

Nemaha Natural Resources District

10-Year Master Plan

2021-2030



62161 Highway 136, Tecumseh, Nebraska 68450 - www.nemahanrd.org

Protecting Lives - Protecting Property - Protecting the Future

INTRODUCTION

The Nemaha Natural Resources District is one of 23 Natural Resources Districts (NRD's) created by the Nebraska Unicameral in 1969 with the passage of LB 1357. Since its formation in 1972, the Nemaha NRD has been assisting people in the Nemaha River Basin in the development and protection of our soil and water resources.

Nebraska statutes require that Natural Resources Districts develop a *Long Range Implementation Plan*. The purpose of the plan is to "summarize planned district activities and include projections of financial, manpower, and land rights needs of the district for at least the next five years and the specific needs assessment upon which the current budget is based." (Section 2-3277, R.R.S. 1943). The plan serves as a tool for carrying out the District's *Master Plan*.

I. AUTHORITY AND RESPONSIBILITIES

The Natural Resources Districts have been given statutory responsibility outlined in Sections 2-3229, R.R.S. 1943. This section states "The purposes of the Natural Resources Districts shall be to develop and execute, through the exercise of powers and authorities contained in this act, plans, facilities, works and programs relating to:

- (1) erosion prevention and control,
- (2) prevention of damages from flood water and sediment,
- (3) flood prevention and control,
- (4) soil conservation,
- (5) water supply for any beneficial uses,
- (6) development, management, utilization, and conservation of groundwater and surface water,
- (7) pollution control,
- (8) solid waste disposal and sanitary drainage,
- (9) drainage improvement and channel rectification,
- (10) development and management of fish and wildlife habitat,
- (11) development and management of recreational and park facilities, and
- (12) forestry and range management."

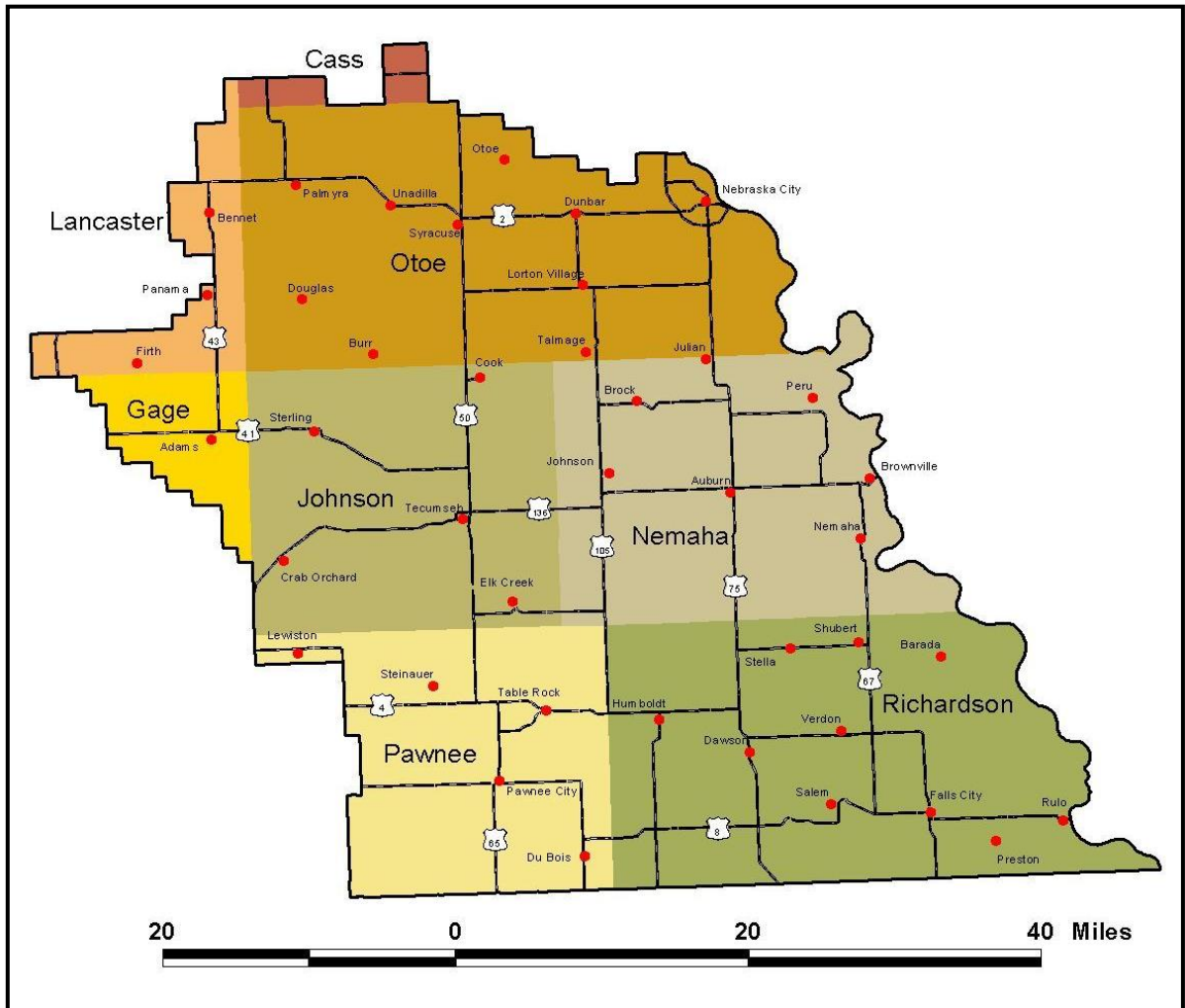
Nemaha NRD programs and projects are available to meet the goal of properly developing our water and related land resources.

II. DESCRIPTION OF THE DISTRICT

Location:	Southeast Nebraska (All of Johnson, Nemaha, and Richardson Counties; most of Otoe and Pawnee Counties; some of Gage, Lancaster, and Cass Counties)
Size:	2,402 square miles or 1,537,460 acres within the Big & Little Nemaha River Basins
Tributaries:	Brownell Creek, Camp Creek, Long Branch Creek, Muddy Creek, Pony Creek, Rock Creek, Lores Branch, Negroes Branch, Spring Creek, Squaw Creek, Turkey Creek, Walnut Creek, Winnebago Creek, Bean Creek, Ziegler Creek, and Wilson Creek.
Population:	44,560 (2011 census)

Taxing Authority: Up to 4.5 cents per \$100 valuation (local property taxes)

Funding: The NRD uses a variety of different methods to fund programs including property taxes, grants, and income from goods and services.



III. GOVERNING BODY

The Nemaha Natural Resources District is governed by a 21-member Board of Directors. Directors are elected during the general election for a term of four years with half of the members up for election every two years. Directors are elected by their sub-district's voters.

To allow balanced representation across the District, the area is divided into ten sub-districts, all with approximately equal population. Two board members represent each of the ten sub-districts. Also, one board member is elected at large every four years.

The NRD Board operates according to a set of by-laws which are kept on file at the District headquarters in Tecumseh, Nebraska.

Nemaha NRD Board of Directors - 2021

Subdistrict 1	Robert Lassen	Firth
Subdistrict 1	Timothy Loseke	Hickman
Subdistrict 2	Michael McDonald	Palmyra
Subdistrict 2	Duane Sugden	Sterling
Subdistrict 3	Orval Gigstad	Syracuse
Subdistrict 3	Doug Iske	Dunbar
Subdistrict 4	Dan Giittinger	Nebraska City
Subdistrict 4	Dan Hodges	Julian
Subdistrict 5	Randy Fox	Nebraska City
Subdistrict 5	Kevin Thorne	Nebraska City
Subdistrict 6	Lisa Beethe	Elk Creek
Subdistrict 6	Robbie Bohling	Johnson
Subdistrict 7	Dan Stukenholtz	Brock
Subdistrict 7	Mike Speece	Auburn
Subdistrict 8	Eldon Snoke	Humboldt
Subdistrict 8	Don Siske	Table Rock
Subdistrict 9	Bill Niedfeldt	Shubert
Subdistrict 9	Jon Keithley	Falls City
Subdistrict 10	Jim Gerweck	Falls City
Subdistrict 10	Alan Romine	Falls City
At-large	Russel Moss	Burr

IV. NRD STAFF

The staff of the Nemaha NRD headquarters consists of 13 full-time or part-time employees. The NRD also staffs full-time and part-time field clerks in five Natural Resources Conservation Service county offices within the District. Staff as of July 1, 2021:

Administrative Staff

General Manager	Kyle Hauschild
Administrative Assistant – Programs & Operations	Jane Kuhl
Administrative Assistant – Accounting & Bookkeeping	Jill Rogman
Secretary	Lisa Bartels

Field Staff

Field Representative	Mark McDonald
Field Representative	Vernon Speers, Jr.
Field Representative	Steve Bartels
Resources Specialist – Conservation Programs	Aaron Stalder
Projects Crew Leader	Tomas Chalé Aké
Land & Water Resources Assistant	Ken Hatten

Water Resources Staff

Water Resources Manager	Chuck Wingert
Resources Specialist – Water Programs	Charlie Pierce

NRCS Field Office Staff

Nemaha County Field Clerk (Auburn)	Alice Alexander
Richardson County Field Clerk (Falls City)	Laura Hart
Otoe County Field Clerk (Syracuse)	Vacant
Pawnee County Field Clerk (Pawnee City)	Kathy Harlow
Johnson County Field Clerk (Tecumseh)	Geralyn O'Malley

In addition to the above listed positions, seasonal laborers are hired to assist with tree planting, maintenance of watershed structures and recreation areas, and to assist District farmers with the layout of non-cost-share conservation practices.

