

LOWER BIG BLUE NATURAL RESOURCES DISTRICT

DECEMBER 2011

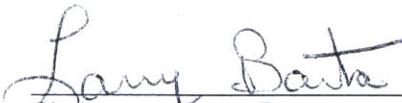
MASTER PLAN

In 1969, the Legislature established Natural Resources Districts and gave the local conservation leaders broad legislative authorities for the protection and management of our Natural Resources.

The Master Plan is prepared by the Lower Big Blue Natural Resources District staff and board in accordance with Nebraska Statutes 2-3276.

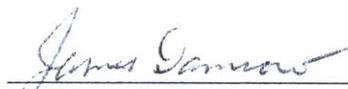
STATEMENT OF ADOPTION

This Master Plan was adopted by the Board of Directors of the Lower Big Blue Natural Resources District at their regular meeting on the 29th day of December, 2011, at Beatrice, Nebraska.



Chairperson, Larry Barta

Date: December 29, 2011



Secretary, James Damrow

Date: December 29, 2011



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DEPARTMENT OF
NATURAL RESOURCES

LOWER BIG BLUE NATURAL RESOURCES DISTRICT

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MASTER PLAN

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MASTER PLAN
CHAPTER I

INTRODUCTION

BACKGROUND

This plan is to serve as a guide for the development of policies and programs within the district with broad long-term goals for land and water resource development.

The economy of this area has been built around the land and water resources available to its residents. With the soil and water in the district being used wisely, a productive union can be achieved, which will multiply their values and result in extensive and intensive agricultural production.

The residents of the district and the desire of an improved quality of life will require increased uses of our resources. There is a need to assure that increased use is also a wise one, efficient use and a nondestructive use. Regardless of what we may think or desire, there are limits to our resources and the decisions of those resources.

The conservation of our natural resources has become more complex as the interaction of individual projects was realized. The importance of conserving our natural resources has also received increased attention. The directors of the district, through proper planning and wise utilization of our natural resources, intend to fulfill goals and objectives in order to enhance these resources for the maximum benefit of the people of the district and the State of Nebraska.

AUTHORITY

The Nebraska Natural Resources District Act and now a part of the Nebraska Statutes 2-3201 and 2-32,114 outlines planning of resources, development, management, utilization, and conservation as one of the purposes of a Natural Resources District.

- 2-3229 “The purpose of the Natural Resources District 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)...”and planning is further outlined as a required item in a later Statute.
- 2-3276 “By August 1, 1979, each Natural Resources District shall prepare and adopt a master plan to include but not be limited to a statement of goals and objectives for each of the purposes stated in Section 2-3229. The master plan shall be reviewed and updated as often as deemed necessary by the District, but in no event less often than once each ten years. A copy of the master plan as adopted and all revisions and updates hereto shall be filed with the Department of Natural Resources.”

PURPOSE OF THE PLAN

With the aforementioned need and authority, the Board of Directors of the Lower Big Blue Natural Resources District has determined that it is in the best interest of the residents of the district that a comprehensive master plan for land, water, and related resources be developed in order to show a broad framework for the efficient and orderly development and management of these resources of the district.

This master plan will provide the framework and outline for the development of programs, projects and priorities for the Long-range Implementation Plan and the goals and objectives toward the accomplishment of the Implementation Plan.

PLANNING FORMAT

The planning format of the district in the development of the Master Plan was to provide guidelines for the orderly development of the plan and to assure that the greatest possible number of factors influencing resources and their development, management, and conservation is taken into consideration.

The directors in developing the format of the master plan, recognize that ever-changing technology and laws makes it almost impossible to develop a plan that will incorporate all features of resources development and management and therefore, the plan will have to be annually reviewed to consider the changes in technology and laws.

The plan is designed as a flexible guide and outlines the orderly development, management, utilization and conservation of the district's soil, water, and related resources in order to best serve the people of the district and state.

The master plan inventories existing resources and factors influencing these resources, it establishes long-term goals and sets out objectives needed to meet those goals.

Its intent and purpose is to provide current information and indications so that a guide for the orderly development of the Long-Range Implementation Plan can be accomplished in meeting the goals of the district for the development, management, utilization and conservation of this district's resources.

CHAPTER II

Description of District

The Lower Big Blue Natural Resources District is located in southeast Nebraska and is the lower portion of the Big Blue River Basin.

The area contained in the district totals 1,647 square miles or approximately 1,054,000 acres and encompasses 89% of Saline County, 44% of Jefferson County, 90% of Gage County, and 23% of Pawnee County. The greatest length west to east of the district is about 45 miles, while the maximum north-south distance is approximately 50 miles.

The northern part of the district is within three (3) miles of the Saline-Seward County line and the southern edge is the Kansas-Nebraska border or 17 miles south of Beatrice, Nebraska.

TOPOGRAPHY

The district is characterized by predominately rolling topography, which includes undulating loess hills, which have a more highly developed drainage pattern. These areas are subject to severe sheet and gully erosion. The overall slope of the district is toward the southeast, with main streams flowing in a southeasterly direction.

Elevations range from 1,580 feet above sea level in western Saline County, to approximately 1,150 feet where the Big Blue River leaves the district and state.

