the benefits of railcar bridges and provide information from other counties where they are commonly used.	3	60	CalFire, Farm Bureau, FEMA, Private Landowners, RWQCB, San Mateo County, San Mateo RCD						0	Adoption of policies regarding railcar bridges will result in a major cost savings to County Government and private landowners. Initial cost of outreach should be minor. These structures may be most appropriate for rural residential applications and could result in significant cost savings for landowners.
SGC-A-24.2	Objective	Roads and Railroads	Conduct outreach and education regarding the adverse effects of roads, and the types of best management practices protective of salmonids.										
SGC-A-24.2.1	Recovery Action	Roads and Railroads	Continue education of Caltrans, County road engineers, and County maintenance staff regarding watershed processes and the adverse effects of improper road construction and maintenance on salmonids and their habitats.										

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SGC-A-24.2.1.1	Action Step	Roads and Railroads	Continue training County Road Maintenance staff through the FishNet 4C program.	2	20	CalFire, CalTrans, County of San Mateo, FishNet 4C, Private Consultants, RWQCB, San Mateo RCD	2.50	2.50	2.50	2.50	2.50	50	
SGC-A-24.3	Objective	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.										
SGC-A-24.3.1	Recovery Action	Roads and Railroads	Establish a moratorium on new road construction within floodplains, riparian areas, unstable soils or other sensitive areas until a watershed specific road management plan is created and implemented.	3	20	CalFire, CalTrans, County of San Mateo, FEMA						TBD	Costs may vary significantly depending on societal pressures to build in these areas. A well designed road management plan should result in long term cost savings.
SGC-A-24.3.2	Recovery Action	Roads and Railroads	Develop a road upgrade fund to supplement FEMA emergency repair funding so problem roads could be upgraded to reduce sediment loading and improve road reliability. The Counties should seek amendment of FEMA policies to allow improvements that prevent erosion and failure, particularly in watersheds with endangered salmonid habitat.	3	20	County of San Mateo, FEMA, State Parks						TBD	Costs are difficult to accurately determine but it may result in a long term cost savings.
SGC-A-24.3.3	Recovery Action	Roads and Railroads	For all rural (unpaved) and seasonal dirt roads apply (at a minimum) the road standards outlined in the California Forest Practice Rules.	2	60	County of San Mateo, Mid Peninsula Open Space District, POST, Private Landowners						TBD	Costs will vary significantly depending on site specific conditions and landowner willingness to have their roads addressed and sediment sources remediated. This should be considered the minimum standard for dirt roads in the watershed.
SGC-A-24.4	Objective	Roads and Railroads	Assess and implement actions that hydrologically disconnect roads or reduce sediment sources in Core CCC coho salmon areas within five years, Phase I within 10 years, and Phase II areas within 15 years (from 2010).										
SGC-A-24.4.1	Recovery Action	Roads and Railroads	Conduct a public road survey.	2	5	CalFire, CalTrans, County of San Mateo, San Mateo RCD						TBD	Some road assessments have already occurred in the San Gregorio watershed. These assessments should form the basis of any future assessment work in the watershed.
SGC-A-24.4.2	Recovery Action	Roads and Railroads	Develop a Road Sediment Reduction Plan that prioritizes sites and outlines implementation and a timeline of necessary actions. Begin with a road survey focused on inner gorge roads followed by roads in other settings.										
SGC-A-24.4.2.1	Action Step	Roads and Railroads	Licensed engineering geologists should review and approve grading on inner gorge slopes.	2	60	CalFire, CalTrans, County of San Mateo						TBD	This is a cost that is frequently absorbed into road projects.
SGC-A-24.4.2.2	Action Step	Roads and Railroads	Install sediment traps for pretreatment, and a modified culvert system that can act as an efficient detention system.	3	60	CalFire, CalTrans, County of San Mateo, Farm Bureau						TBD	Estimates of cost will require estimates on long term maintenance commitments. Maintenance costs may be highly variable depending on location and rainfall year. Years of high rainfall will require more frequent maintenance.
SGC-A-24.4.2.3	Action Step	Roads and Railroads	Establish adequate spoils storage sites throughout the watershed so that material from landslides and road maintenance can be stored safely away from coho streams. Coordinate these efforts with all landowners in the watershed, CalTrans, and county road maintenance staff as appropriate.	1	5	CalFire, CalTrans, Private Landowners, Public, RWQCB, San Mateo RCD	20.00	20.00	20.00	20.00	20.00	100	Inadequate storage of sediment has been an ongoing issue in San Gregorio watershed. The paucity of locations for temporary storage of landslide material is a significant constraint. Sites should be identified within the duration specified and this action should be continued in perpetuity.