Recently Completed and Ongoing Major Projects and Programs

Watershed Planning and Development

Project Location: District-wide
Project Timeline: Ongoing

The NRD has developed and implemented plans on 16 watersheds throughout the District. Watershed planning started in the 1950's, and plans were typically funded through the federal PL566 watershed program. Some of the later plans were developed using local funding sources. Planning assistance is usually provided by NRCS or private consultants. Plans completed to date are as follows:

Watershed	Plan Completed	Drainage in Acres	Structures Completed	*Counties Impacted
Big Muddy Creek – Upper	2006	35,200	16	JO/NE
Brownell Creek	1953	25,053	45	OT
Buck and Duck Creek	2004	17,880	2	NE
Long Branch Creek	1976	46,905	21	JO/NE/PA/RI
Middle Big Nemaha	1987	113,300	8	GA/JO/NE
#Pony Creek	1975	5,540	0	RI
Rock Creek	1966	7,970	15	PA
South Branch – Little Nemaha	1977	122,820	18	JO/LA/OT
South Fork	1973	31,110	15	PA/RI
Spring Creek	1964	33,465	24	JO/NE/OT
Turkey Creek	1998	175,700	60	JO/PA
Upper Big Nemaha	1965	114,980	74	GA/JO/LA/OT
Upper Little Nemaha	1991	128,200	19	CA/LA/OT
Wilson Creek	1962	129,409	77	CA/OT
Winnebago-Bean	1971	12,100	14	RI
Ziegler Creek	1965	17,600	15	OT
TOTAL			423	

*County abbreviations: Cass CA, Gage GA, Johnson JO, Lancaster LA, Nemaha NE, Otoe OT, Pawnee PA and Richardson RI

#The majority of the Pony Creek Watershed and all structures are located in Kansas

Upper Big Nemaha 25C

Location: Gage County
Timeline: Completed December, 2020
Project Cost: \$2.5 million

Upper Big Nemaha 25C was originally constructed in 1974 as one of 33 structures in the Upper Big Nemaha Watershed Project. Located near Adams, Nebraska, it was designed as a low-hazard structure but has been upgraded to high hazard as a result of a rail line and Highway 41 below the dam. This project involved upgrading a large, concrete chute through the center of the dam. Dixon Construction from Correctionville, Iowa, was hired to complete the project at a cost of \$2.5 million. Federal funds accounted for 65% of the cost, and the project was completed in December, 2020.

Watershed Maintenance Activities

Project Location: District-wide
Project Timeline: Ongoing

Many of the early dams built in the Nemaha NRD are reaching 50 years in age. This is typically considered the design life of a small, low-hazard dam. Major repairs are often required on older

structures, which can include replacement of the riser and spillway tube, repairing dam face erosion, and repairing the plunge pool. Some recent, major repairs include:

Year	Structure	Repair Work	Cost
2019	Upper Little Nemaha 59	Rip rap dam face	\$38,036
2019	Wilson Creek 12-T	Rip rap dam face & dirt work	\$88,885
2018	Upper Little Nemaha 18	Outlet repair/rip rap dam face	\$41,955
2017	Brownell 4-1	Replace riser & tube	\$44,168
2017	Upper Big Nemaha G-15	Replace riser & tube	\$38,263
2016	Wilson Creek 12-18	Replace riser & tube	\$33,820
2016	Wilson Creek 6-8	Replace riser & tube	\$32,581
2016	Wilson Creek 5-15	Replace riser & tube	\$39,481
2013	Upper Little Nemaha 17	Rip rap dam face	\$42,350
2013	Upper Little Nemaha 5	Rip rap dam face	\$42,920
2012	Wilson Creek 4-14	Rip rap dam face	\$36,281
2011	Upper Little Nemaha 21	Rip rap dam face	\$80,624

Small Dams Program

Location: District-wide

Timeline: Ongoing

Each year the District accepts applications from landowners for the construction of small dams. Small dams are considered structures with a drainage area of no more than 300 acres. NRD staff evaluates each application and determines which are considered the highest priority for that year. Usually one or two structures are approved for funding. The District contributes up to 75 percent of the cost with the landowner picking up the balance. In recent years Small Dams funds have also been used to contribute towards structures being constructed through federal assistance programs.

Small Dam Program structures completed:

Year	Program Applicant	County	District Contribution	Total Project Cost
2020	Galen Haug Dam	Pawnee	\$106,797	\$139,090
2017	Doug & Sandi Davison	Gage	\$ 22,342	\$ 29,790
2016	Klaus Hartmann Dam	Johnson	\$ 25,000	\$100,000
2015	Milton Buchholz Dam	Johnson	\$ 57,422	\$75,905
2014	Randy Gyhra Structure	Pawnee	\$ 40,000	\$80,984

Eastern Nebraska Water Resources Assessment Project (ENWRA)

Project Location: District-wide

Project Timeline: Ongoing

Project Cost: \$20,000/year

This is a cooperative project that involves six NRDs in eastern Nebraska, the Nebraska Department of Natural Resources, UNL Conservation and Survey Division, and US Geological Survey. The purpose of the project is to collect and analyze aquifer data in the glaciated regions of eastern Nebraska. Funding for the program comes from annual contributions from partnering NRDs and is matched with various grants. Significant project outputs include electromagnetic imaging to better define aquifer boundaries, evaluation and mapping of electromagnetic imaging data, evaluation of new and historic well log data, and comparative analysis of electromagnetic and well log data. The Nemaha NRD has two areas designated for future electromagnetic imaging flights.

Multi-Jurisdictional Hazard Mitigation Plan

Project Location: Johnson, Nemaha, Otoe, Pawnee, and Richardson Counties

Project Timeline: 2011-2021

Project Cost: \$126,000-2015; \$135,800-2020

FEMA required that local governmental jurisdictions such as cities and counties complete a hazard mitigation plan. Rather than have each entity create an individual plan, it was agreed that the NRD would develop a plan for the five counties in southeast Nebraska with the counties and NRD sharing the cost. JEO Consulting was hired by the District to secure grant money from FEMA and write the plan. The planning process included numerous meetings to obtain the necessary input to meet guidelines for writing the plan. Communities also provided a considerable amount of data on existing infrastructure and potential hazards. The original plan was approved by FEMA in March, 2010. FEMA requires the plan to be updated every five years; therefore, the plan was updated in 2015 and again in 2020.

Recreation Facilities

Project Locations: Variable

Timetable: Ongoing

The District operates five recreation facilities and the 22-mile long Steamboat Trace hiking/biking trail. Kirkman's Cove and Iron Horse Trail Lake are the two largest recreation facilities owned by the NRD, and they feature water-based recreation, camping, picnicking, and hiking opportunities for the public. Prairie Owl and Wirth Brothers are smaller and offer more limited water-based recreation and camping opportunities. Duck Creek Recreation Area is the newest area, opened in 2018.