SOILS

Soils in the district are characterized by deep soils of rolling loess-capped hills over glacial till. The topsoil is friable and partly underlain with a moderately heavy to heavy claypan subsoil, with fair to poor permeability. Limestone and sand outcrops may be found on the lower slopes adjacent to principal drain ways. These soils are quite shallow and have limited agricultural use.

The floodplains of the district consist of alluvium, derived predominately from Peorian loess, with some sand and gravel. In most areas, the alluvium is underlain by Bignell loess, which is younger than Peorian loess. Alluvial soils make up an estimated 8% of the total area.

The district lies in two land resource areas, these being Areas 75 and 106. Land resource area 75, the central loess plains, comprises nearly 59% of the total district.

Land resource area 106, the Nebraska and Kansas loess-drift hills, is more typical of the corn belt. Underground water is generally adequate for domestic requirements, but insufficient for irrigation development. This resource area comprises 41% of the district with soybeans, corn, wheat, feed grains, and alfalfa as the principal crops.

STREAM FLOW

The Big Blue River generally runs south through the district and is joined by nearly a dozen tributaries. Small meandering streams, with intermittent flows characterize these tributaries. The stream flow is variable, being primarily derived from precipitation runoff.

The Big Blue River and its tributaries have a relatively low-base flow. Return flows from well irrigation have lengthened the period of time when flows are present in many of these streams. The greatest volume of stream flow normally occurs during the higher rainfall months of May, June, and July.

VEGETATION

Grass was the native vegetation of the upland area and trees were present along the stream valleys. Early settlers introduced timber plantings in the uplands, and additional belts have been added in more recent years. However, with the advent of the pivot sprinkler system, several of these belts and boundary line plantings have been eliminated.

73% of the district is in cropland, thus reducing the natural vegetative cover. Farmers in the district using good tillage practices leave most of the crop residue on or near the surface, providing good cover conditions. On steeper, less fertile and more droughty soils, crop growth frequently is not dense enough to produce amounts of crop residue to make good vegetative cover.

PRECIPITATION

Precipitation varies from 28" in the upper portion of the district to 30 inches in the lower part. Extremes of approximately 13 inches in 1934 and 1974 and over 48 inches in 1951 have been recorded. Precipitation occurs predominately as rainfall, with over 80% received during the growing season from April through October. The average precipitation for June, which is usually the month of highest rainfall, is about 4.5 inches. From statistical weather records of the area, serious drought tends to occur about every 20 years.

EVAPORATION

There are no evaporation records available within the district. The average annual Class A pan evaporation is estimated to range from approximately 62 to 70 inches, being highest near Hastings. The month of July has the highest loss, with a maximum of 17.6 inches and a minimum of 6.3 inches having been recorded at Lincoln (1931-1966)

POPULATION

Population of the district as in the basin reached its maximum in 1890 and has since declined. The 2000 population census shows that 37,899 people lived in the district, of which 9,667 (26%) were rural and 28,232 (74%) were from urban areas or lived in rural non-farm areas. The 2010 population census shows 36,964 people in the district, with 79% being urban and 21% rural. Trends show a further decline in the rural farm population and an increase in the non-farm and urban population.

GENERAL ECONOMY

Historically, agriculture has been the primary factor in the economy of the district. As a result, the general economic conditions of the area have fluctuated with the agricultural economy.

Transportation facilities are generally adequate, as elevators are served by one or more of the two main or branch line railroads and state and federal hard-surfaced highways serve most towns. A relatively good farm-to market network of state, county, and local roads serves the rural areas.

MASTER PLAN

CHAPTER III

Resources

LAND

Ninety-eight percent of the district's total land area (1,054,000 total acres) is devoted to agriculture. Seventy-five percent (75%) of the agricultural land is in crops, 20% in pasture and range, 3% in woodland, and the remaining 2% is in other agricultural or non-farm uses.

Land resource acres are composed of geographically associated land resources units, usually several thousand acres in extent, that are characterized by particular patterns of soil (including slope and erosion), climate, water resources, land use, and type of farming. The two land resources areas within the district are designated as the Central Loess Plains and the Nebraska-Kansas Loess Drift Hills.

CENTRAL LOESS PLAINS

The Central Loess Plains area comprises nearly 59 percent of the district and lies in the western two thirds of the district. This nearly level to gently rolling plain is overlain with loess soil and is generally quite adaptable to irrigation. Private systems utilizing groundwater have been developed to irrigate about 24 percent of the cropland. Soybeans, corn, wheat and grain sorghum are the major dryland crops, while corn and soybeans are the most important irrigated crop.

Woodland occupies 30,900 acres of land or approximately three percent of the total agricultural area.

NEBRASKA AND KANSAS LOESS DRIFT HILLS

The Nebraska and Kansas Loess Drift Hills Area comprises 41 percent of the district and lies along the eastern portion of the district. The soil in this area is comprised of a variable thickness of loess and glacial drift and is typified by narrow stream valleys separated by broad undulating ridges. The irrigation potential appears to be somewhat limited in this area. Rainfall is generally adequate for the production of soybeans, wheat, corn, feed grains, and hay.

