Kendrick Watershed Plan
Project Update
Summer 2011

Natrona County Conservation District

Selenium & Irrigation Management

The Natrona County Conservation District (NCCD) is the lead agency for numerous water quality and water quantity related studies and programs that benefit urban, suburban, and rural water users. The Kendrick Watershed Plan is a 10-year initiative of NCCD to improve the quality of the surface waters in the Kendrick watershed to meet the designated use of waterways that drain to the North Platte River.

The Plan was developed to address and reduce high concentrations of selenium in surface water runoff and ground water migration. Plan implementation is a long-term collaborative by those who have influence or guardianship of surface water runoff areas and discharge locations in the Kendrick watershed, such as: Casper Alcova Irrigation District (CAID), Natural Resources Conservation Services (NRCS), landowners, sportsmen and environmental groups.

Spring and summer are critical seasons for the management of selenium migration for rural and urban landowners. Selenium is naturally occurring in the soil throughout the county, and is transported by rain, snow melt and irrigation water runoff and ground water to drainages, creeks and streams that drain to the North Platte River. Irrigation practices used by landowners throughout the Kendrick Watershed are a primary area of focus for the NCCD, due to the documented relationship between selenium migration and irrigation practices.

There are several irrigation water delivery systems that can be implemented to reduce the migration and plant uptake of selenium. Existing scientific studies and local field tests indicate that the use of alternative irrigation practices can decrease the amount of selenium that leaches back into the soil, into the irrigation drainages and groundwater.

Good irrigation management results in low runoff, minimal leaching below the plant roots, and no surface erosion. Whether irrigating a lawn, vegetable garden, field crop, or pasture, analyzing and understanding the soil conditions and crop requirements is an essential component of irrigation management.

Apply Water at a Rate the Soil Can Absorb

Soil Type	Soil Uptake Rates (Inches/Hour)
Sand	2 to 4 inches
Sandy Loam	1 to 3 inches
Silt Loam, Loams	0.25 to 1.5 inches
Silty Clay Loam, Clay	0.1 to 0.3 inches

Water According to Moisture in the Root Zone

Check soil moisture to determine when to irrigate. It's time to water when soils have lost more than 50% of the water available to plants in the root zones. Root zones of pasture, corn, and alfalfa are 2, 3, and 4 feet deep respectively. Use a soil probe, tensiometers, gypsum block, or the feel method to test the soil. In the summer months, annual crops will require a net application of 1" to 3" of water available at the root zone weekly. If the application efficiency of the irrigation system is 50%, a gross application of 2" to 3" of water will need to be applied each week. Critical irrigation periods are during plant flowering, seed or fruit set.

Irrigated Pastures

- Plant drought resistant grasses: tall fescue, smooth brome, and perennial rye grass are the most drought tolerant.

- Graze properly for a drought tolerant pasture: healthy grass requires leaves above ground to support roots below ground. Do not allow livestock to graze grass lower than 3". When grazing removes too many leaves, roots may die, and the pasture will be less drought tolerant.
- Irrigate hay and pasture during critical times: for hay growers, water is particularly important in the spring, and before each cutting. If grass develops good root systems during these critical periods, it will be more drought tolerant.
- Irrigate in the early morning: water use is more efficient because the winds tend to be calmer, temperature is lower, and evaporation is less.
- Control weeds: unwanted plants compete with grasses and clover for moisture.
- Reduce nitrogen applications during drought: under normal weather conditions, split nitrogen applications for the most efficient use of this nutrient. During drought conditions, reduce nitrogen applications by 25% to 30%. Normal amounts of phosphate, potash, and sulfur are still needed.

Mountain Pine Beetle

Mountain Pine Beetles are one of the most damaging insect pests to pine forests throughout Wyoming. The latest aerial survey by the U.S. Forest Service, released in January 2011, indicates an estimated 314,000 acres of Wyoming's pine forest died from beetle infestation in 2010, mostly from mountain pine beetles. Nearly 3.1 million acres of trees in Wyoming, primarily lodgepole, ponderosa and limber pine, have been infested since the outbreak was first noticed about 15 years ago.

While pine beetles are common among forests in the Rocky Mountain region, recent drought conditions and warmer weather have stressed pine trees making them more susceptible to beetle damage. Beetle damage is not exclusive to pine trees, nearly every species of conifer attracts it's own unique bark or wood boring insect, with equally devastating effects.

Mountain Pine Beetles have a one-year life cycle. In mid-to-late summer, adults leave the dead, yellow-to-red needled host trees in which they have developed. Beginning in mid-July, the beetles ***fly***, leaving the host tree in search of a new healthy tree to host the next generation of beetles. Except for a few days during the summer when the adults emerge and fly to a new tree, all of the stages of their life are spent beneath the bark of the infested tree.

Mountain Pine Beetles are not exclusive to large naturally-forested mountain areas. The recent infestation is effecting trees in urban landscaping, wildland-urban interface areas, and in windbreaks on farms and ranches throughout Natrona County. Residents should be particularly mindful of beetle infestation when cutting or purchasing firewood. Mountain Pine Beetles can be present in the wood. If the wood is stacked and stored through the summer season, the beetles will fly to the closest healthy pine tree - perhaps on your property or a neighbors.