Year Open	Area	County	Acres/ *Miles	Major Uses
1976	Prairie Owl	Otoe	39	Fishing, no-wake boating & day use
1985	Iron Horse Trail Lake	Pawnee	360	Fishing, no-wake boating, camping, hiking, swimming and day use
1988	Kirkman's Cove	Richardson	511	Fishing, boating, camping, hiking, swimming, day use & group events
1996	Wirth Brothers	Johnson	89	Fishing, no-wake boating, camping, swimming, day use and archery
2018	Duck Creek Rec Area	Nemaha	200	Fishing, no-wake boating, camping, hiking, swimming and day use
1999	Steamboat Trace	Otoe-Nemaha	*22	Hiking and biking trail

The District typically budgets \$100,000-\$125,000 annually for maintaining all five recreation areas with additional funds occasionally budgeted for repairs or improvements. Vehicle permits are required at Kirkman's Cove, Iron Horse Trail Lake, Duck Creek, and Wirth Brothers Lake. Fees are also charged for some camping facilities. Those funds collected are put directly back into the parks for maintenance, utilities, and improvements.

The Steamboat Trace is located along an abandoned railroad right-of-way that runs from four miles south of Nebraska City to south of Brownville. It was obtained by the NRD through the federal railbanking program. Approximately \$20,000 is budgeted annually for general trail maintenance. A majority of the trail is in the Missouri River floodplain and is subject to flooding, which increases maintenance costs. The trail attracts both local and out-of-area users who enjoy using the trail for hiking and biking. The trail is normally used regularly from April through November; however, fall is the most popular time of use. Groups and group events are also popular uses of the trail.

Goal - Encourage the conservation of soil resources in the Nemaha River Basin

Objective 1 - Continue to assist the State with the administration of the Nebraska Soil and Water Conservation Program

Each year the Nemaha NRD works with landowners to implement conservation practices district-wide using funding provided through the Nebraska Soil and Water Conservation Program. The District has established a maximum of 50 percent cost-share assistance up to \$8,000 per application. Typically, NRCS has provided assistance with program signup and design. Funding received is dependent on the State budget but typically ranges from \$80,000 to \$100,000 annually. District funds are often budgeted to supplement the funds from the state and are determined based on the demand each year and availability of local funds.

Planned Actions:

- ◆ Periodically review administrative policies, including but not limited to, practice priorities, cost-share percentages, maximum assistance, and application procedures
- ◆ Continue annual sign-up periods
- ◆ Establish project completion deadlines and consider ideas to assure that all funds are spent at the end of the year
- ◆ Coordinate sign-ups, application approvals, and project completion with NRCS
- ◆ Support increasing state funding assistance into the program

Objective 2 - When practical and feasible, partner with communities, counties, and/or private landowners to install grade stabilization structures that reduce stream downcutting and sediment loading into surface water

Stream downcutting and sedimentation is a major resource concern in southeast Nebraska. Most of the major rivers and streams have down cut 10 to 20 feet over the past 50 years, which results in sediment loading, loss of cropland, and threatens transportation and utility infrastructure. Downcutting can also threaten homes and other buildings in communities. Typically solving stream downcutting can be costly, and there are few options for grant funding.

Planned Actions:

- ◆ Work with counties and communities to identify waterways with down cutting or sedimentation problems that threaten infrastructure and develop plans to address concerns
- ◆ Evaluate the technical and economic feasibility of addressing concern areas
- ◆ Consider opportunities to create multi-agency programs and projects that address downcutting and sediment concerns
- ◆ Identify and apply for funds that can assist with developing programs and projects that will control or reduce downcutting and sedimentation
- ◆ Work with landowners to provide technical assistance to address and solve head cutting and erosion issues on private property
- ◆ Establish and implement methods to evaluate the effectiveness of completed projects

Objective 3 - Continue to seek opportunities to implement watershed treatment projects above critical watershed structures

The Nemaha NRD is responsible for over 400 watershed structures. Adequate land treatment above structures is beneficial because it can extend the functional life of a dam or grade stabilization structure. Land treatment can also reduce contamination from pesticides and fertilizers, which is particularly important if a watershed structure is used for recreation or watering livestock. In recent years projects have focused on watersheds above water-based recreation areas; however, other watersheds may also benefit from treatment in the future.

Planned Actions:

- ◆ **Identify and prioritize watersheds that may be candidates for future treatment projects**
- ◆ **Use stream and lake sampling as a tool to identify lakes that could benefit from treatment efforts and help monitor the success of projects that are implemented**
- ◆ **Incorporate a watershed plan into new structures that will include public, water-based recreation activities**
- ◆ **Evaluate the feasibility of developing, funding, and implementing accelerated land treatment programs above NRD operated watershed structures, particularly those that include private or semi-private water-based recreation activities**

Objective 4 - Use available, regulatory authority to address erosion concerns on private land

The District has an approved Erosion and Sediment Control Plan. The plan is used in conjunction with state statutes to address sediment and erosion problems on private land. District staff inspects complaints; and if warranted, state law allows the NRD to require that measures be implemented to eliminate damage on neighboring land.

Planned Actions:

- ◆ **Update the District's sediment control plan as needed or required**
- ◆ **Assure that any official and unofficial complaints are administered fairly and expeditiously**
- ◆ **Work with landowners to find the best/most cost-effective solutions to address erosion issues**
- ◆ **Provide cost-share assistance to help settle complaints when feasible**
- ◆ **Work with landowners to assure required work is completed and the problem is corrected**

Objective 5 - Continue the present partnership with NRCS

The Natural Resources Conservation Service has a mission similar to the NRD's, and as a result there has been a close partnership between the agencies since 1972. The District currently works with offices in all eight counties that encompass the NRD. District funded clerks are assigned to Johnson, Nemaha, Otoe, Pawnee, and Richardson Counties. NRCS typically provides most of the technical assistance for the Nebraska Soil and Water Conservation Program and has also helped the NRD with designing dams and grade stabilization structures. On larger projects such as watershed planning and larger dam design, the NRD may work directly with NRCS State Office staff.

Planned Actions:

- ◆ **Continue to provide clerical assistance to the Johnson, Nemaha, Otoe, Pawnee, and Richardson County NRCS offices**
- ◆ **Partner with NRCS to plan and design dam and grade stabilization projects**
- ◆ **Utilize NRCS to provide technical assistance services for the NSWCP Program**
- ◆ **Participate on the EQIP Working Group**

Objective 6 - Promote the importance of protecting soil from wind and water erosion

In the past the NRD has worked to educate the public on the importance of protecting soil from wind and water erosion. Vehicles such as newspaper articles, radio announcements, and the District newsletter have been used to get the message out in the past.

Planned Actions:

- ◆ **Use local media to help educate the public on the importance of protecting soil from wind and water erosion**
- ◆ **Use the District's website and social media channels to educate the public on the importance of protecting soil from wind and water erosion**

Objective 7 - Support efforts that protect highly erodible land from erosion

Because of the glaciated terrain in southeast Nebraska, the Nemaha NRD has a considerable amount of highly erodible land (HEL). The District has always encouraged landowners and tenants of highly erodible land to operate and maintain it in such a manner that erosion is minimized. This includes installing best management practices, no-till farming, and/or maintaining HEL in grass.

Planned Actions:

- ◆ **Utilize the NSWCP program to help get appropriate conservation practices installed on HEL**
- ◆ **Help educate the public about HEL and the importance of managing and protecting it properly**
- ◆ **Support the creation and implementation of management practices that protect highly erodible land in the Farm Bill**

Objective 8 - Support and encourage efforts that help keep marginal land in grass or woodlands

Because of the sloping terrain of southeast Nebraska, the Nemaha basin includes a substantial amount of Class IV through Class VIII land. With its limited ability for use as cropland and the vulnerability to erosion, it is important that it be kept in grass or, where appropriate, woodlands. In addition to protecting soil from erosion, grass and trees are beneficial to native wildlife species. Historically programs such as the Conservation Reserve Program (CRP) and some wildlife habitat programs have helped to keep or return marginal land back to grass. The NRD has always supported these programs and where appropriate participated as a partner. The changing agricultural economic climate can have an impact on producers' interest in using marginal land for crop production, so it is important that an ongoing education program be maintained and efforts to provide incentives and assistance continued.

Planned Actions:

- ◆ **Continue to support CRP or similar programs**
- ◆ **Promote to USDA and Nebraska's Congressional delegation the importance of federally funded programs that encourage the protection of marginal land**
- ◆ **Promote the value of keeping or converting marginal ground to grass or trees**
- ◆ **Evaluate the development of a conservation easement program to allow landowners to voluntarily protect high quality grassland and woodland**

Objective 9 - Develop and promote activities that help educate youth on the importance of protecting soil resources.

Youth are a critical target audience when getting out the message about protecting soil from water and wind erosion. Students tend to be the easiest to educate and have the time to learn. The District has been a long-time sponsor, organizer, and participant in land and range judging competitions. Competitions help youth understand the importance and value of protecting soil resources and properly managing grazing.