WATER

The water resources of the district consist of variable surface water supplies and groundwater supplies. Interest by district residents in control and conservation of the groundwater supply is increasing.

GROUNDWATER

Groundwater is the primary source of irrigation water for the 189,482 acres of land being irrigated in the district. The best source of groundwater is the quaternary age of deposits of sand and gravel having high permeability. The bedrock materials underlying the aquifer are mostly impermeable in nature. Some bedrock in the southeastern part of the district is somewhat permeable but yields water too highly mineralized for most uses. The most permeable deposits in the district are generally the sand and gravel layers of the Illinoian age. The thickness of these layers is variable and ranges from a few feet to about 200 feet.

The thickness of the water-bearing material has a bearing on the yield of water from the aquifer. However, the porosity and transmissibility primarily determine the actual amount of water available. Transmissibility is a measure of a material's ability to transmit water.

According to Department of Natural Resources records there are 2,209 irrigation wells recorded in the district. The development in the use of groundwater for irrigation from wells for the most part has taken place since 1950. In 1962 there were approximately 440 irrigation wells, irrigating approximately 38,700 acres.

Water use for municipal and industrial purposes is at the present being supplied entirely from groundwater sources. It is expected that the use for these purposes will continue in the future from groundwater.

Groundwater quality has not been a major problem in the district. However, groundwater aquifers near Wilber and DeWitt are highly mineralized and some areas are having increased nitrate concentrations. This district in 1996 implemented its Groundwater Management Plan over the entire district. A Phase II Groundwater Management Area was initiated in 1997 for a 60-square mile area in the DeWitt area. The Groundwater Management Plan is on file at the district office.

SURFACE WATER

Stream flow of the Big Blue River near the Nebraska-Kansas line averages some 561,000 acre feet annually. The long term average annual runoff at the Barneston gauging station is less than 10% of the average annual precipitation. This indicates a considerable amount of precipitation is lost to evaporation and transportation.

Analysis of available data shows that 50% of the time the base flow at the state line is only 1/3 of the average annual discharge in c.f.s. This means that during 50% of the time, over 80% of the annual flow volume occurs.

Groundwater pumping near the Big Blue River has apparently had little effect on the stream flow. The district yearly is measuring groundwater in wells within one mile of the Big Blue River between Beatrice and DeWitt to monitor water levels, as per agreement with the Kansas-Nebraska Big Blue River Compact administration.

Precipitation in the district for an average year shows that approximately 2.2 feet will provide 2,318,800 acre feet. This compares with 6,169,100 acre feet for the Big Blue Basin. The outflow at Barneston is 206,300 acre feet. Therefore, consumptive use of annual precipitation in the district is 2,122,800 acre feet, and for the Basin it is 5,962,800 acre feet. Therefore, approximately 3.3% of the average precipitation in the basin and district is outflow.

The Twelve watershed projects in the district have 184 floodwater retarding structures and 73 grade stabilization structures. These 257 structures have 29,280 acre feet of sediment storage and 106,815 acre feet of flood storage. These waters have the capability of irrigating nearly 24,500 acres of land either by gravity or sprinkler system. These projects are located basically in those areas of the district where groundwater supplies and stream surface water are not readily available for irrigation uses.

SURFACE WATER QUALITY

The quality of the surface waters in the district varies greatly during the year. Studies conducted by the Nebraska Health and Human Services indicate that the best quality of water exists in the late winter or early spring before the spring runoff occurs. In the district there are eight municipalities discharging into the Big Blue River and eight industries discharging into the Big Blue or its tributaries in the district.

Historically, there were at least five low-head dams on the Big Blue River in the district. At the present time only the Holmesville low-head dam is holding. This impoundment, in general, helps to improve the water quality because it acts as a wastewater retention pond. The impoundment contains a high plankton population that utilizes many of the pollutants as food. In addition to this impoundment, there are 184 floodwater retarding structures and 73 grade stabilization structures in the district that have 29,280 acre feet of sediment storage and also act as waste water retention pools and help in providing longer sustained flows to river tributaries in the district.

OTHER RESOURCES

Population of the district, according to the 2010 U.S. Census of Population was 36,964. Population of the district reached its peak in 1890 and has been on the decline since that time. The loss of farm population and the lack of growth in the urban areas have been the major factors in the decline of population in the district.

The 2000 census shows that the urban and rural non-farm areas constitute 79% of the total population of the district, while rural farms constitute 21% of the total population of the district. Urban areas are defined as cities of 2,500 population or more, rural non-farm as places of less than 2,500 population and those living in rural areas but not classified as farmers, and rural farms are people living on farms.

Two urban areas lie within the basin and in 2010 made up 53% of the district's population. The proximity of these urban areas to the cities of Lincoln and Omaha has hampered the growth potential of these two urban areas. However, slight future growth is expected to occur in these areas.

AGRICULTURE

The district lies in a transitional zone between the corn belt on the east and the central great plains on the west. Farms that were mostly diversified family-size units continue to grow and livestock diversity continues to decline. The lack of adequate rainfall in some years has encouraged more private irrigation development.