Whether buying wood from a professional wood cutter or personally harvesting trees, look for wood that is dried and cured. Harvest trees that have been dead for a minimum of one year, do not cut green trees. Purchase only dry firewood; it is much lighter in weight than green wood. Wood from Mountain Pine Beetle infested trees often has a bluish cast. Inspect cut wood for signs of beetle infestation under the bark. Stack and store wood away from trees and structures. If possible cut or purchase fire wood after mid-September and use all of the wood prior to the mid-July beetle migration season.

For information on identifying and treating Mountain Pine Beetle infested trees and treating beetle infested firewood visit the following local web sites.

www.natronacountyconservationdistrict.com

www.firewisewyoming.com

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New NCCD Board Member

NCCD announced the appointment of Andrew C. Anderson to the Board of Supervisors. Anderson grew up on a small farm west of Casper and attended Natrona County High School, received a Bachelor of Science in Geological Engineering the Colorado School of Mines and a Masters of Science Degree in Geology from the University of Wyoming. He worked in Riverton for eight years in the mining industry designing mine reclamation projects and uranium mine exploration, evaluation and permitting. Anderson and his family returned to Casper in 2010 to work the family ranch in Bates Hole.

Supervisor Tyrone Fittje, NCCD Board Chair, announced Anderson's appointment at the April board meeting. The five-member NCCD Board of Supervisors manages the staffing, policy development, fiscal and legal aspects of the District. Each volunteer board member serves a four-year term. To ensure all residents of the county are represented, the Board of Supervisors is made-up of three individuals from the rural area of the county (living outside of a municipality), one board member from the urban area and one at-large board member.

The NCCD Board of Supervisors meets on the second Tuesday of each month at the NCCD office. The board meetings begin at 7:00 p.m. and are open to the public.

The Natrona County Conservation District (NCCD) is a leader in natural resource conservation to address water quality, watershed planning, efficient irrigation, Selenium migration and range management. NCCD provides learning opportunities to all residents of the county: farmers, ranchers, small acreage landowners, urban dwellers and youth groups on conservation best management practices through publications, workshops, seminars and technical assistance.

Kindrick Landowner Survey

A special thank you to the Kendrick Watershed landowners for their time to complete and return the recent NCCD survey. The information provided regarding your management of selenium in the soil, irrigation methods employed and topics of interest help us to develop future landowner information projects.

A summary of the combined 2010 and 2011 survey responses is available on the NCCD web site. Following are a few of the responses specifically related to selenium management and a profile of the landowners completing the survey.

Of those who responded to the survey:

- 50% indicated they are small acreage residents
- 33% indicated a combined farm/ranch operation
- 14% are farmers
- 4% are ranchers

Number of irrigated acres represented among all survey responses combined:

- 2010 total irrigated acres: 1,807 acres
- 2011 total irrigated acres: 2,274 acres

Irrigation water delivery method used:

- 38% Flood
- 20% Linear Side Roll
- 7% Center Pivot
- 6% Surge Valve Furrow
- 4% Low Energy Precision Application (LEPA)
- 7% Other (includes K-line sprinklers, underground pipe, gated pipeline, etc.)

Respondents who have changed irrigation water delivery systems in the last five years:

- Yes, have changed - 37%
- No, have not changed - 63%

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A Message From NCCD

To All Kendrick Landowners & NCCD Stakeholders,

This has been a busy year for NCCD. We continue to work with CAID, NRCS, landowners, sportsmen and environmental groups on the Kendrick Watershed Plan implementation to establish more efficient irrigation water delivery systems. Nearly 9,000 acres of farm land has been reclaimed for alfalfa production through transition to alternative irrigation methods that decrease the migration of selenium to local waterways.

For more than 10 years, NCCD has conducted a water sampling and analysis program in the Kendrick Watershed to identify the concentrations and movement of selenium. Currently, 17 sites are sampled bimonthly.

NCCD serves on the Inter-Agency Scoping Committee for the North Platte River Total Maximum Daily Load (TMDL) Project to establish selenium TMDL's through the analysis of historic water quality testing data.

In September, we coordinated and conducted the Wyoming Department of Environmental Quality surface water Use Attainability Analysis project at 40 water sites in Natrona County identified for real-time characterization.

NCCD coordinates the Rangeland Management project to control Prairie Dog infestations and since 2009 approximately 40,000 acres have been treated/retreated. We are co-presenters in the Rural Living Workshop series featuring topics such as weed identification and control, irrigation water management, Pine Bark Beetle recognition and control, subdivision issues, and solar energy.

Our annual Seedling Tree Program was a huge success this year! We provided more than 3,900 trees and shrubs to Natrona County residents for natural wind breaks, snow fences, and landscaping. The 2012 tree order form will be available on the NCCD web site in November.

This is the final issue of the Kendrick Watershed Plan Project Update newsletter. Please visit our web site to learn about new and continuing projects, and tell us if you found this newsletter informative.

Have a wonderful and productive summer,
Lisa Ogden, District Manager, NCCD

Web site: www.natronacountyconservationdistrict.com

A publication of the Natrona County Conservation District, funded in part with a grant from the Wyoming Department of Environmental Quality/U.S. Environmental Protection Agency.