

**Mill Creek, San Bernardino County  
CAP Workbook Threats Assessment Summary Tables  
2008**

**Assessment of Target Viability  
Mill Creek, San Bernardino County**

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Mill Creek, San Bernardino County**

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**Bold = Current**      Indicator Ratings      *Italics = Desired*

Conservation Target	Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
1 Egg	Landscape Context	Flow during incubation period	Baseflow in relation to avg. annual daily flow	<b>&lt; 25% of avg. annual daily flow</b>	26-50% of avg. annual daily flow		> 50% of avg. annual daily flow	mostly seasonal flows	Poor		Sep-07	
1 Egg	Landscape Context	Non-native species	Non-native egg predators	present throughout watershed	present in >50% of watershed	present in < 50% of watershed	absent				Oct-98	
1 Egg	Landscape Context	Water temperature	Mean weekly avg. temperature in redds	< 5 C. and > 13 C.	11.1-13 C.	10.1-11 C.	6-10 C.					
1 Egg	Condition	Substrate quality	Avg. percent fines (<0.85mm) in potential spawning areas	> 17% fines	11-17% fines	5-10 % fines	< 5% fines				Sep-07	
1 Egg	Condition	Substrate quality	Embeddedness	> 75% embedded	50-75% embedded	25-49% embedded	< 25% embedded				May-95	
2 Fry	Landscape Context	Dispersal	Barriers between redds and rearing habitat	<b>complete barrier</b>	partial barriers common	partial barriers scarce	no barriers	mostly seasonal flows	Poor		Sep-07	
2 Fry	Landscape Context	Non-native species	Non-native fry predators	present throughout watershed	present > 50% watershed	present < 50% of watershed	absent				Aug-07	
2 Fry	Landscape Context	Sediment supply	Turbidity (no. days turbidity is > 25 NTUs)	> 30 days during fry development period	20-30 days	10-19 days	< 10 days				Sep-07	
2 Fry	Condition	Habitat complexity/refugia	Amount of functional high velocity refuge habitat with flows < 15 cm/sec (boulders, overhanging banks, etc.)	<b>none; watercourse in rearing habitat is channelized</b>	some	common	abundant	mostly seasonal flows	Poor		Jan-07	
3 Juvenile	Landscape Context	Dispersal	Barriers between rearing habitat and estuary	present			absent	Prado Dam	Poor		Sep-07	
3 Juvenile	Landscape Context	Flow during rearing period	Pool habitat > 3 feet in depth	<b>pools scarce or absent</b>	low abundance of pools	high abundance of pools	high abundance of pools with multiple "refuge" pools (> 5 ft deep)	probably only in upper drainage	Poor		Sep-07	
3 Juvenile	Landscape Context	Non-native species	Non-native juvenile predators	present throughout watershed	present > 50% watershed	present < 50% watershed	absent				Oct-07	

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3	Juvenile	Landscape Context	Summer flow	Percent of unimpaired median summer baseflow (based on long-term mean monthly discharge)	< 70%	70-90%	> 90%	100% over all IP km	probably only in upper drainage	Poor		Sep-07	
3	Juvenile	Landscape Context	Water temperature	Median weekly average temperature (MWAT) in potential rearing habitat	> 21 C.	18-21 C.	< 18 C.	< 17 C.				May-95	
3	Juvenile	Condition	Estuarine inflows	Percentage of unimpaired freshwater inflow to estuary (necessary for maintaining brackish water < 15 ppt salinity)	< 25%	25-49%	50-75%	> 75%				Sep-07	
3	Juvenile	Condition	Estuarine inflows	Persistence of hypoxic or anoxic saline layer (> 15 ppt) in potential rearing habitat areas between May and onset of winter rains	3 months	1 month	1 week	< 3 days				Sep-96	
3	Juvenile	Condition	Food availability	Species richness	< 25 taxa	25-29 taxa	30-40 taxa	> 40 taxa				Sep-07	
3	Juvenile	Condition	Habitat complexity/refugia	Instream refugia	absent			present (boulders, overhanging banks, etc.)				Sep-07	
3	Juvenile	Condition	Riparian corridor species composition and structure	Mean percent native, undisturbed composition and structure in 100-foot riparian buffer	< 25%	25-50%	51-75%	historic conditions				Sep-07	
4	Smolt	Landscape Context	Dispersal	Number of days when depths are < 0.4 ft anywhere in migration corridor during outmigration period (March through June)	> 10 days	6-10 days	1-5 days	0 days	seasonal flows; groundwater pumping in lower reaches	Poor		Sep-07	
4	Smolt	Landscape Context	Flow for downstream passage March through June	Maximum potential rate of diversion by pumping during April and May (expressed as percent of estimate unimpaired median flow in April)	> 150%	100-150%	50-99%	< 50%				Sep-07	
4	Smolt	Landscape Context	Passage to ocean	Number of days stream mouth is open with adequate flow during outmigration period (March through June)	< 30 days	30-60 days	60-90 days	> 90 days				Sep-96	