FISH, WILDLIFE, AND RECREATION RESOURCES

The major wildlife resources in the district consist mainly of upland game birds, waterfowl, Turkey and deer. Some of the better quail hunting areas of the state are found in this district, except for the northern portion of the district. Pheasant and quail population has declined in the district in recent years.

Loss of cover is the primary factor in reducing supplies of upland game. A shortage of nesting, brood rearing, and/or winter cover may act singly or in combination with each other to restrict the carrying capacity of a given unit of land. CRP lands in the district of approximately 55,260 acres has improved cover in upland game bird shortage areas.

Turkey and white tail deer are available in the district and are usually found along creek and river bottoms. Stream course woodland plays a vital role in providing habitat for the Turkey and deer. One of the primary factors limiting population of deer in the district is that of landowner tolerance to crop depredations. Since virtually the entire district is in private ownership, private landowners will play a large role in determining the future of big game species in the district.

Migratory waterfowl is dependent on lakes, rain basins, and artificial impoundments for waterfowl habitat and exerts a significant attraction for migrating, nesting, and wintering waterfowl. With the construction of the watershed impoundments, considerable more waterfowl has been attracted to the district in the last 20 years. This attraction is basically for a short period of time during the fall and spring migration of waterfowl species.

Fishing waters in the district have increased in the past ten years through development of multipurpose reservoirs and watershed structures through the P.L. 566 program and the Nebraska Resources Development Fund. Several of the watershed structure impoundments in the district have been stocked by the State Game and Parks Commission with largemouth bass, blue gill, and channel catfish. The district has developed several impoundments for public fishing. The Big Blue River has been well recognized as one of the better catfish streams in the state. The district has a medium to high potential for warm water fishing.

While there are many farm ponds in the district, possible only a fourth of them have fishery potential because of size, depth, turbidity, or are used for other purposes not compatible with fisheries management, or are not open to the public. Many of these are overpopulated with non-game fish such as carp and bullheads.

Sediment along with agricultural pesticides, fertilizers, and municipal sewage are a continual hazard to fishery developments.

There are thirteen public water based recreational areas in the district. These are Rockford Lake, Big Indian Recreation Area, Arrowhead, Cub Creek, Diamond Lake, Bear Creek Lake, Walnut Creek, Clatonia, Leisure Lake, Wolf-Wildcat 12, Swan 2, Swan 67 and Swan Lake 5. While some of the towns have municipal swimming pools and parks, suitable areas for most forms of outdoor recreation are limited.

The historical aspects of the district are not of great general significance. However, the site of the first homestead filed under the Homestead Act of 1862 has been preserved at the Homestead National Monument located west of Beatrice. Another area worthy of mention is the site of the Otoe Indian Reservation near Wymore. This village existed during the period of 1855-1882, prior to the movement of the Otoes to Kansas.

GOALS AND OBJECTIVES

1. Soil Conservation

GOAL – Use each acre within its capability with the soil resources in the district and manage each acre according to its needs.

OBJECTIVES:

1. Encourage landowners to minimize and control erosion of soils through improved land treatment practices and conversion of marginal Class IV cropland to non-cultivated uses.
2. Maintain soil nutrients and reduction of water pollution through improved soil management practices.
3. Maintain and install Best Management Practices that will prevent soil erosion from exceeding “T” value as adopted by the district for soils in the district.
4. Support efforts to reduce wind and soil erosion, with vegetative cover and conservation practices.
5. Implement the policies of the district sediment and erosion control plan and update as needed.
6. Cooperate with local units of government in implementing necessary erosion control practices on industrial, residential, commercial development, and other non-agricultural sites, and road construction.
7. Obtain funding from private, other local, state, and federal sources to supplement district funds.
8. Provide information and education and other advice and assistance to promote soil conservation.

2. Floodwater and Sediments Management

GOAL - Minimize loss of life and property through feasible floodwater and sediment control programs.

OBJECTIVES:

1. Reduce runoff of sediments with Best Management Practices.
2. Discourage development of flood plains through land use regulations to reduce flood damage.
3. Construct floodwater-retarding structures where alternative methods of flood control are not feasible.
4. Work with various federal, state, and local agencies to: reduce flood and sediment damage by using flood plain land for parks, open spaces, and agriculture; replace inadequate road bridges with water impoundment structures; implement flood warning programs; maintain stream channels free of detrimental obstructions; and encourage flood plain buyout programs where feasible.

3. Ground and Surface Water Management

GOAL – Maintain the quantity and quality of surface and groundwater for any beneficial use through proper conservation, development, and management.

OBJECTIVES:

1. Manage groundwater quantity and quality levels through monitoring programs in compliance with the Nebraska Groundwater Protection standards and the Groundwater Management and Protection Act.
2. Hold district groundwater level above the 1982 level through various district programs and regulations.
3. Implement the policies in the district's Groundwater Management Plan and update as needed.
4. Provide public with studies and reports, which involve water quantity and quality resources in the district.
5. Carry out provisions of Nebraska Chemigation Act.
6. Encourage proper development and conservation of ground and surface water.
7. Cooperate with other agencies to plan and evaluate ground and surface water quantity and quality data.
8. Continue to encourage well decommissioning of water wells that are no longer used.
9. Reduce the potential for non-point contamination of groundwater through education, research, management practices, and incentives that would not adversely affect the economy of the area.