Planned Actions:

- ◆ **Work with NRCS, schools, FFA, and Extension to organize land and range judging contests**
- ◆ **Participate in statewide planning efforts to develop schedules, update rules, and update program information for land and range judging contests**
- ◆ **Support the Envirothon program**
- ◆ **Continue to sponsor the Watershed of Wonders day camp or similar events to help educate youth on protecting land and water resources**

Objective 10 - Inform public about District programs that are available to address soil erosion issues

To achieve the District's goal, it is critical the NRD partner with producers and landowners. The District uses newsletters, local media, website and social media, and meetings to disseminate information on assistance programs. One-on-one meetings have also been excellent ways to provide information to the public on assistance and the importance of conserving soil.

Planned Actions:

- ◆ **Continue to provide news releases and information on District programs to local newspapers and radio**
- ◆ **Continue to utilize the District's newsletter to provide information to the public on programs**
- ◆ **Utilize the District's website and social media outlets to provide information on District programs, projects, and activities**
- ◆ **Encourage staff to promote District programs when meeting with landowners individually or in small group settings**
- ◆ **Provide information to schools, FFA leaders, and other student groups on District youth related programs and activities**

Objective 11 - Promote and educate producers on the use and benefits of no-till farming

No-till farming is widely used and promoted in southeast Nebraska. Many area farmers have converted from more conventional farming methods to no-till over the past 15 years. In addition to a reduction in tillage, no-till can reduce fuel costs, simplify planting, and allow fields to be worked and planted in a shorter period of time.

Planned Actions:

- ◆ **Continue to promote no-till as an alternative to more traditional tillage and planting operations**
- ◆ **Where feasible and beneficial, incorporate incentives to no-till into assistance programs**

Goal - Protect and manage surface and groundwater resources in the Nemaha River Basin

Objective 1 - Administer and implement the District's groundwater management plan

State law requires the NRD to develop and implement a groundwater management plan. The plan includes management of groundwater quality, groundwater quantity, and the interrelationship between ground and surface water. The District last updated its plan in 2020. In addition to outlining the process for monitoring the status of the quality and quantity within the District, it promotes the use of rules as authorized by the state to manage water use. Rules may be revised as necessary to address concerns that occur.

Planned Actions:

- ◆ Review the plan once every five years to determine if any updates are required
- ◆ As determined necessary by plan review or as required by state statute, update the groundwater management plan and develop programs that address outlined concerns and meet state statutes
- ◆ Work with the Department of Natural Resources to complete and as necessary revise the integrated management plan to address the hydrologic connection between surface water and groundwater.
- ◆ Update the public on any future proposed or implemented plan revisions
- ◆ Implement actions and programs as prescribed by the plan

Objective 2 - Monitor and evaluate changes in groundwater levels in the District

The District monitors over 125 wells to document changes in static water levels. The wells are measured twice annually in spring and fall. Monitoring wells used by the NRD are a combination of irrigation wells, domestic wells, and dedicated observation wells. The dedicated observation wells are maintained by the NRD and usually consist of a data logger which will automatically record the static water level on a preset schedule. The District currently has 38 dedicated observation wells and continually looks for opportunities to expand the network particularly in areas of the NRD that may be more vulnerable to declines and development.

Planned Actions:

- ◆ Continue to monitor groundwater level changes twice annually in the District
- ◆ Incorporate additional wells into the network particularly in areas where development has increased or declining water levels have become a concern
- ◆ When feasible install dedicated monitoring wells with full time data loggers and incorporate them into the District's network
- ◆ Regularly update the public on the status of groundwater levels in the District
- ◆ Provide groundwater level data collected by the NRD to other federal and state agencies as requested

Objective 3 - Monitor and evaluate changes in groundwater quality in the District

The District regularly collects samples from over 100 wells throughout the District to determine the groundwater quality and how it changes over time. All of the wells sampled are tested for nitrates;

however, other samples may be tested for other parameters such as atrazine, metalochlor, or acetochlor to determine if those contaminants exist. Most of the wells in the network are domestic or irrigation wells; however, the NRD does have some dedicated monitoring wells in the system. Most of the sampling is done during the summer months. Additional wells are continually added to the network to help improve the District's understanding of the resources; in some cases the District requires that a new well be included in the network as a condition for approving a well permit. All approved well permits include a one-time sampling requirement for nitrate-nitrogen.

Planned Actions:

- ◆ **Continue to monitor wells in the District for groundwater quality**
- ◆ **Look for opportunities to include additional wells in the network**
- ◆ **Update the public on the status of groundwater quality in the District**

Objective 4 - Develop programs that encourage groundwater users to manage and conserve groundwater

The District's groundwater management plan includes both required and voluntary activities. Voluntary activities are often encouraged to avoid having to resort to more restrictive required activities. When appropriate the NRD may use financial incentives such as cost sharing to promote the use of best management practices.

Planned Actions:

- ◆ **Seek out opportunities to provide cost share or other incentives to groundwater users willing to voluntarily implement activities that promote the efficient use of the resource**
- ◆ **When evaluating groundwater conservation programs, consider programs that have proven to be successful in other NRDs for inclusion in the Nemaha NRD plan**
- ◆ **Provide information to the public on the importance of conserving groundwater and programs the NRD has available to assist landowners**
- ◆ **Provide training or information to landowners on implementing best management practices that conserve water**
- ◆ **Develop programs that promote water conservation that are specifically targeted towards community water users**

Objective 5 - Monitor surface water quality to help assure that EPA and State standards are being met

The District works with the Nebraska Department of Environment and Energy (NDEE) to monitor surface water quality throughout the NRD. Historically efforts have included stream sampling, lake sampling, and sampling efforts to address a specific quality concern such as toxic blue-green algae. Data collected is critical in monitoring the health of streams in the District, and it is also used to assure that water quality in the District's recreation facilities is safe for public use. NDEE often provides technical help, equipment, and funding assistance to help carry out sampling efforts.

Planned Actions:

- ◆ **Continue to monitor water quality in District owned recreation lakes**
- ◆ **Assist NDEE with stream monitoring efforts as requested**
- ◆ **Identify lakes or streams in need of monitoring because of potential contamination concerns**
- ◆ **Maintain a District-wide surface water quality database**
- ◆ **Assist landowners to identify and address surface water quality concerns**
- ◆ **Provide information to the public on surface water quality and addressing water bodies with specific concerns and how those may/will be addressed**

Objective 6 - Develop and participate in programs that help the District better understand and delineate groundwater in the District's aquifer regions and hydrologic framework

Groundwater hydrogeology in the Nemaha NRD is complicated and variable. It requires an extensive amount of data to develop accurate and reliable aquifer maps and groundwater models. It is important that the District continue to develop or participate in programs and projects that improve and refine data that is presently available. In recent years the District has been a partner with five other NRDs to create the Eastern Nebraska Water Resources Assessment (ENWRA) study that is helping develop more accurate aquifer maps using electromagnetic imaging. The District has also started to require that anyone interested in drilling a high-capacity well include a test well log with a permit application. The data from the log can be added to the present database to increase log information available to the District.

Planned Actions:

- ◆ **Continue to participate in the ENWRA program**
- ◆ **Utilize well drilling logs to better document aquifer boundaries within the NRD**
- ◆ **Incorporate new well drilling log data into the current database**
- ◆ **When necessary and feasible create field data collection projects that will add critical log data into the District's present database.**
- ◆ **Use tools such as HEM, Lidar, and computer models to better map and define aquifers within the Nemaha Basin**
- ◆ **Consider adopting data collection projects or tools that will provide the NRD with additional and/or more accurate information on groundwater supplies**

Objective 7 - Assist public water suppliers with implementing wellhead protection areas and plans

Presently 25 out of 41 communities and eight rural water districts operate public water supply systems in the NRD. Although state statutes would allow the District to do so, no rural water districts are presently operated by the NRD. Historically the NRD has worked with public water suppliers to delineate Wellhead Protection Areas to help protect groundwater in the NRD. The District has also provided technical expertise to public water suppliers to help them locate additional, better quality supplies of water.

Planned Actions:

- ◆ **Continue to work with public water suppliers to delineate wellhead protection areas**
- ◆ **Help public water suppliers develop programs that will better protect their groundwater supplies**
- ◆ **Provide technical expertise to public water suppliers seeking additional or better quality supplies of water for their users**

Objective 8 - Work with communities and landowners to properly decommission abandoned wells

Thousands of water wells were constructed in rural areas and communities in the years before rural water districts and public supply systems were ever created. Over time many of these water wells fell into disrepair, went dry, or were no longer needed.