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Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
5	Adult	Landscape Context	Dispersal	Accessibility of suitable spawning areas (based on TRT criteria)	accessible sites are clumped in one location or < 25% of all tributaries are accessible	25-50% of all tributaries are accessible	50-75% of all tributaries are accessible	> 75% of all tributaries are accessible	seasonal flows; Prado Dam; aqueduct	Poor		Sep-07	
5	Adult	Landscape Context	Dispersal	Number of days stream mouth is open with adequate flow during entry period (1 November to 1 June)	< 30 days	30-60 days	60-90 days	> 90 days				Sep-96	
5	Adult	Landscape Context	Flow during spawning period (spawning and upstream/downstream passage)	Percent of net discharge (unimpaired flow minus total diversions) occurring between 1 December to 1 June, in all water years	> 10%	6-10%	3-5%	< 3%				Jun-02	
5	Adult	Landscape Context	Water temperature	Median weekly average temperature in migration corridor	> 17 C.	15-16.9 C.	13-14.9 C.	10-12.9 C.				May-96	
5	Adult	Size	Population size	Mean annual adult spawner abundance		TRT criteria for low extinction risk (by watershed)						May-07	
6	Multiple Life Stages	Landscape Context	Barriers/diversions	Stream crossings/stream mile	> two/mile			< two/mile				Oct-07	
6	Multiple Life Stages	Landscape Context	Channel flow and morphology	Percent of total watercourse length channelized	> 25%	16-25%	5-15%	< 5%				Sep-07	
6	Multiple Life Stages	Landscape Context	Fire regime/vegetation maturity	Percent of watershed affected by high intensity fire within previous 100 yrs	> 25%	10-24%	5-9%	< 5%					
6	Multiple Life Stages	Landscape Context	Floodplain connectivity	Floodplain connectivity	< 50% of response reaches in watershed have inundation of historic floodplains by bankfull flows (connectivity)	50-65% of response reaches in watershed demonstrate floodplain connectivity	66-80% of response reaches in watershed demonstrate floodplain connectivity	> 80% of response reaches in watershed demonstrate connectivity				Sep-07	

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Conservation Target	Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating	
6	Multiple Life Stages	Landscape Context	Historic vs Current Spawning Habitat	Fraction of historic spawning tributaries currently accessible to spawners	< 15% available	16-50% available	51-90% available	>90% available	Prado Dam; aqueduct; seasonal flows	Poor		Sep-07	
6	Multiple Life Stages	Landscape Context	Hydrology	Dry stream reaches	> 75% dry reaches	26-75% dry reaches	1-25% dry reaches	no dry reaches; perennial surface flows	aqueduct; groundwater pumping	Poor		Sep-07	
6	Multiple Life Stages	Landscape Context	Hydrology	Hydrograph	severely modified			natural	aqueduct; groundwater pumping	Poor		Sep-07	
6	Multiple Life Stages	Landscape Context	Land use	Distribution of public ownership along main stem of watercourse	< 25% of land bordering main stem of drainage is publicly owned	25-50%	51-75%	> 75%				Jun-07	
6	Multiple Life Stages	Landscape Context	Land use	Miles of road per square mile of watershed within 100 meters of watercourse	> 1 mi	0.5-1.0 mi	0.1-0.49 mi	< 0.1 mi				Sep-07	
6	Multiple Life Stages	Landscape Context	Land use	Miles of roads per square mile of watershed	> 3.0 mi	2.6-3.0 mi	1.6-2.5 mi	< 1.6 mi				Jun-02	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in agricultural use	> 30%	20-29%	10-19%	< 10%				Jun-02	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in agriculture within 100 meters of watercourse	> 20%	11-20%	5-10%	< 5%					
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in public ownership	< 25 % public ownership	25-50%	51-75%	> 75%				Jan-06	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in urban/residential use	> 25%	10-25%	5-9%	< 5%				Sep-07	
6	Multiple Life Stages	Landscape Context	Water quality	General index of toxicity based on severity of adverse effects on fish	Acute lethal effects (fish kill)	Sublethal effects (reduced growth, altered behavior, etc.)	Toxins detected but no sublethal effects	No toxins or contaminants detected				Sep-07	
6	Multiple Life Stages	Landscape Context	Water quality	Percent total impervious surfaces as % of watershed area	>40%	21-40%	5-20%	< 5%				Sep-07	
6	Multiple Life Stages	Condition	Estuarine habitat quality	Current lagoon area as percentage of historic total area	< 25%	26-50%	51-75%	> 75%				Sep-07	

