

DRAFT

Problem Statement

Bodie Hills Sediment/Siltation and Habitat Alteration TMDLs

(Aurora Canyon Creek, Clark Canyon Creek, Clearwater Creek, Hot Springs Canyon Creek, and Rough Creek)

East Walker River Hydrologic Unit, Mono County

Updated July, 2003

Overview

The Lahontan Regional Water Quality Control Board (Lahontan RWQCB) is developing the Total Daily Maximum Loads (TMDLs) for five Bodie Hills streams. Bureau of Land Management stream surveys indicate that aquatic habitat in Aurora Canyon Creek, Clark Canyon Creek, Clearwater Creek, Hot Springs Canyon Creek, and Rough Creek has been diminished. The impairments are associated primarily with livestock grazing and to a lesser extent with roadway activities (BLM 1991).

Continual season-long grazing with concentrated livestock distributions has adversely affected aquatic, riparian, and upland vegetation. Diminished aquatic and riparian vegetative cover has caused bank destabilization and stream channel gullyng. BLM surveyed 66 miles of perennially flowing streams in the Bodie Hills region and found 27 miles (41 percent) in gullied channels. The entire length of Hot Springs Canyon Creek and 74 percent of Rough Creek were in gullied channels (BLM 1983). Diminished upland vegetative cover and soil compaction have increased the vulnerability of upland areas, especially meadows and springs, to rill and sheet erosion.

Roadway construction and maintenance in close proximity to stream channels has caused stream bank destabilization and stream channel gullyng. Roadways run adjacent to the stream channel for significant distances in Aurora and Clearwater Canyons (BLM 1983).

Sediment/siltation patterns influence the aquatic habitat, water chemistry, and stream morphology and hydrology. The primary concern in the Bodie Hills region is the impact of excessive sediment/siltation on aquatic habitat. Increased sediment deposition can choke spawning gravels, impair fish food sources (macroinvertebrate populations), fill in rearing pools, and reduce habitat complexity. In addition, increased sediment suspension can make it more difficult for fish to find prey and can cause physical harm at high levels (USEPA 1999).

Project Area

Geography

The five waterbodies (Aurora Canyon Creek, Clark Canyon Creek, Clearwater Creek, Hot Springs Canyon Creek, and Rough Creek) are adjacent to the Nevada Border in Mono County, California, east of the town of Bridgeport and Highway 395, and north of Mono Basin. The combined watersheds cover approximately 68,200 acres (107 square

miles) of high desert land, dominated by sagebrush and pinion pine, in the Bodie Hills. Elevations in the watersheds range from approximately 6,500 feet above mean seal level (AMSL) near the confluence with the East Walker River to approximately 10,000 AMSL at the summit of Bodie Mountain.

Waterbody Description

Physical descriptions of Aurora Canyon Creek, Clark Canyon Creek, Clearwater Creek, Hot Springs Canyon Creek, and Rough Creek are provided in Table 1 below.

Table 1: Physical Descriptions

Creek	Description
Aurora Canyon Creek and Clark Canyon Creek	The Aurora Canyon Creek watershed covers approximately 30 square miles on the upper western slope of Bodie Mountain. Elevations in the watershed range from 10,168 feet AMSL at the summit of Bodie Mountain and 10,687 feet AMSL at Potato Peak to 6,500 feet AMSL at its mouth. Aurora Canyon Creek flows west for 8 miles from its headwaters to its confluence with the East Walker River approximately 1 mile upstream of the Bridgeport Reservoir. Aurora Canyon Creek is joined by Clark Canyon Creek, a major tributary, approximately 2 miles from its mouth. Aurora Canyon Creek has a total drop of 2,000 feet and an average slope of 0.045.
Clearwater Creek	The Clearwater Creek watershed covers an area of approximately 31 square miles on the southwestern slope of Bodie Mountain. Elevations in the watershed range from 10,168 feet AMSL at the summit of Bodie Mountain to 6,800 feet AMSL at its confluence with Virginia Creek. Clearwater Creek flows west for 12.3 miles from its headwaters to its confluence with Virginia Creek. Virginia Creek flows north into the East Walker River approximately 10 miles upstream of the Bridgeport Reservoir. Clearwater Creek has a total drop of 2,600 feet and an average slope of 0.040.
Hot Springs Canyon Creek	The Hot Springs Canyon Creek watershed covers an area of approximately 5 square miles on the lower western slope of Bodie Mountain. Elevations in the watershed range from 8,000 feet AMSL in the southern headwaters to 6,500 feet at its mouth. Hot Springs Canyon Creek flows west for approximately 4 miles from its headwaters to its confluence with a drainage ditch. The drainage ditch flows into the East Walker River approximately 4 miles upstream of the Bridgeport Reservoir. Hot Springs Canyon Creek has a total drop of 940 feet and an average slope of 0.045
Rough Creek	The Rough Creek watershed covers 270 square miles, 41 in California and 229 in Nevada, on the eastern slope of Bodie Mountain. Elevations in the California portion of the watershed range from 10,168 feet AMSL at the summit of Bodie Mountain and 10,687 feet AMSL at Potato Peak to 7,180 feet AMSL at the California / Nevada border. Rough Creek flows northeast for 8 miles in California and an additional 14 miles in Nevada to its confluence with the East Walker River approximately 18 miles downstream of the Bridgeport Reservoir. The portion of Rough Creek in California has a total drop of 2,600 feet and an average slope of 0.063.