Abandoned and improperly constructed water wells can provide a direct conduit for surface water runoff to flow to groundwater aquifers often carrying organic wastes, microbiological contaminants, fertilizers, and other chemical residues such as pesticides and petroleum products. Small mammals and reptiles can also fall into the water wells, further adding to the bacteriological contamination

problem. Once groundwater is contaminated, it is very difficult, if not impossible, to clean up; and the process is always expensive. In addition, open water wells are especially hazardous to small children and present a risk to human life that can be prevented.

Planned Actions:

- ◆ **Educate District residents on the health and safety risks associated with abandoned groundwater wells**
- ◆ **Continue to fund and promote the District's Well Abandonment Cost-Share Program**
- ◆ **Identify and document abandoned wells that are candidates for decommissioning**
- ◆ **Work with communities to identify abandoned wells and assist them with getting those wells decommissioned**
- ◆ **Work with public water supply systems to properly decommission abandoned wells within their wellhead protection areas**

Objective 9 - Continue to provide local administration of the Chemigation Program

State law requires that anyone applying a fertilizer, pesticide, or fungicide through an irrigation system obtain a permit to do so. Chemigators are also required to have the appropriate safety equipment on their systems to reduce the potential for groundwater contamination. The District partners with NDEE to locally administer the chemigation program. This includes permitting, field inspections of safety equipment, and local record keeping. In 2021 there were 306 chemigation permits issued in the NRD.

Planned Actions:

- ◆ **Continue to work with NDEE to administer the chemigation program**
- ◆ **Collect and approve permit applications received from irrigators in the District**
- ◆ **Work with irrigators to inspect safety equipment in accordance to State statutes**
- ◆ **Document and address safety equipment that fails to meet established performance requirements**
- ◆ **Submit applications, reports, and fees to NDEE as required by statute.**
- ◆ **Identify wells illegally applying chemicals without a permit or safety equipment**

Objective 10 - Provide free nitrate-nitrogen and bacteria analysis for District residents

Nearly all District residents get their drinking water from either private or municipal groundwater wells. Municipal groundwater quality is regulated and tested by the Nebraska Department of Health & Human Services; however, private water well testing is the responsibility of the well owner. The District will continue to offer free nitrate-nitrogen and bacteria sampling and analysis to District residents. Nitrate-nitrogen (NO₃-N) and bacterial contamination are common drinking water contaminants found in wells that can endanger human health.

Planned Actions:

- ◆ **Continue to promote and encourage routine private water well sampling and analysis**
- ◆ **Educate District residents on the health risks associated with groundwater contamination, on methods to treat the problem, and on actions to reduce or eliminate the reoccurrence**
- ◆ **Look for opportunities to expand the water analysis programs**

Objective 11 - Work with the State to assure proper permitting and registration of wells in the District

State law requires that all new wells be registered with the Nebraska Department of Natural Resources. Anyone desiring to drill a new, high capacity well (pumping greater than 50 gallons per minute) is also required to obtain a well permit from the NRD before drilling the well. The District has worked with landowners, the State, and local well drillers to assure that these requirements are met. District staff also reviews existing permits to assure that the information and location of the well are accurate. In the event that a well is identified that has not been registered, the NRD will work with the landowner and State to get the well properly registered.

Planned Actions:

- ◆ **Continue to work with the State, well drillers, and landowners on assuring that new and existing wells are properly permitted and/or registered**
- ◆ **Include the importance of permitting and registration in news releases and articles developed by the NRD**

Objective 12 - Educate the public on the importance of protecting and managing water resources and inform them about District programs and regulatory requirements

Water impacts everyone in the Nemaha NRD. Farmers depend on water for irrigation; business owners use water to operate manufacturing plants; and the average homeowner depends on having a high-quality, reliable source of domestic water for daily needs. The District uses a variety of methods to make information on water issues available to the public including newsletter articles, news releases to local media, meetings, and specific mailings. Since the NRD administers many regulatory programs, it is critical that those impacted are informed of any requirements placed on them by the NRD. Education is also a key component. Historically the NRD has focused on youth education; however, with more regulatory requirements it may be necessary to expand programs to target water users.

Planned Actions:

- ◆ **Look at opportunities to create information and education programs that are specific to surface water and groundwater**
- ◆ **Provide the public access to water quality and quantity data collected by the District**
- ◆ **Continue to incorporate information on the District's water programs into local media releases**
- ◆ **Develop education programs targeted at youth and young adults**
- ◆ **Develop education programs that promote the sensible use of fertilizers, pesticides, and other potential contaminants**
- ◆ **Provide the public with information on new programs, particularly those that include regulatory requirements**
- ◆ **Use the NRD's newsletter and website to provide the public with information regarding water programs and issues**

Goal - Help assure that domestic water supplies are safe and adequate to meet the public needs in the Nemaha Basin

Objective 1 - Maintain information and databases on public water supply systems within the NRD

Presently 33 public water systems operate within the Nemaha NRD. Systems fall into three categories: 1) municipal systems; 2) rural water districts; and 3) systems that serve a combination of rural and municipal customers. Historically the District has always acquired and stored some information on these systems such as location of wells, location of the systems, volume of water used and wellhead protection areas. This information is useful to the NRD when planning and making decisions on future groundwater development.

Planned Actions:

- ◆ **Periodically review records to assure information on public water supply wells is correct**
- ◆ **Obtain the necessary information from public water suppliers to update District well records**
- ◆ **Work with public water suppliers in the District to develop wellhead protection plans**
- ◆ **Maintain records and information on supply systems that fail to meet quality standards**

Objective 2 - Cooperate with public water suppliers providing the assistance and data needed to help support the operation of their system

The District regularly assists public water suppliers to help insure that their systems provide an adequate source of water that meets federal and state standards. This may include sampling, helping determine the ability of an aquifer to supply groundwater, providing assistance with locating new sources of water, and providing information on options to address contamination problems. The NRD has an extensive database of aquifer and hydrologic data that it can make accessible to the public water supplier.

Planned Actions:

- ◆ **Continue to make hydrologic information available to public water suppliers**
- ◆ **Help suppliers address quantity and quality concerns**
- ◆ **Help suppliers identify and evaluate options for locating new public water supply wells**

Objective 3 - Evaluate and support reasonable options for consolidated or regional water supply systems

The ability to secure an adequate source of water that meets federal and state standards in southeast Nebraska varies greatly depending on location and geology. Some aquifers produce ample supplies of water while in other parts of the District there may be little or no water available. It may be in the best interest of some suppliers to work together to consolidate systems or create a regional supply system. A regional water system could result in reducing quality issues, assuring adequate supplies into the future, reducing the cost to supply water to customers, allowing suppliers to share staffing, and allowing communities to expand without future water concerns. Over the past ten years, the NRD has had an interest in working with suppliers to evaluate the need for combining or regionalizing water systems including seeking grant funds for studies.

Planned Actions:

- ◆ **Provide planning and technical support to systems considering consolidation.**
- ◆ **Promote the concept of regional or cooperative public water supply systems**
- ◆ **Encourage suppliers to allow for future consolidation when they plan their systems**
- ◆ **Continue to seek funding opportunities to help fund studies**

Goal - Protect lives, infrastructure, and property in the Nemaha River Basin from flooding

Objective 1 - Evaluate watersheds within the Nemaha Basin and determine if new flood control projects are needed and feasible

Flood control has always been a high priority for the Nemaha NRD. Over the years the District has monitored watersheds developing plans in those watersheds that could benefit from flood control. Plans typically will include flood control and grade stabilization structures to reduce flood damages downstream in the watershed. Although many watershed plans have been completed, some watersheds still have not been evaluated and/or planned. In most cases these watersheds never qualified for federal or state planning assistance.

Planned Actions:

- ◆ Review watersheds within the NRD to determine if merit exists for the development of a watershed plan
- ◆ Use Light Detection and Ranging (Lidar) data to help identify and plan potential structure sites
- ◆ Identify new structures that should be constructed and develop plans for funding and completing the construction work
- ◆ Provide information to the public on future watershed planning and flood control projects

Objective 2 - Inspect all District operated structures to assure that they are safe and operate properly

The Nemaha NRD is responsible for operating and maintaining over 400 grade stabilization and flood control structures in the District. Most of the structures are classified as low hazard by the State of Nebraska; however, the NRD does operate a total of eight significant or high hazard structures. To assure that the structures are functioning properly and safely, the NRD performs periodic inspections. The low-hazard structures are inspected biennially, and the significant and high-hazard structures are inspected annually. The State of Nebraska also does periodic inspections of dams, and those reports are incorporated into the District's inspection program.