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Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
6	Multiple Life Stages	Condition	Estuarine habitat quality	Depth, LWD, and other habitat elements (e.g. eelgrass)	depth < 1 meter; LWD and/or overhanging banks absent		depth > 1 meter; LWD and/or overhanging banks present					Sep-96	
6	Multiple Life Stages	Condition	Riparian corridor quality	Riparian canopy cover	< 25% cover	25-49% cover	50-75% cover	> 75% cover				Sep-07	
6	Multiple Life Stages	Condition	Riparian corridor quality	Riparian corridor species composition	< 25% native composition	25-50% native composition	50-75% native composition	> 75% native composition				Sep-07	



**Overall Viability Summary  
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Summary of Threats										
Click the page-down icon ▼ to the right to view more summary tables.										
Mill Creek, San Bernardino County										
Threats Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	7	8	
1	Dams and surface water diversions	Very High			Very High					
2	Groundwater extraction	Very High			Very High					
3	Channel and/or estuary maintenance, dredging, and vegetation control (incl. flood control activities)	-	-	Very High	-	-	-			High
4	Conversion of watershed lands to row crop agriculture	-	-	-	-	-	Very High			High
5	Levees and channelization	-	-	Very High	-	-	-			High
6	Urban development	-	-	Very High	-	-	-			High
7	Agricultural effluents	-	-	-	-	-	-			-
8	Artificial lagoon breaching	-	-	-	-	-	-			-
9	Culverts, crossings, and bridges	-	-	-	-	-	-			-
10	Gas, water, and/or other utility pipelines	-	-	-	-	-	-			-
11	Illegal collecting, poaching, and/or unauthorized angling	-	-	-	-	-	-			-
12	Invasive, non-native plants	-	-	-	-	-	-			-
13	Livestock Farming & Ranching	-	-	-	-	-	-			-
14	Mining & Quarrying	-	-	-	-	-	-			-
15	Non-native species present (incl. hatchery fish)	-	-	-	-	-	-			-
16	Non-point pollution from roads	-	-	-	-	-	-			-
<b>Threat Status for Targets and Project</b>		Very High	-	-	Very High					

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Mill Creek, San Bernardino County										
Threats Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	7	8	
17	Oil & Gas Drilling	-	-	-	-	-	-			-
18	Public ownership in watershed									-
19	Recreational facilities and activities (ORV use, campgrounds, etc.)	-	-	-	-	-	-			-
20	Roads in watershed and/or within 300 feet of watercourses	-	-	-	-	-	-			-
21	Urban wastewater effluents (incl. industrial and commercial effluents)	-	-	-	-	-	-			-
22	Wildland fires (incl. debris flows following fires)	-	-	-	-	-	-			-
23										-
24										-
25										-
26										-
27										-
28										-
29										-
30										-
31										-
32										-
<b>Threat Status for Targets and Project</b>		Very High	-	-	Very High					

**Overall Viability Summary**  
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<b>Stress Matrix</b>									
<b>Mill Creek, San Bernardino County</b>									
<b>Stresses (Altered Key Ecological Attributes) Across Targets</b>		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages		
		1	2	3	4	5	6	7	8
1	Impaired riparian habitat quality	-	-	Very High	-	-	-	-	-
2	Altered hydrograph	-	-	-	-	-	Very High	-	-
3	Altered base flows during incubation	Very High	-	-	-	-	-	-	-
4	Impaired access to rearing and/or spawning habitat	-	-	-	-	-	Very High	-	-
5	Impaired access to spawning areas	-	-	-	-	Very High	-	-	-
6	Impaired access to ocean	-	-	-	Very High	-	-	-	-
7	Dispersal barriers between redds and rearing habitat	-	Very High	-	-	-	-	-	-
8	Impaired summer base flows	-	-	Very High	-	-	-	-	-
9	Impaired flows during rearing period	-	-	Very High	-	-	-	-	-
10	Impaired access to estuary	-	-	Very High	-	-	-	-	-
11	Impaired water quality	-	-	-	-	-	-	-	-
12	Impaired habitat complexity/refugia	-	-	-	-	-	-	-	-
13	Altered sediment supply	-	-	-	-	-	-	-	-
14	Impaired water temperature	-	-	-	-	-	-	-	-
15	Impaired estuarine inflows	-	-	-	-	-	-	-	-
16	Impaired food availability	-	-	-	-	-	-	-	-

