

1. Introduction

The Upper Carson Watershed has been identified as a Category I priority watershed for water quality improvement by the California Unified Watershed Assessment. In November of 2000, with assistance from the Alpine County Resource Conservation District and the Sierra Nevada Alliance, a collaborative stakeholder-based watershed group was formed in the California portion of the Upper Carson River Watershed. This collaborative group became known as the Alpine Watershed Group.

In September of 2002, the Sierra Nevada Alliance, on behalf of the Alpine Watershed Group, entered into an agreement with the California State Water Resources Quality Control Board to prepare a Stream Corridor Condition Assessment for the Upper Carson River Watershed. The assessment was to include a fluvial geomorphic assessment, a survey of conditions in the riparian and floodplain zone, a restoration priority list, and recommended management measures. In addition, a Geographic Information System (GIS) database was to be developed to store, update, present, and analyze data from this assessment as well as other sources (see Attachment One).

MACTEC Engineering and Consulting was selected by the Alpine Watershed Group and retained by the Sierra Nevada Alliance to prepare technical aspects of the assessment. MACTEC's project team included Swanson Hydrology and Geomorphology, River Run Consulting, and C. G. Celio & Sons.

1.1 Project Goals

The purpose of the assessment is to provide information about the Upper Carson River watershed so that future planning, restoration, and improvement in resource management can occur in a reasoned manner. Baseline information will be developed to aid in the preparation of a restoration list and recommended management measures.

The assessment area includes approximately 66 miles of channel within the following stream corridors (Figure 1.1):

- The West Fork of the Carson River from the California-Nevada state line to the upstream end of Faith Valley;
- The East Fork of the Carson River from the California-Nevada state line, upstream to the confluence with Wolf Creek;
- Wolf Creek from the confluence with East Fork Carson to the wilderness boundary; and,
- Markleeville/Hot Springs Creek from the confluence with the East Fork of the Carson River to the upstream end of the Hot Springs meadow on California State Parks land.

Additionally, a segment of Pleasant Valley Creek was visited to determine whether it should be included as a relatively undisturbed reference site of meadow streams within the assessment area. Pleasant Valley Creek is a tributary to Markleeville Creek. After examination by the team, it was decided not to include this as a reference reach. This was due to the relatively isolated nature of Pleasant Valley and its distance from proposed study reaches.

Prior to conducting field activities, members of the assessment team conducted background research and contacted appropriate resource management agencies. The goal was to assemble current information regarding historical land use, prior resource assessments, and natural resources management within the assessment area. Agencies contacted included the Bureau of Land Management, the Humboldt Toiyabe National Forest, the Natural Resources Conservation Service, and the U.S. Fish and Wildlife Service, Reno field office.