Planned Actions:

- ◆ Inspect all high and significant hazard structures annually and low hazard structures biennially
- ◆ Coordinate inspections with the State of Nebraska
- ◆ Continue incorporating technology to streamline inspections to efficiently record inspection reports
- ◆ Inform landowners regarding concerns or problems caused by their use or alteration of a structure and instruct them on the needed corrective action
- ◆ Monitor dams after high runoff events to assure that they are operating properly
- ◆ Educate the public on the importance of inspecting and maintaining dams on private land

Objective 3 - Repair and maintain all District operated watershed structures

Each year the NRD performs a wide variety of minor dam maintenance duties including removing trees, repairing erosion problems, repairing minor leaks in risers, eliminating rodent holes, unplugging tubes (plugged by beavers), adding rip-rap to the dam face and replacing trash racks. As dams age

they may require more extensive repairs. Repair needs are evaluated regularly, and dams with the most critical problems are given the highest priority.

Planned Actions:

- ◆ **Review all inspection reports and develop a maintenance plan year by year that prioritizes work based on safety and need**
- ◆ **Consider repair options that reduce long-term maintenance**
- ◆ **Measure cost-benefit of repairs on aging structures that provide limited conservation benefits**
- ◆ **As necessary, utilize NRCS staff or private consultants to assist with recommendations, designs, and/or approval of repairs**
- ◆ **Continue to perform routine maintenance and repairs with existing staff**
- ◆ **Work with qualified area contractors to complete major maintenance repairs**
- ◆ **Update landowners on any dam operation, maintenance, or repair concerns**
- ◆ **Provide staff with training to assure that they are familiar with the newest ideas and concepts in repairing dams**

Objective 4 - Evaluate watershed structures to assure they meet present day dam safety and classification standards

Watershed structures in the NRD are classified by the State as 1) high-hazard, 2) significant-hazard, or 3) low-hazard structures. Almost all the structures in the Nemaha NRD are low hazard; however, there are some significant- and high-hazard structures in the District. Classification depends on potential downstream threat in the event the dam fails and it impacts the technical standards to which the structures are designed. Occasionally changes occur downstream from a structure that could require that they be reclassified. This could include homes, buildings, roads, or other structures that create a greater threat to human life. If it appears that changes have occurred to warrant potential reclassification, a qualified consultant must be used to evaluate the structure for reclassification. If a structure is upgraded to a higher hazard classification, it could require that a dam be upgraded to meet more stringent standards. Upgrading a structure can often be technically challenging and costly.

Planned Actions:

- ◆ **Monitor structures for downstream changes or design alterations that could result in potential reclassification**
- ◆ **Work with NRCS or private engineering firms to help evaluate dams that may need reclassification and develop plans to address structures that require reclassification**
- ◆ **Update landowners on the status of dam evaluation, planning, and construction**

Objective 5 – Develop and maintain breach inundation zone maps for critical dams, and use data to establish methods that help limit the potential development in these areas

Rehabilitating dams to high-hazard criteria is expensive. Limiting development below low- and significant-hazard dams protects the structure from having to be reclassified as high hazard. Unless easements are in place, the NRD has no regulatory authority to limit development below dams; so the NRD must work with other entities such as counties and zoning boards to address this concern. Options for protecting vulnerable areas below dams include ordinances, zoning restrictions, and conservation easements.

Planned Actions:

- ◆ Evaluate, and if necessary, update breach inundation zone maps for high-hazard structures
- ◆ Develop breach zone inundation maps for significant-hazard dams that have a high probability for future downstream development
- ◆ Form partnerships with counties and other local government to help address future development concerns
- ◆ Encourage the use of zoning and building restrictions to better control development below dams
- ◆ Evaluate the use of conservation easements in critical areas below dams to control future development
- ◆ Create programs to inform the public on the impacts of developing below flood control structures

Objective 6 - Evaluate and consider options for rehabilitating dams that are elevated to high-hazard criteria

Structures that, if they fail, pose a threat to human life are classified as high hazard. Threats typically occur when roads or buildings are constructed in the breach zone of a dam. Hazard classification is taken into consideration when planning structures, and great effort is made to avoid the need to construct a high-hazard structure to avoid the additional cost. There are situations when development occurs below a structure after it has been constructed requiring the dam to be upgraded. As the dam owner, the NRD is responsible for upgrading the structure to meet the high-hazard criteria.

Planned Actions:

- ◆ Form partnerships with NRCS, state government, local government, and landowners to plan and fund projects
- ◆ Develop feasibility plans that consider realistic options for addressing dams elevated to high-hazard status
- ◆ Determine benefits and costs for all viable options
- ◆ Select the best alternative and develop a plan for funding rehabilitation

Objective 7 - Update emergency action plans and work with the state, counties, and communities to provide training opportunities

Emergency action plans are required on all high- and significant-hazard dams. The NRD keeps plans on file and updates them on a periodic basis. Plans include the basic procedure for warning the public and law enforcement in the event a dam is in danger of failing. To assure that a plan is carried out in the most efficient manner, it is beneficial to do occasional training exercises with the staff and others involved in the plan.

Planned Actions:

- ◆ Continue to update and maintain emergency action plans for all high-hazard dams every three to five years or as mandated by the Department of Natural Resources
- ◆ Work with state dam safety officials to assure that plans meet minimum requirements
- ◆ Work with communities and law enforcement officials to assure that they are aware of their role in the event emergency action is required
- ◆ Schedule training meetings and/or workshops to review emergency action plans

Objective 8 - Evaluate and consider alternative, non-structural methods to reduce flood damage

Typically flood control dams provide the most cost effective method of reducing flooding and protecting property. There are cases when other methods such as floodplain buyouts or restoring historic stream channels may be better options.

Planned Actions:

- ◆ **Work with counties and communities on obtaining updated floodplain map data**
- ◆ **Incorporate the evaluation of alternative flood control methods into flood control planning process**
- ◆ **Make communities and counties aware of potential, non-structural alternatives that may be available to address flooding issues in their jurisdiction**
- ◆ **Where feasible work with communities within the NRD on floodplain buyouts**

Objective 9 - Offer programs that encourage landowners to construct small, multi-purpose dams that meet the goals of the District

The NRD administers a Small Dams cost-share program. Landowners around the NRD have an interest in dams and reservoirs for benefits such as grade stabilization, livestock watering, wildlife habitat, and recreation. In many cases structures benefit both the landowner and the goals of the NRD. Applications are accepted by the NRD, reviewed, and prioritized with the highest ranked structures typically considered for funding. Projects that provide some general benefit to the NRD such as flood control or grade stabilization are awarded the highest ranking.

Planned Actions:

- ◆ **Continue to administer the Small Dams Program and include funding in the budget for one dam per year within present cost-share and maximum assistance policies**
- ◆ **Evaluate and prioritize applications received from landowners on an annual basis taking into consideration benefits, interest, and potential permitting concerns when selecting structures for design and construction**
- ◆ **Continue to look at options to combine NRD funds with local or state funds to complete small dam projects**
- ◆ **Work with NRCS staff and, if necessary, qualified private consultants for planning and design assistance**
- ◆ **Monitor completed projects to make certain they operate properly and that landowners are performing required maintenance**

Objective 10 - Promote the importance of flood control, watershed planning, and the operation and maintenance of watershed structures

One of the keys to the District's success in developing watershed and flood control projects has been keeping the public informed about the planning and construction of structures. Since most of the structures the NRD operates are done so through easements, it requires the District to develop working relationships with landowners. Information on watershed activities has typically been provided through meetings, newsletter articles, news releases to local media, and mailings. In recent years the District's website has also become an important tool for providing information. Historically educating the public about the benefits provided by flood control and the importance of maintaining existing structures has also been critical in achieving the goal of reducing flood damage in the NRD.