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SGC-A-24.4.2.4	Action Step	Roads and Railroads	Evaluate and remove roadside berms that lead to increased runoff velocities and result in increased sediment discharge.	2	5	CalFire, California Coastal Conservancy, CalTrans, Farm Bureau, FishNet 4C, Mid Peninsula Open Space District, NRCS, POST, RWQCB, San Mateo RCD						TBD	Cost of removal cannot be conducted until an evaluation of the magnitude of the problem is conducted. Cost associated with berm evaluation should be coupled with ongoing and future public and private road evaluations as a means to reduce overall expenses.
SGC-A-24.4.3	Recovery Action	Roads and Railroads	Limit winter use of unsurfaced roads and recreational trails by unauthorized and impacting uses to decrease fine sediment loads.	2	60	Cal Western Railroad, CalTrans, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, Mid Peninsula Open Space District, Mines and Geology, NRCS, POST, RWQCB, San Mateo RCD						TBD	Costs cannot be determined at this time. These standards should be adopted for all unsurfaced roads and trails in the San Gregorio watershed.
SGC-A-24.4.3.1	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.	2	60	CalFire, CalTrans, Coastside Land Trust, County of San Mateo, Farm Bureau, Mid Peninsula Open Space District, NRCS, POST, Public, San Mateo RCD						TBD	Standard business practice; however, implementation may be difficult in the watershed due to the large number of small landowners and varying degree of financial resources.
SGC-A-24.4.4	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).	1	60	CalFire, CalTrans, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, Mid Peninsula Open Space District, Mines and Geology, NRCS, POST, RWQCB, San Mateo RCD						TBD	Costs cannot be determined at this time. These standards should be adopted for all future road projects in the San Gregorio watershed.
SGC-A-24.5	Objective	Roads and Railroads	Reduce road densities by 10 percent over the next 10 years, prioritizing high risk areas.										
SGC-A-24.5.1	Recovery Action	Roads and Railroads	Decommission riparian road systems and/or upgrade roads (and skid trails on forestlands) that deliver sediment into adjacent watercourses (DFG 2004).	3	20	CalFire, CalTrans, Farm Bureau, Mid Peninsula Open Space District, NRCS, POST, Private Landowners, RWQCB, San Mateo County, San Mateo RCD						TBD	DFG 2004 estimated costs of storm proofing roads at \$15,900 per mile. However, costs may be significantly depending on infrastructure impacts and site specific conditions. Costs will vary depending on landowner participation and cooperation and feasibility of decommissioning roads in a relatively urbanized watershed like San Gregorio.
SGC-A-25.1	Objective	Storms and Flooding	Conduct outreach and education regarding how local, city, county, State and Federal planning can put in place mechanisms that provide community resiliency to storms and flooding.										

San Gregorio Creek (Santa Cruz Mountains) 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		
SGC-A-25.1.1	Recovery Action	Storms and Flooding	Agencies should develop large woody debris retention programs and move away from the practice of removing instream large woody debris under high flow "emergencies".	1	5	CalFire, CalTrans, CDFG, County of San Mateo, NMFS, NRCS, USACE	20.00	20.00	20.00	20.00	20.00	100	These monies could be used to develop a site specific program expressly for conditions in San Gregorio Creek. Monies could be saved if a Santa Cruz Mountain Diversity Stratum program or a San Mateo County program is developed to address this recommendation on a programmatic basis.
SGC-A-25.1.2	Recovery Action	Storms and Flooding	Create flood refuge habitat, such as hydrologically connected floodplains with riparian forest, and use streamway concept where appropriate.	1	60	CalFire, California Coastal Conservancy, CalTrans, CDFG, Coastside Land Trust, Conservation Fund, County of San Mateo, Farm Bureau, FEMA, FishNet 4C, Mid Peninsula Open Space District, NRCS, POST, Private Landowners, RWQCB, San Mateo RCD, State Parks, USACE, USFWS						TBD	This is a very high priority. This will likely be an opportunistic restoration action and costs will be based on landowner willingness to participate and site specific conditions in regards to potential habitat suitability. Currently, these types of habitats have not been identified in the San Gregorio watershed.
SGC-A-25.1.3	Recovery Action	Storms and Flooding	Land use zoning should be appropriate to the site and be tolerant to anticipated conditions (e.g., tolerant to frequent flooding).										
SGC-A-25.1.3.1	Action Step	Storms and Flooding	Counties and municipalities should adopt a policy of "managed retreat" (removal of problematic infrastructure and replacement with native vegetation or flood tolerant land uses) for areas highly susceptible to, or previously damaged from, flooding.	2	60	County of San Mateo, FEMA						TBD	Adoption of these policies will result in significant short term expense but a long term cost savings as a result of minimizing future flood fighting actions and post flood infrastructure repair.
SGC-A-25.1.3.2	Action Step	Storms and Flooding	Flood control projects or other modifications facilitating new development (as opposed to protecting existing infrastructure) should be avoided.	2	60	County of San Mateo, FEMA, NMFS, RWQCB, USACE						0	Not building flood control projects will not incur expenses.