4. Fish and Wildlife Management

GOAL – Develop, enhance, and manage the fish and wildlife resources in cooperation with the Game and Parks Commission on NRD property and on private lakes.

OBJECTIVES:

1. Manage Fish and Wildlife habitat on NRD controlled lands.
2. Manage and implement programs utilizing P.L. 83-566 funds to establish and enhance wildlife habitat areas near P.L. 83-566 structures.
3. Encourage landowners associated with P.L. 83-566 structures to cooperate with the Nebraska Game and Parks Commission and the Commission's fish stocking program.
4. Provide tree planting services to private landowners in the planting of wildlife habitat areas.
5. Obtain funding for habitat programs from private, other local, state, and federal sources.
6. Encourage private landowners to preserve the remaining wetlands where practical, discourage dredge-and-fill activities, and conservation to croplands unless there are reasonable wetland mitigation sites available.
7. Provide information and education to promote fish and wildlife.

5. Park and Recreation Management

GOAL – Develop and maintain the quantity and quality of outdoor recreation areas for the citizens of the district.

OBJECTIVES:

1. Develop and manage park and recreation facilities for public use in cooperation with the appropriate agencies.
2. Encourage state and federal agencies to assist in the development of NRD owned areas.
3. Encourage municipalities in the district with flood prone areas to use these areas for wetland, recreation, and open space areas.
4. Provide information and education to promote parks and recreational uses of public lands.

6. Forestry and Range Management

GOAL – Develop and maintain forest and grassland for beneficial purposes in cooperation with local, state, and federal agencies.

OBJECTIVES:

1. Provide demonstration areas to show proper management of forest and grassland areas.
2. Provide to private land owners information on importance of proper seed bed, quality plant materials, and proper maintenance procedures to insure quality forest and grassland areas.
3. Consider providing cities and villages, on a case-by-case basis with planning and financial assistance for community tree, shrub, and native grass plantings.

7. Pollution Control

GOAL – Protect, enhance and maintain the quality air, land, surface water, and groundwater resources of the district.

OBJECTIVES:

1. Provide technical assistance to municipalities, county and regional planning agencies in the development and management of licensed sanitary land fill areas.
2. Implement and update goals and objectives of NRD sediment and erosion control plan and groundwater management plan.
3. Improve public awareness of the importance to protect and enhance our Natural Resources.
4. Promote installation of buffer strips with landowners through cooperation with state programs.
5. Encourage other agencies to take water conservation and beneficial uses into account in clean-up efforts.

MASTER PLAN

CHAPTER V

PROGRAMS

The districts purpose as defined in 1-3229 is to develop and execute through its power and authorities plans, facilities, works, and programs relating to (1) erosion prevention and control, (2) prevention of damages from floodwater and sediments, (3) flood prevention and control, (4) soil conservation, (5) water supply for any beneficial uses, (6) development, management, utilization and conservation of ground 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. In this chapter is a description of the various programs and progress attained since the adoption of the previous Master Plan and programs the district feels will be emphasized during the next 10 years.

Flood control and soil conservation were high priority programs in the past 10 years. With all the P.L. 566 projects completed, maintenance of these structures will receive special emphasis in the next 10 years. The district in the past 20 years completed flood control projects in Big Indian, Cub, Bear-Pierce-Cedar, Clatonia, Mission, Walnut Creek, Swan, and Wolf-Wildcat Watersheds. The district is in the process of completing construction of the Lower Turkey Creek Watershed Project which is the last major watershed in the district without a completed watershed project. A total of 257 flood control and grade stabilization structures have been built in the 12 watersheds, Exhibits 1 and 2.

These 257 structures control drainage from 357,691 acres, which is 36% of the entire district. With construction completed on 257 structures and with many of these structures becoming 50 years old, maintenance is becoming a major item of expenditure each year. Recent inspections of the dams indicated that approximately \$5,000,000 of maintenance was needed.

To have a successful flood control program, there needs to be a successful land treatment program. On the average, for the past 10 years there has been approximately 100 miles of terraces, 25 miles of tile and 70 acres of waterways installed each year. Land treatment cost-share programs that have been initiated in the district in the past 10 years have been the Nebraska Soil and Water Conservation Program and cost-share program through long-term contracts provided through 319 funds in the Swan and Big Indian Watersheds and funds provided by the district. These programs, along with the EQIP programs have enabled our district to save, on the average, 250,000 tons of soil each year from eroding our highly erodible lands. The district provided funds for technical assistance to the NRCS and full-time secretarial help in the NRCS offices. With the completion of the Swan and Big Indian projects, the district involvement with land treatment will continue in other priority watersheds. This program will receive a high priority for NRD funds along with the small dam cost-share program in the next 10 years, since 68% of the crop land in the district is classified by the NRCS

as highly erodible land and 49% of the HEL is capable of losing 14.4 tons of soil/acre/year if not properly treated.

