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D.E.Q.

ELK CREEK NEAR HERON

**WC LEVEL 2.5 STREAM SURVEY
REACH HEALTH ASSESSMENT
MANAGEMENT AND REHABILITATION RECOMMENDATIONS**

June 12, 1997

Prepared for: Elk Creek Watershed Council

Prepared by: Watershed Consulting, LLP

Elk Creek Restoration Project



Elk Creek
Watershed
Council

Heron,
Montana

The Groundwork

Educating Ourselves

- Learning about watershed management
- Prioritizing streams
- Choosing Elk Creek
 - 55 square miles
 - 10 miles of stream

Formation of a Watershed Council

- Partnership

Landowners

Green Mountain CD

MT Watercourse

Adopt-A-Stream

- A Vision Statement

In 20 years, Elk Creek will be running full-length with good quality water which supports lots of fish and a well managed healthy riparian zone. Happy neighbors and responsible watershed residents will have a thoughtful management process in place which will use community priority setting and decision making that draws on a good data base.

Know Your Watershed Workshop

- Speakers on:

History of Elk Creek
Water Quality & Aquatic Life
Hydrology of the Watershed
Ground Water Resources

Technical Advisory Team

US Forest Service
MT Fish, Wildlife and Parks
Natural Resources Conservation Service
Washington Water Power
Dept. of Environmental Quality
MSU County Extension
Noxious Weed Trust Fund
Green Mountain Conservation District
Adopt-A-Stream Project

Developing the Project

Setting Goals

- Restoration of degraded areas along Elk Creek
- Improve water quality
- Improve riparian vegetation
- Educate watershed residents
- Develop a watershed management plan
- Improve trout populations & habitat

Funding

For Stream Assessment:

\$ 8100 to Elk Ck Council

\$ 3157 to Elk Ck Council

Source: MT Fish, Wildlife & Parks
Future Fisheries Improvement Pro-
gram

For Stream Restoration:

\$55,800 to Elk Ck Council

Source: MT Fish, Wildlife & Parks
Future Fisheries Improvement Pro-
gram

\$64,000 to Green Mountain CD
(Part of \$126,800 total grant)

Source: Dept. of Environmental
Quality (319 & RDGP)

Stream Assessment

Informal:

- By council members and NRCS employees
- Use of GPS system to plot restoration sites

Formal:

By Watershed Consulting, LLP

- 16 reaches analyzed
- Rehabilitation recommendations
- Monitoring recommendations
- Summary
- Typical site plans

Restoration Plans

- 4 Main Types of Work:
 - 1) Revegetation
 - 2) Rootwad revetment
 - 3) Narrowing & deepening of stream channel
 - 4) Complete rechanneling
- 25 sites along 7 miles of Elk Creek
- Sample Site Plans