SGC-A-25.1.3.3	Action Step	Storms and Flooding	Modify Federal, State, city and county regulatory and planning processes to eliminate provisions allowing new construction of permanent infrastructure that will adversely affect watershed processes, particularly within the 100-year flood prone zones in all historic CCC coho salmon watersheds.	2	10	FEMA, San Mateo County						TBD	
SGC-A-26.1	Objective	Water Diversion and Impoundment	Improve current laws and policies to control diversions and water use in order to maintain and restore surface flows.										
SGC-A-26.1.1	Recovery Action	Water Diversion and Impoundment	Avoid and/or minimize the adverse effects of water diversion on CCC coho salmon by establishing a more natural hydrograph, by-pass flows, season of diversion, and off-stream storage (DFG 2004).										
SGC-A-26.1.1.1	Action Step	Water Diversion and Impoundment	Develop and enforce stream flow bypass requirements for diversions in San Gregorio Creek and its tributaries.	1	6	CDFG, NMFS, Private Consultants, SWRCB	33.33	33.33	33.33	33.33	33.33	200	Significant work regarding flow is currently occurring in San Gregorio Creek. These data should be leveraged, and it is anticipated that there will be a significant cost savings regarding the recommendation to develop bypass requirements. Most of the costs will involve enforcement of these conditions through the existing water master.
SGC-A-26.1.2	Recovery Action	Water Diversion and Impoundment	Improve compliance with existing water resource regulations via monitoring and enforcement.										
SGC-A-26.1.2.1	Action Step	Water Diversion and Impoundment	Improve coordination between agencies and others to address season of diversion, off-stream reservoirs, bypass flows protective of coho salmon and their habitats, and avoidance of adverse impacts caused by water diversion (DFG 2004).	2	5	CDFG, NMFS, RWQCB, San Mateo County, SWRCB, USFWS						TBD	

San Gregorio Creek (Santa Cruz Mountains) 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		
SGC-A-26.1.3	Recovery Action	Water Diversion and Impoundment	Promote passive diversion devices designed to allow diversion of water only when minimum streamflow requirements are met or exceeded (DFG 2004).	2	20	Farm Bureau, NMFS, San Mateo RCD, SWRCB, USACE						TBD	
SGC-A-26.1.4	Recovery Action	Water Diversion and Impoundment	Request that SWRCB review and/or modify water use based on the needs of coho salmon and authorized diverters (DFG 2004).	1	60	SWRCB						TBD	
SGC-A-26.1.5	Recovery Action	Water Diversion and Impoundment	Ensure water supply demands can be met without impacting flow either directly or indirectly through groundwater withdrawals and aquifer depletion.										
SGC-A-26.1.5.1	Action Step	Water Diversion and Impoundment	Continue to prohibit new or increased summer diversions.	1	60	SWRCB						0	
SGC-A-26.2	Objective	Water Diversion and Impoundment	Promote water conservation by the public, water agencies, agriculture, private industry, and the citizenry.										
SGC-A-26.2.1	Recovery Action	Water Diversion and Impoundment	Promote conjunctive use of water with water projects whenever possible to maintain or restore coho salmon habitat.	1	60	California Coastal Conservancy, CDFG, County of San Mateo, Farm Bureau, FishNet 4C, NMFS HCD, NOAA RC, NRCS, POST, Private Consultants, Private Landowners, San Mateo RCD, Trout Unlimited						TBD	Costs will vary significantly depending on landowner cooperation, infrastructure constraints, and types of infrastructure necessary to meet landowner needs. Due to the high degree of flow impairment in the watershed it is likely that significant infrastructure and coordination will be required to meet minimum flow requirements for coho salmon viability and therefore, costs will be significant.
SGC-A-26.3	Objective	Water Diversion and Impoundment	Develop new policies and regulations and or enforce existing policies and regulations to provide suitable flow conditions for CCC coho salmon.										
SGC-A-26.3.1	Recovery Action	Water Diversion and Impoundment	Avoid and/or minimize the adverse effects of water diversion on CCC coho salmon.										
SGC-A-26.3.1.1	Action Step	Water Diversion and Impoundment	Determine and monitor 1600 program compliance related to water diversions (DFG 2004).	1	1	CDFG	100					100	This estimate is for a DFG warden and biologist to work half time for one year in the watershed to review current levels of compliance.
SGC-A-26.3.1.2	Action Step	Water Diversion and Impoundment	Develop and implement regulations for groundwater use.	3	10	County of San Mateo, SWRCB	30.00	30.00	30.00	30.00	30.00	300	New County regulations should be adopted within five years for areas where overdraft and direct connectivity is identified.
SGC-A-26.4	Objective	Water Diversion and Impoundment	Petition the SWRCB to declare San Gregorio Creek fully appropriated during summer and fall months (DFG 2004).	1	60	SWRCB						0	
SGC-A-26.4.1	Recovery Action	Water Diversion and Impoundment	Continue funding of a water master to enforce allocations.	1	60	Private Landowners, San Mateo County, SWRCB						0	This is an ongoing requirement per the adjudication in San Gregorio and should not be considered an additional expense.