

PART III: COMPARISON OF SUBWATERSHED QUALITIES

A. Comparison of Subwatersheds.

The previous section, Part II, evaluated hydrologic and environmental conditions *within* 21 subwatersheds in the Bear Creek valley. Part III combines the separate analyses to provide basis for evaluating the whole Bear Creek watershed.

A.1. Strategy for Prioritizing Watershed Protection and Restoration Actions.

A measure of watershed health of the Bear Creek valley as a whole can be obtained by combining the separate subwatershed units into a summary matrix, which portrays the watershed as a whole. The strategy for the assessment is as follows:

1. Describe and assess the existing conditions within watersheds – landscape characteristics, stream channel characteristics, hydrology, water flow and quality, riparian habitat conditions, disturbance patterns, wildlife use, socio-economic characteristics, pertinent jurisdictions,
2. Identify fishery status and condition for each tributary, limiting factors, and potential restoration needs,
3. Use watershed professionals and citizens groups to rate watershed aquatic quality and diversity, and form a measure of ecological integrity;
4. Identify relative restoration priorities for 9 watershed evaluation elements:
 - Stream flows
 - Stream turbidity/sedimentation
 - Water quality
 - Riparian habitat
 - Stream temperature
 - Channel structure/habitat
 - Wetland habitat
 - Floodplain morphology
 - In-stream barriers

The purpose is not to prioritize subwatersheds, but to rank the subwatersheds by their proprietary qualities in comparison to the others (i.e., aquatic habitat, water quality, flow volume, fishery habitat, etc.), to portray the conditions of the whole watershed.

B. Prioritization of Limiting Factors and Restoration Needs for Bear Creek and Tributaries.

Data on the hydrologic and riparian conditions, water quality, and fishery status are compiled for each subwatershed, and used by the Technical Team to formulate ratings of *Subwatershed Ecological Integrity, Aquatic Diversity, and Limiting Factors*. The descriptive information and evaluations are then integrated to *Prioritize Limiting Factors and Restoration Needs* for each subwatershed (Table III.1). The prioritized limiting factors and restoration needs will then be used to formulate *Recommended Restoration Actions* for streams within the subwatersheds.

Table III.1. Limiting Factors and Restoration Needs for Bear Creek and Tributaries.

<i>Priority Limiting Factors and Restoration Needs</i>									
Stream	Stream Flows	Stream temperature	(303d list) Water Quality-303d toxics, bacteria,nutrients,	Sedimentation	Riparian habitat	Aquatic habitat	Channel stability	Floodplain connectivity	In-stream barriers
Bear Creek	H	H	H	M	M	M	L	L	L
Willow Creek	H	H	M	L	M	M	L	L	M
Jackson Creek	H	H	M	L	M	M	L	L	H
Griffin Creek	H	H	M	L	M	M	L	L	H
Coleman Creek	M	H	H	L	H	M	L	L	M
Anderson Creek	H	M	H	L	H	M	L	M	L
Wagner Creek	H	M	M	M	H	H	L	L	L
Ashland Creek	M	M	H	M	H	L	H	L	L
Neil Creek	H	H	M	M	H	L	L	M	L
Emigrant Creek	H	H	M	L	M	M	L	L	H
Walker Creek	M	H	M	L	H	M	L	H	L
Gaerky Creek	H	H	H	L	M	M	M	L	L
Butler Creek	H	H	H	L	M	M	L	L	M
Myer Creek	H	H	H	L	M	M	M	L	L
Jeffery Creek	H	H	H	M	M	M	L	L	L
Kenutchen Creek	H	H	H	L	M	M	L	L	M
Payne Creek	H	H	H	M	M	M	L	L	L
Larson Creek	H	H	M	L	H	M	M	L	L
Lone Pine Creek	M	H	H	M	H	M	L	L	L
Upton Creek	L	L	H	M	H	M	M	H	L
Whetstone Creek	L	L	H	M	H	M	M	H	L
Bear Creek	2.6	2.65	2.52	1.4	2.57	1.9	1.45	1.4	1.47

* The priority restoration and protection activities are defined by a technical team, and reflect data-based conditions in need of regulatory or aesthetic correction.

The “High-Medium-Low” ratings for each subwatershed can be converted to a numeric scale to portray and compare the relative prominence of each environmental element in the Bear Creek watershed (High=3; Medium=2; Low=1). Ratings were converted to the numeric value, summed by the environmental element column, then the mean average score computed for each element. The scores are reported in the “total” row, at the bottom of Table III.1 above.

B.1. Restoration Needs for Environmental Elements.

In the Bear Creek watershed, water flows, water quality, stream water temperature, and riparian habitat are the highest priority needs for restoration in the valley. These priority needs are shared by almost all subwatersheds, except for the Eastern Urban Interface, and Eastern Delta subwatersheds.

The environmental elements of sedimentation, aquatic habitat quality, channel stability, and in-stream barriers are a second level priority. These environmental elements are important to the integrity of the Bear Creek watershed, but their problems are superceded by the critical nature of high priorities to the anadromous fisheries.

C. Future Steps.

1. Prepare an Action Plan. The Bear Creek Watershed Assessment is the first part of the Action Planning process, and is intended to provide the technical basis for identifying and ranking subwatershed restoration actions. The Action Planning process will follow this effort.

The Bear Creek Watershed Council is responsible for evaluating the Bear Creek Watershed Assessment and implementing the Action Plan. The watershed restoration and protection ratings provide the basis for identifying and implementing watershed restoration actions for the near future. The action plan will evaluate the restoration needs, and develop an action plan for implementation and funding. The action plan will also address existing data needs, and design a monitoring plan for filling data gaps and assessing the effectiveness of projects completed in the watershed.

The Action Plan will:

1. Identify geographically how issues will be addressed within the watershed, including identification of reach enhancement areas and prioritization of actions;
2. Identify and prioritize restoration actions and protections that link to goals and objectives of the Council, and address data gaps and issues;
3. Identify community organizations and programs that will respond to actions identified;

4. Identify and implement continuing assessment and monitoring of environmental conditions in the Bear Creek watershed;
5. Solicit and develop partners and cooperators in the watershed for project restoration activities;
6. Implement conservation activities in the watershed.

2. Monitoring. Current monitoring of environmental conditions should continue, and future monitoring needs should be initiated as soon as possible to fill data gaps.

3. Prepare Subwatershed Assessments for remaining areas. Subwatershed assessments have been prepared for the Jackson, Wagner, Ashland, Neil, and Emigrant subwatersheds. Assessments for the remaining subwatersheds in the Bear Creek watershed are needed.