Water quality and quantity programs have been a resource issue receiving more attention in the past 10 years and more attention will be given to these programs in the next 10 years. The district has a groundwater management plan, a groundwater quality sampling program, has been measuring groundwater levels since 1981, has conducted studies with state agencies of potential water quality problem areas, provided irrigation scheduling assistance, has developed in cooperation with the Extension and NRCS a nitrogen management program, has allowed a portion of NSWCP funds to be used for irrigation reuse systems, has cooperated with the Gage County FSA and NRCS on a Special Water Quality Grant Program in portions of Blakely and Grant Townships in Gage County, has continued to enforce regulations for irrigation runoff.

The district has developed and is maintaining its public access properties for recreation and fish and wildlife uses. The district has also cooperated with the Nebraska Game and Parks Commission in the management of fish and wildlife habitat. The District has chosen to participate in the Wild Nebraska Program. District funds normally allocated to other wildlife management programs are being used in the operation and management of the district's nine existing public use and Wildlife Management Areas.

Other programs the district has and will continue to participate in include the small dam program, rural water supply projects in area west of Beatrice to the Homestead National Monument and in southern Gage County, and providing a tree planting service to landowners of the district.

Information and education programs have been developed to provide the public with an understanding of natural resources issues. Three times a year the district publishes a newsletter to inform area residents of the district's programs and projects being undertaken and planned.

MASTER PLAN

CHAPTER VI

Future Concerns and Programs

The district has seen several changes in resource concerns and programs in the past 10 years and will likewise expect to see changes in resource problems, uses, and solutions in the future. The resource base will continue to be more exposed to greater utilization pressures and the district realizes that change will occur and that it will be charged with additional responsibilities.

Groundwater quantity and quality problems will continue to be concerns for the future. The groundwater management plan will be used as the guide to address these problems and implement policies to insure that the public will have groundwater of acceptable quantity and quality. In the past 10 years changes in groundwater legislation have increased the district's responsibility in groundwater issues. These laws deal with a wide range of objectives from managing groundwater quantity, the inspection of equipment used for chemigation to developing special protection areas to reduce groundwater quality problems caused by non-point contamination and to the development of groundwater quality management plans.

Soil conservation will continue to receive attention in the future. Water quality and its relationship to soil erosion have been emphasized in the past, and programs will focus on action needed to reduce soil erosion and nutrient loss into the future. The impact of this action will not solely benefit soil resources, but will also benefit water quality, wildlife, and recreation. The demand for cost-share assistance funds will continue, and efforts to use those funds to achieve the greatest results in reducing soil losses will be necessary. In the next 10 years, landowners will need to continue to follow their conservation plans and implement BMP's, which will add to the demand for cost-share funds. Sediment management will continue to be an important concern of the district, and its sediment and erosion control plan will be the district's planning tool to reduce sedimentation and other problems that result from erosion.

Floodwater control projects continue in the district with the Turkey Creek Structures being built at this time. Four Turkey Creek Structures have been completed with three remaining. Turkey Creek was the last uncontrolled watershed in the district. As indicated in an earlier chapter, maintenance of structures in the future will require additional funds to insure that the structures are maintained and function properly.

The district recently upgraded the Willard L. Meyer (Swan Lake) recreation area with electric hookups, electric well, warning siren and pole lights. Big Indian Recreation Area south of Wymore was also upgraded with a Handicapped accessible restroom, new boat dock, new camping areas, three mainstream sediment structures and many inlake fisheries improvements. There are now 12 public use areas either managed by the district or by the Nebraska Game and Parks Commission for recreational use or for fish and wildlife management. The district expects to see greater demand for recreation in the future and will continue to maintain and upgrade recreation facilities.

Forest, grassland, and range management programs will continue to be carried out primarily to implement goals of soil conservation, floodwater retention, water quality, wildlife habitat, and recreation. The district will continue to provide conservation seedlings and a tree planting service to landowners to implement forestry programs and wildlife habitat plantings.

The district will be facing many resource problems in the future, and in order to solve those problems it will mean the implementation of new programs. To meet this challenge, the directors and residents of the district will need to be informed. There is little chance of maintaining the district unless there is a broad understanding of the problems. The district will need to cooperate and coordinate information and education efforts with schools, local, state and federal agencies, organizations, and interested individuals to increase public awareness and understanding of natural resources.

The district will need to continue to cooperate with these groups and agencies to deal with future problems so that our efforts will be the most efficient and effective in dealing with natural resources and related areas of concern.

MASTER PLAN

CHAPTER VII

FINANCING

The many programs and projects carried out by the NRD in one way or another, hinge on one thing - money. NRDs are being asked more and more by the public to serve as the local unit of government to implement a diverse array of resource related programs.

If the NRDs are to meet these needs and wants, it is necessary to evolve a process for planning financial resources and setting priorities.

Finances, no matter how much you have, are always short. The availability of financing will finally determine what activities are carried out and the extent to which they are carried out. The conclusion that must be reached is what activities will be favored or have a higher priority over others to receive the allocation of funds.

The choices will be difficult, since there are none that are truly "right" or "wrong". Therefore, priorities will determine funding, and funding will determine priorities.

