



Extending Knowledge and Changing Lives.

Water quality risk assessment for grazing areas

Tip Hudson, WSU Extension rangeland & livestock management regional specialist



Extending Knowledge and Changing Lives.

- Reasons for water quality regulations
- Problems caused by livestock
- How does grazing affect water quality?
- How can I evaluate my own place/stream?
- Why should I care?
- What can I do?

Water quality regulations are intended to limit significant contributions of pollution to protect surface water.



Manure is not toxic waste, but excess sediment, nitrogen, phosphorus, and bacteria can cause serious problems



Livestock grazing can affect water quality in two main ways:
1. Direct input of manure into surface water



Livestock grazing can affect water quality in two main ways:
2. Impairing vegetation and stream function so that it doesn't filter low levels of potentially polluting substances



A wide-angle photograph of a grassy field. In the foreground, tall, thin grasses are in focus, some showing signs of being eaten. The middle ground is a vast expanse of green grass. In the distance, several dark-colored cows are grazing. The horizon is a flat line under a clear, light blue sky.

It is critical to maintain healthy upland conditions to protect water quality, because dysfunction on uplands affects stream conditions



It is critical to maintain healthy riparian conditions to protect water quality, because good water quality is produced by healthy riparian vegetation



Both sides of this fence are grazed.

SF Crooked River 1979 Season Long



SF Crooked River 1986 Spring Use



How can I tell if I have a problem?



WSU Extension water quality risk assessment

- WSU risk assessment is not a regulatory document
- The conditions and practices described should not be used as a new bright line, speed limit, sideboard . . .
- WQRA is designed to allow a producer to self-assess relative level of risk of water quality problems from an ecological perspective.
- Risky conditions & practices may not indicate a discharge or cause impairment, but do indicate higher risk
- Positive conditions & practices may not guarantee water quality compliance, but do decrease risk

Risky Conditions

Certain visual indicators or conditions are direct evidence of discharge and do not require further analysis:

- Contaminated runoff entering surface water
- A "plume" of sediment in the water where a streambank is being actively eroded by heavy livestock activity
- A "plume" of manure continually being washed into a stream
- Manure accumulation in or immediately adjacent to water (this is real potential)

Risky Conditions

Conditions within the stream zone which increase risk of a water quality problem include:

- Bare soil
- Visibly eroding streambanks; streambanks are more prone to erode when soils are saturated (Note: this is sometimes a hydrologic feature rather than livestock damage)
- Eroding livestock trails
- Replacement of riparian-type vegetation with upland-type vegetation and/or invasive plants

Risky Conditions

Duration and quantity matters – is there a significant contribution of pollutants to waters of the State? Be honest.



Why should I care?

1. Animal health – water consumption, pathogens, thermal stress





Why should I care?

2. Forage production is dramatically higher on healthy rangeland and riparian zones

Bear Creek (3.5 Miles)

	1978	1994	2010
Riparian Area	3.8 acres	12 acres	
Bank Erosion	12,448 feet	799 feet	<100 feet
Water Storage	500,000 gal/mi	2,096,000 gal/mi	
Production	200 lbs/acre	2000 lbs/acre	>3,000 lbs/ac
Total production within riparian zone	760	24,000	36,000

Data from C. Rasmussen (1996) and W. Elmore

What can I do? Talk to someone you trust.



What can I do?

Self-assessment



More good than bad – Dr. Sherman Swanson



Good

- Early
- Short duration
- Avoids hot season
- Rotate use areas and timing of grazing
- Light to moderate utilization
- long recovery periods
- Regrowth before winter



More good than bad – Dr. Sherman Swanson

Good

- Occasional rest
- Sutter deferred (willows grow taller for two year, then a late graze year)
- More offsite water
- Well scattered salt/supplement
- Cleaned pasture, closed gates



Heavy spring utilization (April 30 photo)



But 60 days recovery allows full plant community expression (June 30 photo)



More good than bad – Dr. Sherman Swanson

Bad

- Season-long
- Long season of use
- Hot season grazing in large pastures with limited riparian area
- Little water and only riparian water
- Heavy use too often
- Little or no regrowth before winter



More good than bad – Dr. Sherman Swanson



Bad

- Graze at same time every year - repeated stress
- No rest - little recovery with multiple-season use
- Salting on creeks
- No riding/herding
- Stragglers stay in riparian zone



Water quality risk management strategies



UI Policy Analysis Group conclusions

- If a site is grazed more than once per growing season, moisture conditions must allow regrowth
- Create separate, homogenous riparian grazing units (RIPARIAN PASTURE)
- Prevent cattle from congregating near surface water to protect streambanks

Water quality risk management strategies

UI Policy Analysis Group conclusions

- Locate salt blocks, fencelines, and winter feeding areas away from surface water to prevent manure accumulation adjacent to water
- Avoid utilization levels >65% to sustain vegetation & 3-6" residual height
- Vegetative buffers (ungrazed) not necessary unless:
 - Animal ccn reduces ground cover to <50%
 - Trampling damage causes sloughing
 - Large amounts of manure are deposited in one place





CONTACT INFO:

Tip Hudson

HUDSONT@WSU.EDU

509-962-7507