Implementation of Project

Bid Process and Selection of Contractor

Construction

- Materials
- Oversight by hydrologist
- Documentation

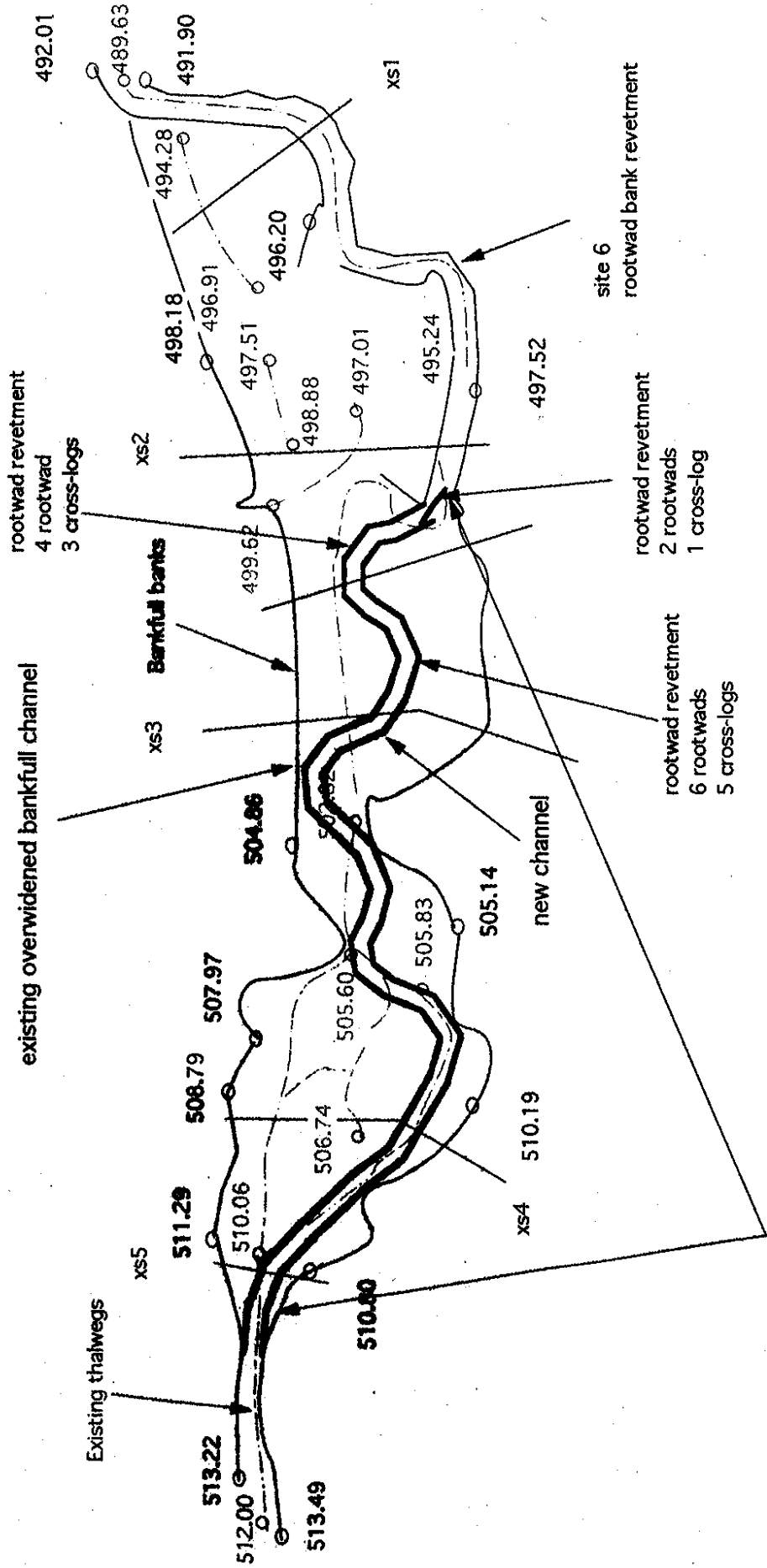
Pitfalls/Concerns

Monitoring the Project

- Fish Sampling
- Macroinvertebrate Sampling
- Staff Gauges/Thermometers

ELK CREEK NEAR HERON -- BOB LANS

Rootwads: 12
 Cross-logs 9
 Rocks: 84

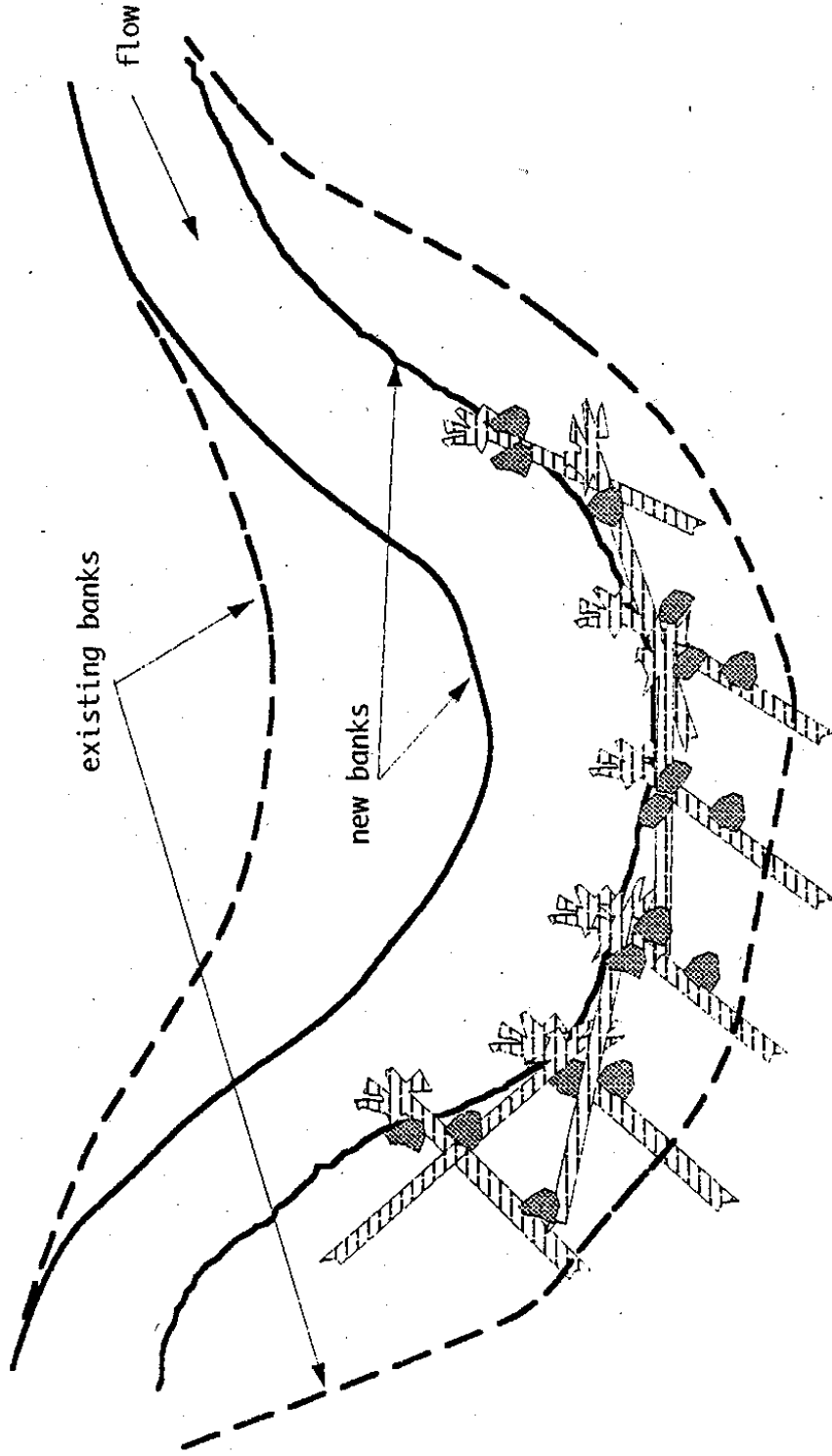


channel aggradation, loss of depth, overwidening
 1,440' of channel rehabilitation
 W: 24'; D: 2.2'
 the rehabilitated channel follows a pre-existing route

200 FEET

Sites with channel narrowing and deepening; see the profile drawings

11, 12, 13, 14, h, i, j,

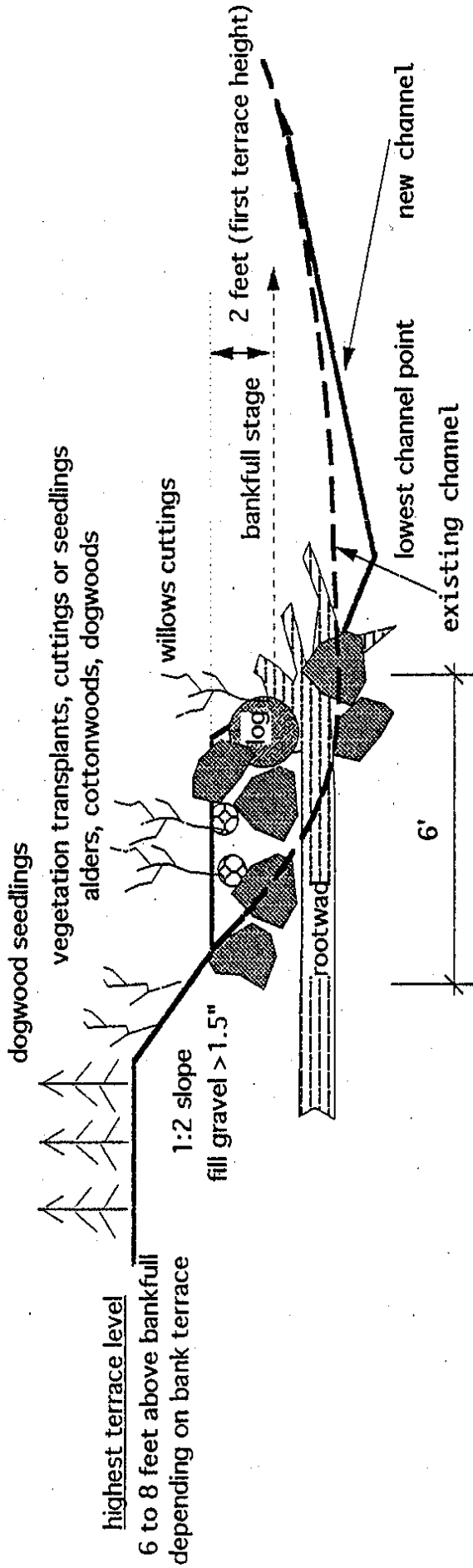


ALL ROOTWADS WEIGHTED BY ROCKS AND COVERED BY GRAVEL

ELK CREEK NEAR HERON -- ROOTWAD REVETMENT BANK PROFILE

- Sites: 11, 12, 13, 14, h, i, j; rootwad revetment, width bankfull to 26'; depth bankfull to 2'
- Site 11: treatment length - ~70 feet, 6 rootwads, 5 cross-logs, 42 rocks
- Site 12: treatment length - ~80 feet, 6 rootwads, 5 cross-logs, 42 rocks
- Site 13: treatment length - ~60 feet, 5 rootwads, 4 cross-logs, 40 rocks
- Site 14: treatment length - ~80 feet, 6 rootwads, 5 cross-logs, 42 rocks
- Site h: treatment length - ~90 feet, 7 rootwads, 6 cross-logs, 50 rocks
- Site i: treatment length - ~70 feet, 6 rootwads, 5 cross-logs, 42 rocks
- Site j: treatment length - ~80 feet, 6 rootwads, 5 cross-logs, 42 rocks

coniferous seedlings
spruce, grand fir, cedar



Rootwad specifications: 1.5 feet minimum diameter above the root; 2-foot diameter and higher preferred; minimum stem length 10 feet, 15 feet preferred

Rock specifications: angular rock with a minimum 2.5-foot intermediate diameter (one of the axis can be less and one must be more)

Fill specifications: where channel width will be decreased and thus off-site fill used, the minimum intermediate diameter will be 1.5 to 6 inches.

This drawing is common for all sites where rootwad revetment will be used. The height of a terrace that forms a bank will be the only difference.