**Overall Viability Summary  
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Stresses (Altered Key Ecological Attributes) Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages		
		1	2	3	4	5	6	7	8
17	Impaired instream habitat complexity/refugia	-	-	-	-	-	-	-	-
18	Non-native predators	-	-	-	-	-	-	-	-
19	Impaired access to stream from ocean (stream mouth closed)	-	-	-	-	-	-	-	-
20	Impaired substrate quality (sedimentation and embeddedness)	-	-	-	-	-	-	-	-
21	Impaired water temperatures in migration corridor	-	-	-	-	-	-	-	-
22	Low adult population size	-	-	-	-	-	-	-	-
23	Impaired water temperature in spawning areas	-	-	-	-	-	-	-	-
24	Impaired floodplain connectivity	-	-	-	-	-	-	-	-
25	Altered fire regime/recent fire in watershed	-	-	-	-	-	-	-	-
26	Non-native egg predators	-	-	-	-	-	-	-	-
27	Altered land use from natural condition	-	-	-	-	-	-	-	-
28	Impaired estuarine habitat quality	-	-	-	-	-	-	-	-
29	Altered riparian habitat quality	-	-	-	-	-	-	-	-
30		-	-	-	-	-	-	-	-
31		-	-	-	-	-	-	-	-
32		-	-	-	-	-	-	-	-

**Overall Viability Summary  
Mill Creek, San Bernardino County**

<b>Overall Viability Summary Mill Creek, San Bernardino County</b>								
<b>Conservation Targets</b>		<b>Landscape Context</b>		<b>Condition</b>		<b>Size</b>		<b>Viability Rank</b>
		<b>Grade</b>	<b>Weight</b>	<b>Grade</b>	<b>Weight</b>	<b>Grade</b>	<b>Weight</b>	
1	Egg	Poor	1	-	1	-	1	Poor
2	Fry	Poor	1	Poor	1	-	1	Poor
3	Juvenile	Poor	1	-	1	-	1	Poor
4	Smolt	Poor	1	-	1	-	1	Poor
5	Adult	Poor	1	-	1	-	1	Poor
6	Multiple Life Stages	Poor	1	-	1	-	1	Poor
7		-	1	-	1	-	1	-
8		-	1	-	1	-	1	-
<b>Project Biodiversity Health Rank</b>								<b>Poor</b>

# Overall Viability Summary

## Mill Creek, San Bernardino County

### Detailed Viability Summary

#### Mill Creek, San Bernardino County

Conservation Targets		Key Ecological Attributes				Indicators				Calculated Rank	User Override	
		Poor	Fair	Good	Very Good	Poor	Fair	Good	Very Good			
1	<b>Egg</b>										<b>Poor</b>	
	Landscape Context	1				1				Poor		
	Condition									-		
	Size									-		
2	<b>Fry</b>										<b>Poor</b>	
	Landscape Context	1				1				Poor		
	Condition	1				1				Poor		
	Size									-		
3	<b>Juvenile</b>										<b>Poor</b>	
	Landscape Context	3				3				Poor		
	Condition									-		
	Size									-		
4	<b>Smolt</b>										<b>Poor</b>	
	Landscape Context	1				1				Poor		
	Condition									-		
	Size									-		
5	<b>Adult</b>										<b>Poor</b>	
	Landscape Context	1				1				Poor		
	Condition									-		
	Size									-		
6	<b>Multiple Life Stages</b>										<b>Poor</b>	
	Landscape Context	2				3				Poor		
	Condition									-		
	Size									-		
7											-	
	Landscape Context									-		
	Condition									-		
	Size									-		
8											-	
	Landscape Context									-		
	Condition									-		
	Size									-		