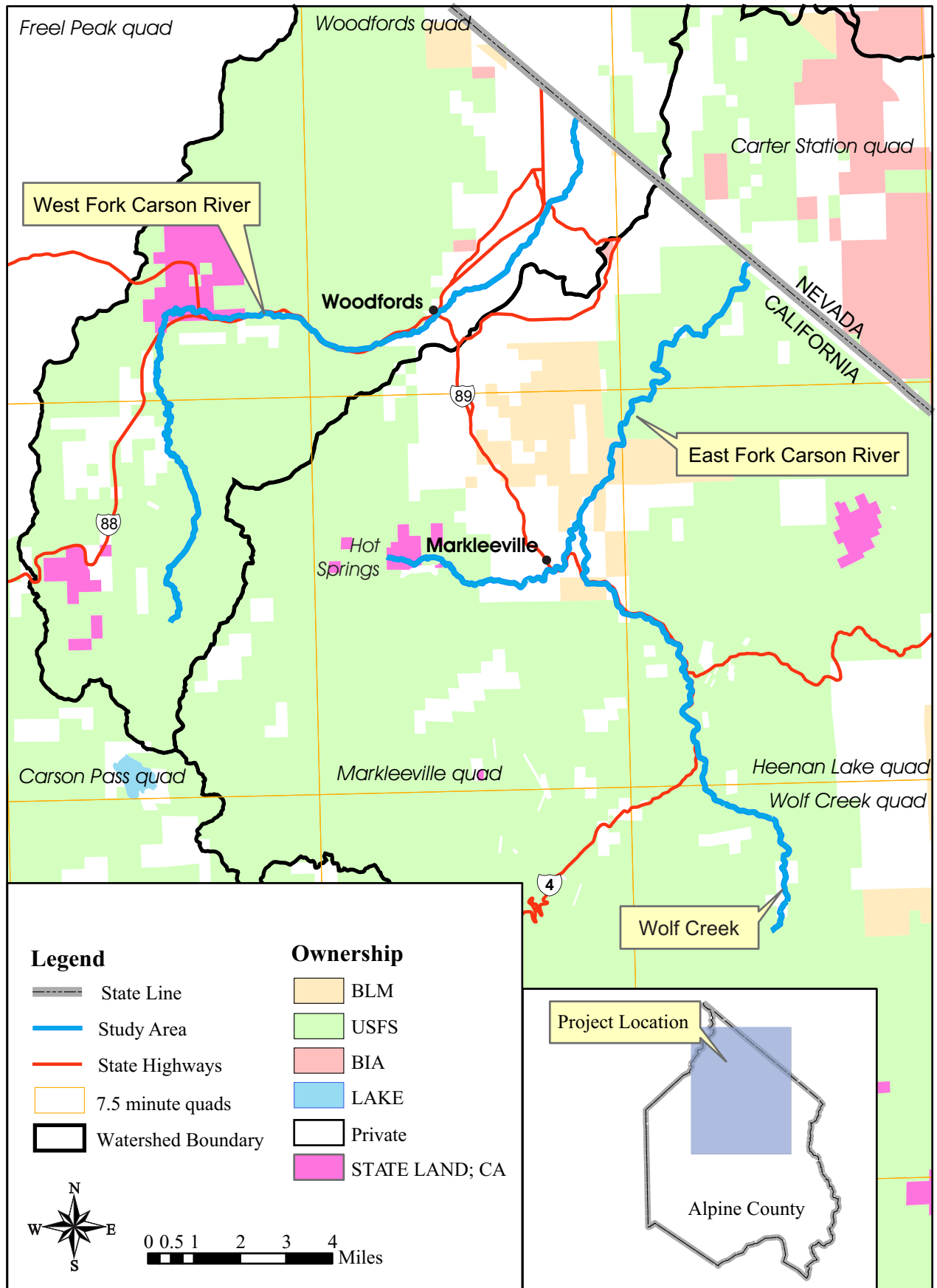


Figure 1.1. Project area map.

Two phases of field review were conducted as part of the assessment. The assessment team conducted a preliminary survey of the area in May and June of 2003. The goal of that survey was to review the entire assessment area, allowing the team to become familiar with existing physical and biological conditions, to delineate stream reaches, and to develop a general understanding of impacts and restoration opportunities. The end product of the preliminary survey was a list of areas to be revisited as part of the in-depth analysis during the second field phase. Results of the preliminary field review were reported in "White Paper One," which was presented to and reviewed by the Alpine Watershed Group and the Sierra Nevada Alliance.

Based on the examination and consideration of data collected during the preliminary assessment, the project team developed a list of impacted and reference reaches. Each of these reaches was then subjected to detailed review. Initial results of the second field review were reported in "White Paper Two," which was presented to and reviewed by the Alpine Watershed Group and the Sierra Nevada Alliance.

The present document is intended to report on the project as a whole. Watershed geomorphic processes are reviewed, results of both field assessments are summarized, and human interaction with the watershed is discussed.

1.2 Report Format

This report documents activities conducted as part of the Upper Carson River Stream Corridor Condition Assessment. It is divided into seven chapters of which this introduction is the first. Chapter 2 is a discussion of the geologic and hydrologic setting, including a description of geomorphic processes that operated to create and sustain the late stream channel prior to significant human disturbance. Physical and biotic processes operating in the stream and floodplain ecosystem prior to human disturbance are also described. Chapter 3 contains a summary of the preliminary field review. Emphasis is placed on describing methods employed and on describing the stream reaches examined. Chapter 4 summarizes information developed as a result of the detailed field review of selected stream reaches. Chapter 5 provides an analysis of changes in the channel due to human disturbances and summarizes the role of human interaction as it relates to the structure and function of the stream and floodplain ecosystem. A summary of potential stream restoration strategies and measures is presented in Chapter 6. Also provided is an analysis of each proposed action with respect to their ability to meet project objectives. Chapter 7 contains a complete listing of references cited in the report.

1.3 How to Use This Document

This document is intended for use by a wide variety of audiences. The hope is decision makers, technical professionals, grant applicants, and the layperson alike will find the report to contain useful information. It is intended to be a management tool for the community, providing perspective into historic and current conditions of the watershed, and guidance on how to maintain or improve natural resource conditions within the watershed.

Sections of greatest interest to the decision maker would be those that address the larger context of watershed geomorphic processes (Chapter Two), human interactions with the watershed (Chapter Five), and recommendations regarding actions that could be taken to improve conditions in the watershed (Chapter Six). These sections provide a historic perspective that will help decision makers to understand how the present condition came about. Understanding that context is important. It can serve as common ground, allowing all involved in the decision making process to assess the likely benefit to be derived by the watershed from any given management decision.

Technical professionals will probably want to turn their attention to Chapters Four, Five, and Six. These chapters present the detailed technical results of work done as part of the present study, draw inferences based on those data, and make appropriate recommendations.

We have structured selected chapters with the grants person in mind. Each reach description contained in Chapters Three and Four, and each category of recommendation provided in Chapter Six starts on a new page. The idea is that a grants person can build the body of a proposal by pulling information on a particular reach and recommendation.

The lay person would benefit most by starting with Chapter Two. This chapter provided a good overview of watershed geomorphic processes. This is a great place to get your feet wet with all of the jargon associated with watershed characterizations. Chapter Five will also be of interest. It discusses human interactions with the watershed and how the watershed was altered by those interactions.

As a tool for the community, the report will be effective only if it is maintained by the diverse group of stakeholders that saw to its creation. This document does not represent the final watershed assessment, but a solid starting point. The value of this document can be increased by its integration into a multi-layered management process. Key elements of the report will require regular updating to reflect the success of project implementation, to include results of continued research, and to identify additional restoration projects.

Whatever your interest, whatever your reason for picking up this report, we hope you find it useful and informative. Resource management is predicated on an understanding of condition and process. It is hoped that this document assists efforts to address the Upper Carson River Watershed.