

Evaluating Limiting Factors for Salmonids in Lagunitas Creek



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Program Distinctions

- Early implementation of a TMDL. (Is this watershed impaired? If so, how?)
- Administered by local Resource Conservation District (RCD). Funded by Proposition 13 Nonpoint Source Pollution Control program.
- Describes implementation of existing watershed plan. (monitoring and restoration projects)



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Lagunitas Creek Profile



- Subwatershed of larger Tomales Bay watershed.
- 103 square miles
- Land use – Recreation(1/2), agriculture and residential
- Impairments (1987)- nutrients, sediment and pathogens
- Historically supported several thousand salmonids.
- Populations declined between 1950-1990 due to sedimentation.

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Past Efforts

- Restoration work in the 80s' by Trout Unlimited, Marin RCD, Soil Conservation Service, etc.
- Marin Municipal Water District (fish populations, temperature, sedimentation)
- Salmon Protection and Watershed Network (water quality).
- Point Reyes National Seashore (fish populations and habitat surveys)
- UC Davis (effectiveness of fish restoration projects)



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2003 Tomales Bay Watershed Plan



Goal:

“Ensure water quality in Tomales Bay and tributary streams sufficient to support natural resources and sustain beneficial uses.”

Action:

“Assess condition of salmonid habitats. Restore salmonid habitat. Identify limiting factors for salmonids in Lagunitas Creek....”

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Lagunitas Advisory Group

Responsibilities to Resource Conservation District



Answer the following questions:

- What is the scope of work for our limiting factors analysis?
- Who shall we hire to conduct the work?
- Does analysis seem accurate?
- Shall we proceed with the monitoring recommendations?
- How will we evaluate and rank our restoration projects?
- How much money should we spend on our projects?

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Lagunitas Advisory Group

- CA Department of Fish and Game
- Marin Municipal Water District
- Marin Resource Conservation District
- Paul Siri, Ocean Policy and Science Consultant
- Point Reyes National Seashore
- Salmon Protection and Watershed Network
- Samuel P. Taylor State Park
- San Francisco Bay Regional Water Quality Control Board
- Sierra Club
- Tomales Bay Association
- Tomales Bay Watershed Council
- Trout Unlimited
- Other interested members of the public

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Information

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Limiting Factors Analysis

Evaluating different life stages:

- Elementary/Middle/High School Kids
- Egg/Fry/Juvenile Coho Salmon

Suspected problems:

Low survival between egg deposition to late summer life stages due to:

- Redd entombment?
- Redd scour?
- Limited winter rearing habitat?
- Loss of estuarine rearing habitat?



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Limiting Factors Analysis -Monitoring



- Infiltration bags and freeze cores to measure fine sediment causing redd entombment
- Scour chains, embedded tracers to measure redd scour
- Emergence traps to monitor fry emergence
- Snorkel surveys to monitor juvenile abundance

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Limiting Factors Analysis - Monitoring Results

✓ NO Redd Entombment

✓ NO Redd Scour

Limited winter rearing habitat?



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Restoration Projects



- Focusing on habitat improvement projects.
- Evaluating projects using local expertise – hydrologist, biologist, engineer, construction foreman etc.
- Training local stream technicians.
- Projects are followed up with photo monitoring, fish population surveys, watershed-wide water monitoring by partnering agencies/organizations.

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Discoveries

- Make certain the role of the advisory group is well defined.
- Communicate all progress to the advisory group.
- Plan for advisory group meetings when planning for implementation.
- Learn from each other and build stronger partnerships.



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