Conservation Practices Work for Bowman - Haley Reservoir

The Bowman-Haley Watershed Project, located in southwestern North Dakota along the South Dakota border, is one of the state's most successful section 319 projects. The Bowman-Haley Watershed Project covers 304,000 acres. The principal land uses of the area are rangeland (167,740 acres), cropland (121,890 acres), farmstead (7,230 acres), and roads (7,146 acres).

Bowman-Haley Dam, constructed by the U.S. Army Corps of Engineers in 1966, was established to provide an alternative water supply, downstream flood control, and recreation. The resulting 2,560-acre reservoir provided a much needed recreational facility for all.

Over a period of time, however, residents began to notice a steady decline in water quality. More alarming, recreational use of the reservoir for swimming, boating, and fishing dropped off. In 1989 and 1990, evaluations of the water quality, physical characteristics, and fishery by the state health agency found that the reservoir was hypertrophic and nutrient rich. Moreover, its water quality was progressively degrading.

Algal blooms dominated in summer, with low dissolved oxygen in winter. Nutrients and sediments from improper agricultural management were soon identified as the culprits. These conditions--which affected sport fishery, holding capacity, and recreational values--were expected to continually deteriorate and significantly shorten the reservoir's useful life.

In June 1990, the local soil conservation district and water resource board took action to reverse this downward trend. They developed a five-year plan outlining specific agricultural land management practices to improve water quality. The plan's main focus was to reduce wind and water erosion.

This would reduce nutrient and sediment loadings to the reservoir--based on Universal Soil Loss Equation values--by a minimum of 20 percent. The target audience was watershed landowners. The project was designed to provide financial and technical assistance to landowners and encourage them to voluntarily use conservation practices on their lands. USDA and section 319 funding was used to provide additional staff, cost-share assistance to apply conservation practices, and educational activities.

The project's success in encouraging landowner participation and ultimately in improving the land management and water quality in the watershed was due to several factors:

- An aggressive, well-developed educational program;
- Financial assistance to landowners; and
- A comprehensive project plan.

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The educational component was critical--the public's attitude about water quality and conservation needed changing. The public needed to understand that water quality improvements and agribusiness could coexist and be profitable. Additionally, local residents needed to be educated about the impacts of nonpoint source pollution on water quality and see the various technologies available to improve their land management practices. Educational devices used included media communications, workshops, seminars, direct mailings, demonstrations, and one-on-one consultations with landowners.

As part of the educational effort, the project staff encouraged landowners to develop resource management plans by providing financial and technical assistance for farms. The plans identified current farming and ranching practices and scheduled appropriate conservation practices to reduce wind and water erosion. Various federal and state programs provided financial assistance to ensure the use of these practices.

The resource management plans identified crop residue management, conservation cropping sequence, strip cropping, and grassed waterways as the main practices to reduce wind and water erosion. Plans also identified improvements for fragile rangelands and water distribution facilities.

By January 1992, land management throughout the watershed showed tremendous improvement. Under the project, some 65 resource management plans were developed to reduce wind and water erosion on 110,020 acres, accounting for over 36 percent of the entire watershed. The local sponsor, the Soil Conservation District Board representing Bowman and Slope counties, has also reported that a variety of conservation practices are being used on acreage not covered by a formal plan. Using Universal Soil Loss Equation values, the nutrient and sediment loadings to the reservoir have been reduced by 25 percent--5 percent more than the project's original goal.

The most important benefit may be the public's enlightened attitude about water quality and conservation. Preproject surveys and recent feedback show that local residents are significantly more aware of water quality issues in the reservoir. This attitude change will undoubtedly result in a continuous voluntary effort to tackle water quality problems and improve the reservoir's overall water quality.

After only three years, this project has shown that a voluntary approach to water quality improvement can be successful. Based on past successes and the general public's new awareness, local project sponsors estimate that landowners will apply improved land management practices on over 50 percent of the watershed acreage by the end of the five-year project. They also expect land management improvements to continue after the project ends because of landowners' understanding of environmentally sound land management, both on and off the farm. Prior to 1992, watershed water quality improvements were difficult to document because of prolonged drought conditions. During this period, many monitoring sites remained dry and virtually no water quality samples were collected. Given the limited water quality data available prior to 1993, the project's true benefits cannot be accurately documented.