



**Summary: DRAFT Inter-Fluve
Current Conditions
Inventory Report
January 27, 2010**



Overview of Inter-Fluve work

The Habitat Enhancement Feasibility Study is being conducted in two phases. We are currently finishing up the first phase.

1. Inventory of current conditions
 - a. Watershed characteristics
 - b. Watershed history
 - c. Creek geomorphology¹
2. Feasibility analysis and conceptual design

Watershed Context

Prior to the construction of Warm Springs Dam, the valley experienced high floods from winter rainstorms and very low flow (dry in many years) during the summers. This creek flow pattern is typical of the Mediterranean climate.

1850s: Settlement in the valley begins

- 40% of forested acres were cleared 1850-1870
- Increased runoff and sediment to lower valley
- Initially raised creek bed (3')
- Later resulted in creek bed lowering by turn of century (4'-5')

1900 – 1970s: Gravel mining in Russian River

1950s – 1970s: Gravel mining in Dry Creek near Westside Bridge

1952: Healdsburg Dam Construction

1959: Coyote Dam construction

Combined, these 20th century factors caused:

- Lowering of downstream base level for Dry Creek
- Additional bed lowering by 1980s (10'-11')
- This in turn propagated up DC tributaries
- Effects slowed by mid-1980s

1984: Warm Springs Dam

Construction and operation of Warm Springs Dam altered:

- Flow patterns
 - o Reduced winter floods
 - o Higher summer flows
- Sediment patterns
 - o Cut off upper 60% of watershed
 - o Effects moderated by supply from Peña, Dutcher, Crane, Mill Creeks
- Vegetation patterns
 - o Combination of reduced winter floods, high summer flows, and Mediterranean climate resulted in extensive riparian growth
 - Stabilizes gravel bars
 - Focuses flow in channel

¹ The topographical features of the earth's surface and the processes that caused them.

Combined effects of Warm Springs Dam construction and operation:

- The above factors have not resulted in additional systemic bed lowering.
- Conditions vary from upstream to downstream.
- Grade control sills² and bedrock help control creek bed.

Fish Habitat Inventory

During 2009, Inter-Fluve performed an inventory of pools,³ riffles,⁴ glides,⁵ and alcove⁶ and edge habitat⁷ in the 13.9 miles of Dry Creek between the dam and the Russian River. This effort provides a detailed understanding of fish habitat conditions and a baseline to compare future improvements against. For the purposes of the study, the creek was split into 16 sub-reaches.

Some selected habitat inventory results were as follows:

- On average, much of the gravel in riffles were in the target size range for spawning.
- Fine sediment was generally within acceptable levels in riffles.
- Small woody debris was fairly abundant but large woody debris was lacking.
- Alcoves were most prevalent in the lower half of the creek.
- Edge habitat was slightly more prevalent in the lower half.
- Overall habitat quality was less than ideal, e.g., velocity.

Outlook for Fish Habitat Enhancement

Inter-Fluve reviewed areas of interest for potential habitat enhancement.

Off-channel and alcove habitats, highly productive habitats for coho salmon, are the least available type of habitat. Creation of off-channel and alcove habitat would involve excavation and installation of woody material.

There appear to be many opportunities for enhancement of main channel pools, riffles, and streambanks. Enhancement of riffles would involve supplementing instream gravel to increase riffle area relative to other habitat types. Enhancement of pools would include grading and installation of woody material to increase cover and complexity. Enhancement of streambanks would involve grading, stabilization, and installation of woody material to enhance cover and complexity.

Next Steps

Detailed Feasibility Analysis and Concept Designs

- System-scale feasibility
- Project-scale feasibility

Upcoming Schedule

- Spring to summer 2010: Detailed feasibility analysis
- Fall 2010: Concept designs and ranking of opportunities

² Low line of rocks extending from the streambank into the stream channel to control the creek bed grade.

³ A stretch of creek with relatively greater depths and low velocities.

⁴ A shallow, fast-moving stretch of creek in which the water is broken by turbulence and the presence of rocks.

⁵ A smooth, fast-moving stretch of creek that often separates pools from riffles.

⁶ Off-channel area with backwater ponding and negligible velocity.

⁷ Area of shallow water depth and low velocity along edge of creek channel.