Planned Actions:

- ◆ **Use local media, the NRD newsletter, and social media to promote efforts to upgrade and repair watershed structures**
- ◆ **Use local media, the District newsletter, and electronic media to provide information to the public on programs available to help construct dams on private property**
- ◆ **Continue to promote the benefits provided by NRD flood control structures**
- ◆ **Promote the damage reduction benefits and how safely the District structures operated following major flood events**
- ◆ **Work with communities, counties, and other local entities to better educate them on the importance of developing emergency action plans in the event of a potential structure failure**
- ◆ **Make landowners aware of how their management and use of the site can impact the safe operation of a dam**

Goal - Provide local and regional outdoor public recreation opportunities in southeast Nebraska

Objective 1 - Continue to operate and maintain present recreation facilities at Kirkman's Cove, Iron Horse Trail Lake, Duck Creek, Prairie Owl, and Wirth Brothers Lake

The NRD presently operates public recreation facilities around five flood control structures in the District. Kirkman's Cove, Iron Horse Trail Lake, and Duck Creek are the larger areas with Wirth Brothers Lake and Prairie Owl smaller in size. Typical maintenance activities include mowing, spraying for weeds, weekly cleanup of use areas and restrooms, garbage pickup, and replacement or repair of broken facilities such as picnic tables, restrooms, grills, etc. Vehicle entry permits are required at four areas, and fees are also required to use some RV camping facilities. Most of the use at NRD parks occurs between May and September. Some facilities are closed during the winter months.

Planned Actions:

- ◆ **Continue to operate the public recreation areas in order to provide an excellent, convenient, and user-friendly experience for park users**
- ◆ **Provide staffing to perform routine maintenance services at all NRD recreation facilities**
- ◆ **Investigate opportunities to include volunteer groups to help with maintenance or campground hosting**
- ◆ **Coordinate and schedule routine trash pick-up, water, and electric services for the recreation facilities**
- ◆ **Update and implement a recreation maintenance and improvement plan for District facilities to consider expanding/upgrading RV hookups, beaches, or other group facilities**
- ◆ **Continue to contract mowing of Kirkman's Cove, Iron Horse Trail Lake, Duck Creek, Wirth Brothers Lake, and Prairie Owl recreation areas.**
- ◆ **Periodically evaluate fee structure to determine if changes are needed**
- ◆ **Consider options for campsite or other facility reservations**
- ◆ **Review rules and regulations annually or as needed and enlist input from area law enforcement**

Objective 2 - Continue to operate and maintain the Steamboat Trace Trail

The District operates and maintains the Steamboat Trace, which is a 22-mile long trail that was developed on an old railroad right-of-way that extends from south of Nebraska City to Brownville. Maintenance typically consists of tree trimming, mowing, spraying for weeds, and repairing the rock surface. Because the trail is located adjacent to the Missouri River, it is prone to flooding and flood damages on occasion. The flooding of 2019 destroyed the levee near Peru, Nebraska, which protected a portion of the trail. Much of the trail was damaged by the 2019 floods to the point of closing the trail for its entire length in 2019 and 2020. The north half of the trail was reopened in June, 2021, but remained at minimum maintenance condition. Plans to repair the south half were underway with FEMA funds available to help with some of the work. However, until the levee is rebuilt, minimal financial contribution to repairs is planned.

Planned Actions:

- ◆ **Investigate cost-effective options for repairing flood damaged sections of the trail and reopening the entire trail to the public**

- ◆ Regularly maintain the trail using current staff
- ◆ Regularly inspect the trail for maintenance issues with special focus after storm events
- ◆ When available use local contractors to complete major maintenance or repairs items
- ◆ Identify options to address reoccurring maintenance problems and damages from flooding
- ◆ Promote the trail both locally and regionally

Objective 3 - Evaluate ways and, if feasible, implement programs, projects, or facilities that will increase recreation area and trail use

The District is always looking at ways to encourage more use of NRD recreation facilities. Increasing park use offers several benefits including more fee income, reduced opportunities for vandalism, wider spectrum of the public using the facilities, more visibility for the NRD, and improved experience for the park user. The NRD obtains input on improvements from users through the permitting process. Where feasible those comments are incorporated into the decision making process.

Planned Actions:

- ◆ Continue to acquire suggestions from park area users on park improvements
- ◆ Identify and implement ways to better determine use numbers at District recreation facilities and the segment of the public using the trail
- ◆ Evaluate similar facilities and look for opportunities to install features that will expand recreation facility use by the public
- ◆ Consider special events that may attract new users to NRD recreation facilities
- ◆ Promote park facilities in area newspapers and media outlets
- ◆ Develop and circulate informational materials about NRD parks

Objective 4 - Work with Nebraska Game and Parks to improve sport fisheries habitat and upgrade angler access facilities at District recreation areas

The Nebraska Game and Parks Commission has worked with the NRD in the past to stock appropriate fish in lakes associated with District parks. They also regularly monitor fish populations in lakes to assure the appropriate species balance is maintained and populations of undesirable species are limited. Game and Parks also has access to grant funding that can be used to upgrade fish habitat in lakes and improve angler access opportunities including those for disabled anglers.

Planned Actions:

- ◆ Continue to work with Game and Parks on fish stocking programs
- ◆ Continue to work with Game and Parks to monitor fish species in District recreation lakes
- ◆ When appropriate use Game and Parks grant funds to make improvements to District parks
- ◆ Monitor District recreation lakes for invasive species

Objective 5 - Seek ways to make the operation and maintenance of District recreation facilities more cost efficient

Each year the NRD spends a significant amount of money on maintaining parks. To assure that facilities are well maintained within a reasonable cost, the NRD typically considers several options for addressing maintenance and repairs. In some cases it is most cost effective to have staff handle maintenance items while in others contracting the service out may be the better option. Vehicle entry and camping fees have been used to help generate income for maintaining parks. Fees presently generate as much as \$30,000 per year or more. There also may be options for incorporating facilities that require less maintenance thus reducing costs.

Planned Actions:

- ◆ Regularly evaluate recreation area and trail maintenance activities and consider incorporating changes that improve cost efficiency
- ◆ Evaluate the recreation fee structure once every five years
- ◆ Utilize materials and facilities that result in long-term maintenance reduction to the District parks and trail
- ◆ Consider eliminating facilities that receive little or no public use

Objective 6 - Seek opportunities to assist counties and communities desiring to improve public recreation facilities

Almost all communities in the District operate park facilities. Historically the NRD has worked with communities to provide technical assistance and in some cases financial assistance to upgrade city parks. In recent years the NRD has provided funding through the Urban Special Projects program to help fund trails and outdoor education components in community parks.

Planned Actions:

- ◆ Continue to provide funding for some park related improvements to communities through the Urban Special Projects Program
- ◆ Where feasible, provide technical assistance to communities for park development
- ◆ Seek opportunities to work with communities on park development that enhances District recreation goals and facilities

Objective 7 - Promote the use of the NRD recreation facilities, and encourage partnerships with other public entities to improve public recreation opportunities in southeast Nebraska

It has been important to assure that everyone in the District is aware of and has an opportunity to use NRD recreation facilities. The District promotes facilities through local media, newsletters, the NRD's website, social media, and brochures. The District not only makes the public aware of the recreation areas but also informs the public of closings, water quality concerns, and park improvements. The District also provides information to the public on assistance programs such as Urban Special Projects that potentially can assist communities with recreation projects in their jurisdiction.

Planned Actions:

- ◆ Continue to promote the District's recreation facilities using local news media
- ◆ Utilize the District's website and social media to update the public on the status of the District recreation areas and the trail
- ◆ Utilize special events or media events to promote major park or trail improvements
- ◆ Develop public relations campaigns targeted at encouraging new users and groups to visit NRD recreation facilities

Goal - Promote the protection and management of grass and forest resources in the Nemaha River Basin

Objective 1 - Participate in programs that inform the public about the negative impact invasive species have on grassland and forest resources

Numerous invasive species have an impact on ecosystems in southeast Nebraska. Some of the bigger threats include sericea lespedeza, musk thistle, phragmites, and purple loosestrife. Tree species such as eastern red cedar and locust have also become a threat to pastures in the District. The District has worked with the Five Rivers RC&D and local weed superintendents to get more information out to the public on these concerns. In addition the District has worked with the Five Rivers Weed Management Area to increase the focus on addressing invasive species.

Planned Actions:

- ◆ Continue to work with the Five Rivers RC&D and the Five Rivers Weed Management Area to increase awareness of invasive species in southeast Nebraska
- ◆ Incorporate information on invasive species into educational programs sponsored by the NRD
- ◆ Include articles in the NRD newsletter on invasive species

Objective 2 - Provide landowners with conservation tree sales and planting services

Since its inception in 1972, the NRD has provided tree sales and planting services. Each spring the NRD handles 10,000 to 20,000 trees for use in conservation plantings throughout the NRD. District staff works with state foresters to evaluate species suitability for the NRD. Trees not suited to the area or that show problems with disease are not offered by the District. Cost-share assistance through SWCP is offered on eligible projects.