Under the current system of financing, the district is limited to a maximum of 4.5 cents/\$100 actual valuation on all property in the district. History has shown that in the last 10 years, the property taxes collected by the NRD are approximately 1% of the total property taxes collected for local units of government.

Financial planning is an integral part of both long range comprehensive planning and short term implementation planning. The district may need to have the capability to generate large sums of funds for short periods of time for large projects.

In the past few years, budget constraints have reduced federal funds for soil conservation programs. Programs that were funded in the past by state or federal funds are now to be funded by local sources. These constraints are not expected to improve in the future.

The reduction of direct or indirect funds from federal or state sources may result in either the elimination of some projects or necessitate the increase in local funding to carry out these programs and projects.

The district has the power and authority of obtaining finances to carry out programs and projects by the following means:

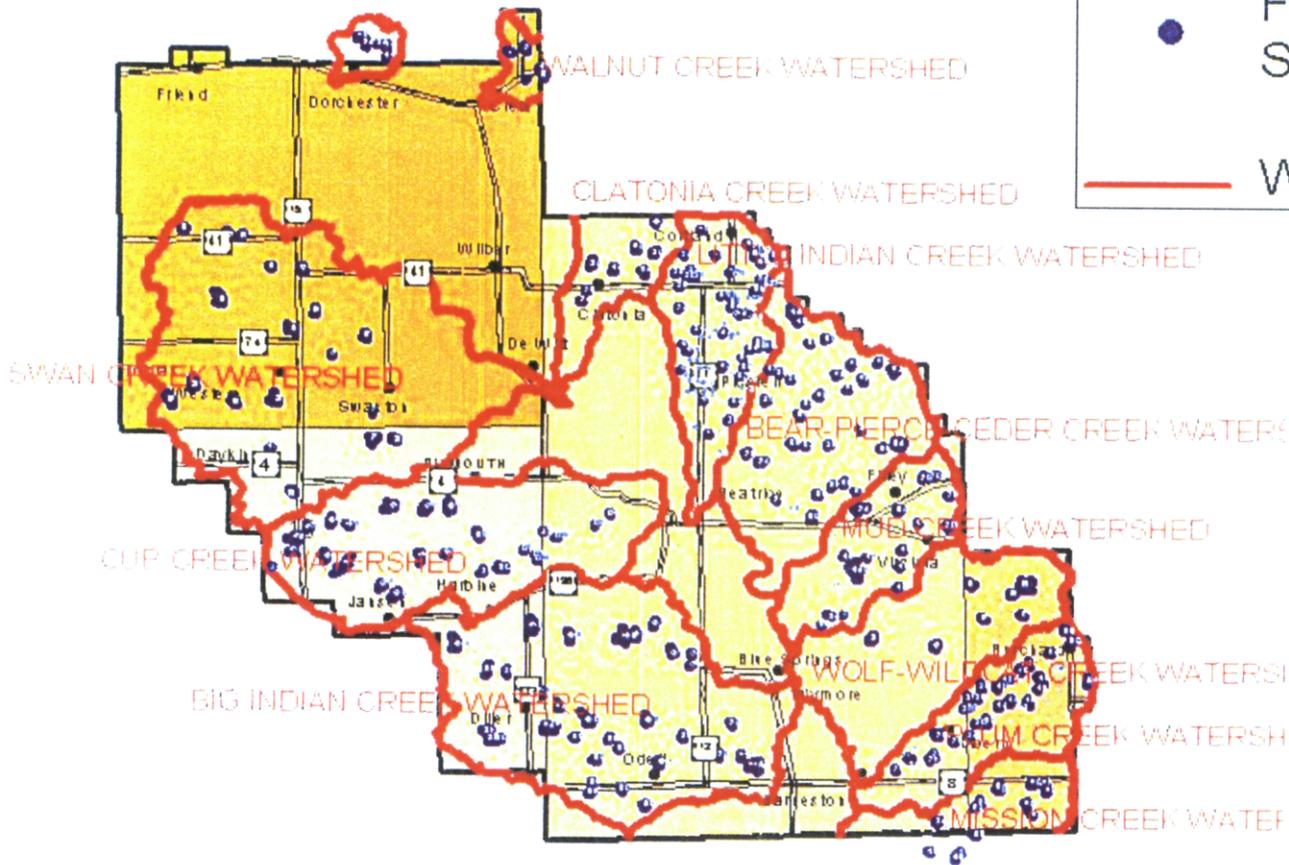
1. Levy a tax not to exceed 4½%/\$100 valuation annually on all taxable property, except intangible property within the district.
2. Receive and use grants, state appropriations, gifts, and bequests.
3. Borrow money.
4. Establish special assessment areas to pay for the cost of construction, capital improvement, or operation and maintenance of improvement project areas.

Various funds, grants, and other services are available from state and federal agencies for the development of natural resources in the district.

