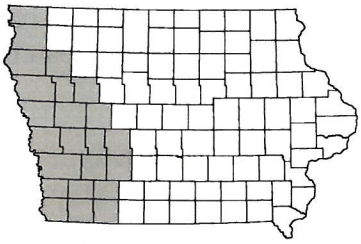
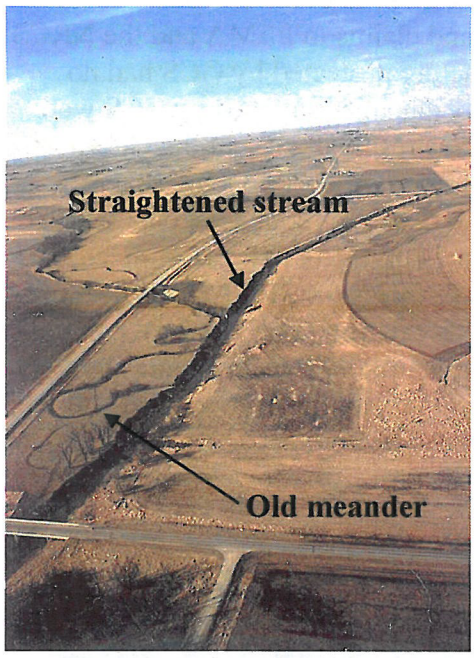
HUNGRY CANYONS ALLIANCE

The Problem

The Hungry Canyons Alliance (HCA) was formed locally to research and implement solutions to stream channel erosion and degradation in a 23 county area of the deep loess soils region of western Iowa. Channelization of streams and land use changes during the first half of the 1900's caused stream channels to erode, causing an estimated $1.1 billion in damages to public and private infrastructure (bridges, culverts, utility lines, etc.), loss of farmland, and increased sediment loads. A survey of western Iowa bridges in 2000 revealed that 404 were endangered due to stream channel degradation.



23 counties eligible for Hungry Canyons Alliance cost share.



Straightened versus meandering stream. (Walnut Creek, Pottawattamie County).

The Solution

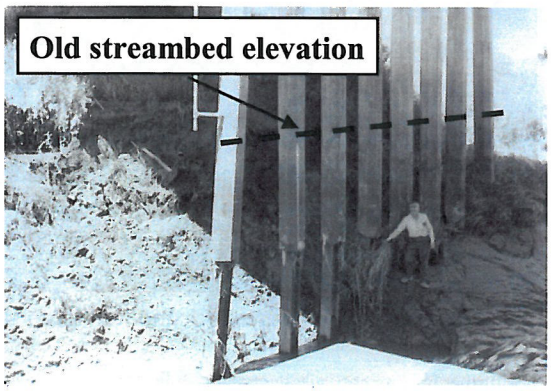
A proven, affordable solution to this problem is to build grade control structures in streams. Grade control structures (GCS) at regular intervals help streams stabilize by changing the stream profile from an erosive steep incline to a stable stair-step pattern. Streambed stabilization is the key to preventing further erosion and protecting infrastructure.

Large drainage areas are often controlled with weirs constructed with steel sheet pile, riprap and concrete grout slope immediately downstream, a riprap stilling basin downstream, and riprap covered banks. Weirs allow the stream elevation to drop in a controlled setting, restore lost stream grade, prevent further degradation, decrease sediment loads and turbidity, and increase water quality.

Savings

The HCA provides available state and federal money to the 23 counties through a cost share program for grade control structures (GCS). County governments provide a minimum of 20% match for each GCS. Since 1992, the program has provided $20.5 million in state and federal appropriations and the technical assistance needed to complete 290 GCS in 17 counties in western Iowa. Another 29 GCS are in progress. These GCS will protect an estimated $77.75 million in property value. It is estimated that 570 acres of land, equivalent to 20.1 million tons of sediment, will be protected from erosion by the 319 GCS. HCA grade control structures, with an average cost of $64,845, protect approximately $243,731 in property per GCS. **For every $1 invested in HCA grade control structures, more than $4.24 of property value and an average of 0.98 tons of sediment are protected from streambed degradation.**

Over 750 grade control structures of all types have been constructed in western Iowa by a variety of local, state, federal, and private entities. With so



Bridge endangered by exhumation of pilings.

many GCS located in one area, western Iowa has been referred to as a "laboratory" for GCS design. Because western Iowa is still experiencing streambed degradation, the HCA is one of the unheralded leaders in innovative GCS research, design, and construction in the world.

Sheet pile weir with a 20:1 grouted riprap slope in Crawford County.

2007-2008 Floods

Severe rains in May 2007 and June 2008 caused widespread flooding and stream channel damage; this was the worst flooding to hit western Iowa since 1993. However, Federal Emergency Management Agency (FEMA), Natural Resources Conservation Service (NRCS), Hungry Canyons Alliance (HCA), and counties have all seen evidence that grade control structures have directly reduced flood damage costs and claims to FEMA and the NRCS Emergency Watershed Protection (EWP) Program. Infrastructure protected by GCS had no damage, and the vast majority of GCS were undamaged. Any damages suffered by GCS were minimal compared to the total loss of our bridges that may have resulted without the GCS.

EWP funding is available; however, local county governments are experiencing severe budget shortfalls. The HCA has agreed to provide 10% of the match to reduce the counties burden to meet the 25% match requirement for EWP projects. **The HCA will use state cost share to match the federal EWP funding (75%) and county funds for all EWP projects which provide grade control or are directly associated with existing GCS projects.** In this era of economic stimulus concerns, having match to utilize $13 million in federal funds will create/keep employed numerous people supplying construction project labor, materials, and heavy equipment industries over the next two years. Increased state dollars for GCS could leverage more federal dollars in Iowa, creating more jobs while protecting Iowa's infrastructure.

Sheet pile weir with a 20:1 grouted riprap slope, designed to allow fish passage, in Montgomery County.

For further information, please contact: John Thomas, Project Director, Hungry Canyons Alliance, Golden Hills RC&D Office, 712 S. Hwy. 6 & 59, P.O. Box 189, Oakland, IA 51560-0189 Ph: 712-482-3029 Fax: 712-482-5590 Cell: 402-250-3293 Email: john.thomas@rcdnet.net