Planned Actions:

- ◆ Continue to sell conservation trees and provide tree planting services to the public
- ◆ Work with the Nebraska Forest Service on selecting trees suitable for southeast Nebraska
- ◆ Work to coordinate tree program activities with neighboring NRDs to help make the program more efficient
- ◆ Monitor tree planting sites to determine survival and growth rate
- ◆ Consider establishing a windbreak renovation cost-share program
- ◆ Continue efforts to promote tree planting to the public

Objective 3 - Work with the Nebraska Association of Resources Districts and other NRDs in Nebraska to maintain or create a source of seedling conservation trees in Nebraska

In recent years NRDs around the state have worked with the Nebraska Association of Resources Districts to help administer the statewide tree program. NARD works directly with the Bessey Nursery in Halsey to assure that districts are getting desirable, high-quality seedling trees. They help coordinate ordering between the NRDs and Bessey as well as help determine future needs.

Planned Actions:

- ◆ Continue to participate in the agreement with NARD to administer the statewide tree program
- ◆ Provide input to NARD and the Nebraska Forest Service on tree concerns as needed or requested

Objective 4 - Provide the public with technical assistance on trees, tree planting, tree disease, and insect problems

The District regularly provides technical assistance and advice to the public on tree planting, disease and insect problems, plant identification, and tree care. When necessary the NRD consults foresters from the Nebraska Forest Service to address more challenging concerns.

Planned Actions:

- ◆ Provide assistance to the public on tree planting and care
- ◆ Continue to provide technical assistance to the public on tree disease and insect problems
- ◆ Work with the Nebraska Forest Service to address more challenging or complicated concerns
- ◆ Continue the Plant-A-Tree Program with District schools
- ◆ Continue to monitor insect disease and other concerns that pose a threat to the forest resources of southeast Nebraska
- ◆ Provide information on tree threats to the public as appropriate
- ◆ Encourage the use of disease and insect resistant tree species

Objective 5 - Promote programs that help maintain grass, wetland, and woodlands on marginal land

The District has always supported programs such as CRP and the Grassland Reserve Program which promote the concept of converting cropland into grass. Grass provides more habitat and reduces nonpoint source pollutants such as sediment from entering waterways.

Planned Actions:

- ◆ Continue to support and promote programs such as CRP to encourage cropland to grass conversion
- ◆ Support efforts to allow landowners to reenroll land into existing programs such as CRP
- ◆ Continue to support the Nebraska Buffer Strip Program alone or in conjunction with CRP

Objective 6 - Promote the use of environmentally beneficial plants in urban and residential areas

In recent years the NRD has worked with several communities to incorporate native and environmentally beneficial plants into community landscapes. When eligible and feasible funding may be provided to communities through the Urban Special Projects Program. Often times these plantings can serve as an educational tool for the public.

Planned Actions:

- ◆ Work with communities on using native and environmentally beneficial species in community landscapes
- ◆ Continue to include native plantings as an eligible practice in the Urban Special Projects program

Objective 7 - Inform the public on District programs that encourage the planting of trees and grasses

In order for the District to have a successful tree program, it is critical that the public be made aware of the programs and assistance that the NRD makes available to them. Every year the District makes a major effort to promote the sale of conservation trees through the District newsletter, news articles, the NRD website, and brochures. The District also promotes trees through education programs such as the Plant-A-Tree Program, which targets youth audiences.

Planned Actions:

- ◆ **Annually provide local media with information on the District's tree planting services**
- ◆ **If necessary purchase advertisements from local newspapers and radio stations promoting tree planting services provided by the NRD**
- ◆ **Use the District's website and social media to promote the tree program**
- ◆ **Include information on the tree planting program in the NRD newsletter or other mailed media**
- ◆ **Provide brochures or other written materials that help inform the public on trees and tree planting**
- ◆ **Continue the Third Grade Plant-A-Tree Program to help educate youth on the importance of planting trees**

Goal - Help manage and enhance fish and wildlife habitat in the Nemaha River Basin

Objective 1 - Provide landowners the opportunity to participate in federal and state wildlife habitat programs

The District has participated in numerous wildlife habitat programs in the past that help partner with landowners to install practices to improve wildlife habitat including Wild Nebraska, Partners for Wildlife, and the Nebraska Buffer Strip Program. Habitat improvements may include seeding of native grasses, food plots, shrub and tree plantings, reduction of grazing, wetlands enhancement, and riparian area improvements. Typically landowners receive a payment or cost share assistance for participating in the program. The District works with the Nebraska Game and Parks Commission, U.S. Fish and Wildlife Service, and other conservation organizations to implement programs.

Planned Actions

- ◆ **Continue participation with Nebraska Game and Parks in the Wild Nebraska Program**

Objective 2 - Seek opportunities to incorporate riparian buffers, wetland development, and protection into watershed projects

Some flood control or grade stabilization projects offer opportunities for establishing buffers along streams and/or developing or enhancing wetlands. In some cases it may be required to meet mitigation requirements for permits. Typically wetland development or enhancement will require assistance from a qualified biologist to assure that the end product meets wetland requirements. Mitigation actions typically increase the overall cost of a project, and post-construction monitoring may also be required to assure that the project results in appropriate environmental protection.

Planned Actions:

- ◆ **Incorporate potential stream protection, stream enhancement, or wetland development sites in future watershed plans**
- ◆ **Evaluate future watershed projects for potential wetland development and determine the potential for using wetlands for environmental mitigation**
- ◆ **Incorporate wetlands and riparian buffers where practical and feasible**
- ◆ **Create programs that help educate the public on the importance of wetland and stream channel ecosystems**

Objective 3 - Develop programs that teach both adults and youth about the importance of fisheries and wildlife habitat

Historically the NRD has had opportunities to partner with agencies such as Nebraska Game and Parks to work on or develop programs that promote the value of fisheries and wildlife habitat. Programs such as Project Wild and Envirothon are good examples of programs that the NRD has used to help educate the public, particularly youth. Other opportunities may be available including developing the District's own program that could have a place in educating the public. Many programs are geared at youth education, and there may be a need for more adult education in the future.

Planned Actions:

- ◆ **Continue to use programs such as Project Wild when doing youth and adult education events**
- ◆ **Look for or develop education programs that compliment present efforts, and if possible, provide a more localized education opportunity**
- ◆ **Continue to support the Envirothon competition**
- ◆ **Provide information to the public on habitat issues and concerns by using local media, the NRD newsletter, and electronic media**

Goal - Provide support to communities, counties, and drainage districts to address drainage concerns within the Nemaha River Basin

Objective 1 - Work with communities to address problems that are caused by storm water runoff

Storm water runoff and drainage issues are ongoing problems for cities and villages. In recent years several communities in the NRD have asked for assistance in dealing with drainage issues, and the District will typically provide technical assistance on projects. In some cases the NRD will consider providing funding assistance to communities for drainage projects.

Planned Actions:

- ◆ **Work with communities by providing technical assistance on addressing drainage issues**
- ◆ **Promote the importance of addressing storm water runoff from urban areas**
- ◆ **Evaluate funding requests from other communities on a case-by-case basis to determine if NRD funding is appropriate**

Goal - Promote the reduction of solid and hazardous waste within the Nemaha River Basin

Objective 1 - Support and promote programs that help reduce household hazardous and other hazardous waste

Many homes have supplies of household hazardous wastes that are no longer useable or are outdated. This may include items such as cleaning products, paint, lawn chemicals, insecticides, and automotive products. These products typically cannot be disposed of in landfills, so owners have few options for disposal. In recent years hazardous waste pickups have been scheduled through the support of the Five Rivers RC&D. The NRD has assisted in the past by sponsoring grant applications to help fund the effort.

Planned Actions:

- ◆ **Continue the support of household hazardous waste pickup events**
- ◆ **Promote pickup events to increase public participation and awareness**
- ◆ **Provide information to the public on the proper disposal of these materials**

Objective 2 - Support the use of recycled materials

More options are available for using recycled materials. As cost and availability come down, the NRD should consider the use of such materials. Historically the District has used recycled paper products and wood products. The District also uses shredded paper for tree mulch rather than disposing it.

Planned Actions:

- ◆ **Continue to use recycled paper and wood products when feasible**
- ◆ **Look for opportunities to expand the use of recycled products**