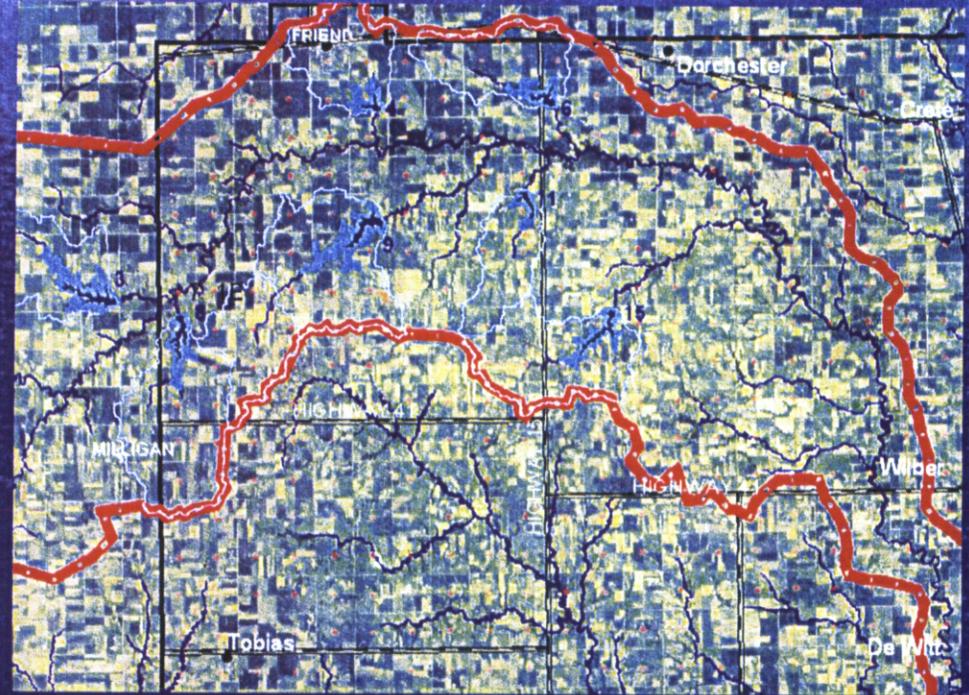
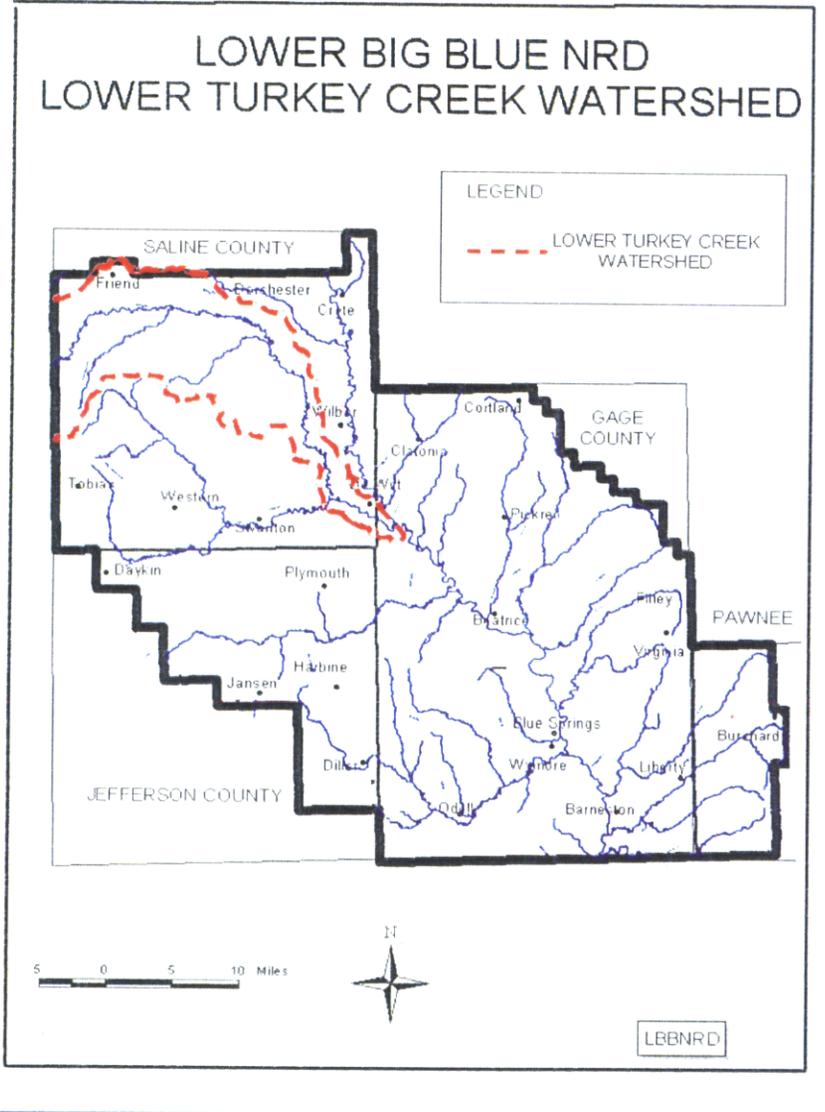
LOWER BIG BLUE NRD FLOOD CONTROL STRUCTURES

● FLOOD CONTROL STRUCTURE

— WATERSHED



Lower Turkey Creek Project



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