Climate and Hydrology

A cool, semiarid climate is typical in the Bodie Hills. Temperatures range from an average monthly high of approximately 83 degrees Fahrenheit in July or August to an average monthly low of approximately 10 degrees Fahrenheit in December or January. The majority of the precipitation occurs during the midwinter as snowfall with lesser amounts falling in the late spring or early summer as intermittent rainstorms.

Land Use

Approximately 80 percent of the land in these five watersheds is public land managed by the Bureau of Land Management. Uses include various forms of recreation and permitted livestock grazing.

Listing Information

Beneficial Uses

Beneficial uses designated for these streams include: municipal and domestic supply (MUN); agricultural supply (AGR); ground water recharge (GWR); freshwater replenishment (FRSH); water contact recreation (REC-1); non-contact water recreation (REC-2); commercial and sport fishing (COMM); cold freshwater habitat (COLD); Wildlife Habitat (WILD); rare threatened or endangered species (Rough Creek only) (RARE); migration of aquatic organisms (MIGR); spawning, reproduction and or early development (SPWN); and water quality enhancement (WQE).

Water Quality Objectives

The Water Quality Control Plan for the Lahontan Region identifies water quality objectives and beneficial uses, which serve as the water quality standards for purposes of the Clean Water Act. The relevant narrative water quality objectives for sedimentation/siltation are listed in Table 2.

Table 2: Relevant Water Quality Objectives

Parameter	Water Quality Objective
Non-degradation of Aquatic Communities and Populations	All wetland shall be free from activities that would substantially impair the biological community as it naturally occurs due to physical, chemical, and hydrologic processes.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Materials	Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or that adversely affect the water for beneficial uses.
Suspended Material	Waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

Source: Lahontan RWQCB 1994

Impairment

The Lahontan RWQCB included Aurora Canyon Creek, Clark Canyon Creek, Clearwater Creek, Hot Springs Canyon Creek, and Rough Creek on the 1998 Section 303(d) list as impaired waterbodies for habitat alterations and sediment/siltation. Table 3 presents the 1998 303(d) list information for the five waterbodies.

Table 3: California 1998 303(d) Listing for the Five Waterbodies

Waterbody	Cause	Source	Priority	Length Affected (miles)
Aurora Canyon Creek	Habitat alterations	Rangeland	Low	13
Clark Canyon Creek	Habitat alterations	Rangeland	Medium	5
Clearwater Canyon Creek	Sedimentation/Siltation	Rangeland	Medium	7
Hot Springs Canyon Creek	Sedimentation/Siltation	Rangeland	Medium	1
Rough Creek	Habitat alterations	Rangeland	Medium	8

Source: Clean Water Act 1998 Section 303(d) List

References

BLM (Bureau of Land Management). 1983. Proposed Livestock Grazing Management for the Bodie-Coleville Planning Units: Draft Environmental Impact Statement. U.S. Bureau of Land Management, Washington DC.

BLM (Bureau of Land Management). 1991. *Bishop Resource Management Plan and Environmental Impact Statement*. U.S. Bureau of Land Management, Washington DC.

USEPA (U.S. Environmental Protection Agency). 1999. *Protocol for Developing Sediment TMDLs*, 1st Ed. October 1999. U.S. Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Washington, DC.

Lahontan RWQCB (Regional Water Quality Control Board). 1994. *Water Quality Control Plan for the Lahontan Region: North and South Basins*.

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