wilderness

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WILDERNESS PARK
Lancaster County, Nebraska

A master plan for its use and management prepared
for Lincoln Department of Parks and Recréation
prepared by

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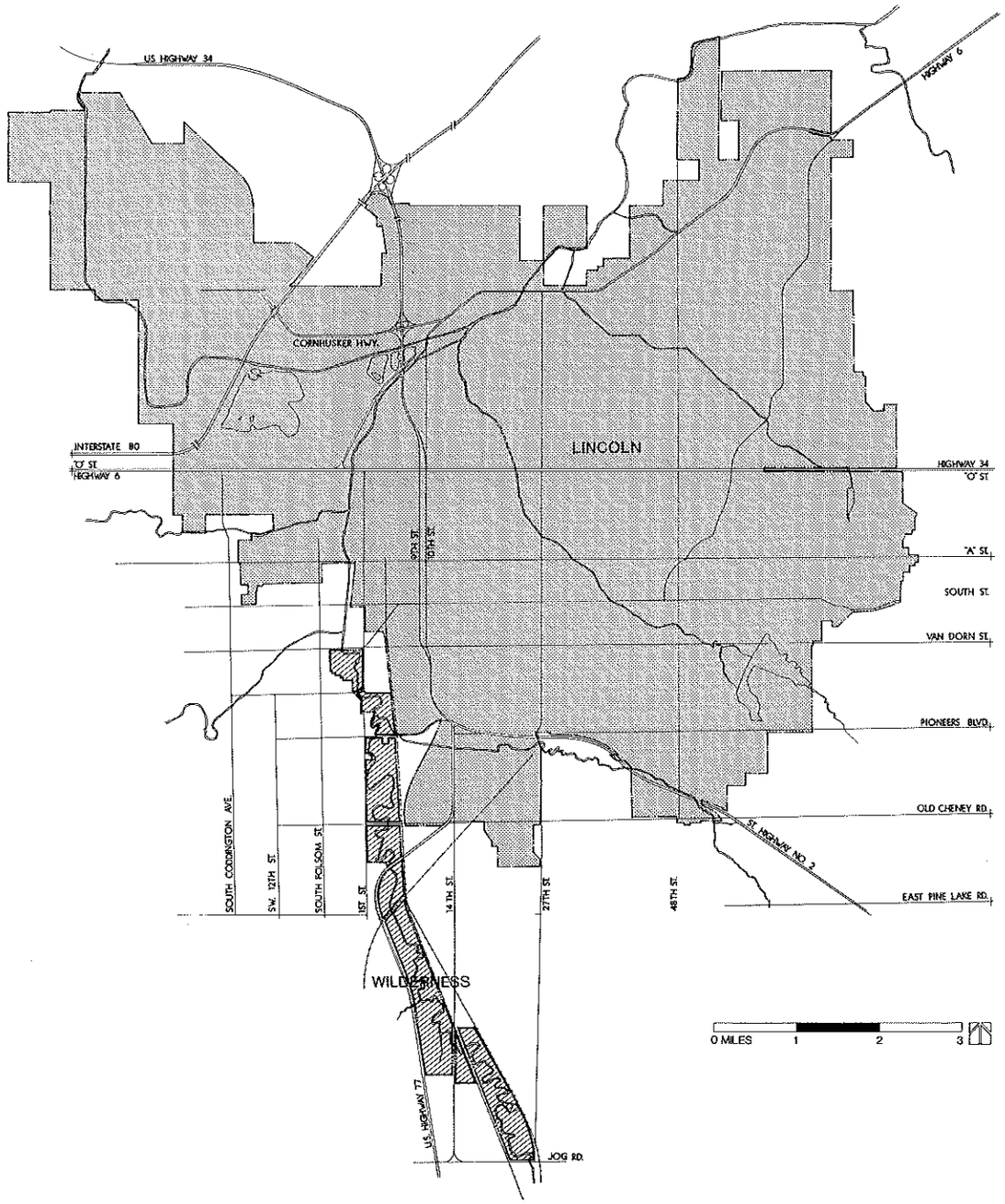

US HIGHWAY 34
HIGHWAY 6
CORNHUSKER HWY.
LINCOLN
INTERSTATE 80
"O" ST
HIGHWAY 6
HIGHWAY 34
"A" ST
SOUTH ST
VAN DORN ST
PIONEERS BLVD
OLD CHENEY RD
ST. HIGHWAY NO. 2
EAST PINE LAKE RD
SOUTH 56TH ST
SOUTH CODDINGTON AVE
SW. 12TH ST.
SOUTH FOLSOM ST.
1ST. ST
14TH ST.
27TH ST
48TH ST.
WILDERNESS
U.S. HIGHWAY 77
JOG RD.
0 MILES
1
2
3

This plan for the development of Wilderness Park recognizes the need for a "primitive-type" park within the Lincoln Park System and provides for only those developments which will enable the public to use the park to enjoy, understand, and appreciate the values of a natural area within an urban setting.

The plan is based upon an ecological analysis of the area made before the suggested use divisions were delineated. Existing resources were inventoried and present and past land usages were identified.

We believe development should be minimal for the recreational use and enjoyment of this natural area. The accompanying plan, if followed, will enable the Park Department to manage Wilderness Park as a resource of ever-increasing value to the citizens of Lincoln, today and in the future.

"WILDERNESS PARK", DEFINED

Wilderness Park is an appropriate name for the area along Salt Creek despite the fact that there has been a long history of human intervention. It is not a pristine primitive area, nor is it free from evidence of man's manipulation of the landscape, criteria frequently used to identify wilderness tracts.

Wilderness is a state of mind as well as a geographic entity. To a city-raised child, the natural woodland along Salt Creek is a challenge to his pioneering skills, an area to evoke memories of the heroes of primeval America or a place in which to marvel at the wonders of nature viewed apart from the interferences of man. To the adult, such a natural area can be a place of renewal and esthetic delight, a place where one escapes from the cares imposed by a mechanized society and is allowed to participate again as one within the community of all living things.

A definition of wilderness, therefore, must encompass two aspects: a) the physical landscape -- the actual geographic site -- as well as, b) the psychological effects caused by the landscape on the individual viewer.

Wilderness Park meets few of the physical criteria of wilderness. It is not vast; it is crisscrossed by railroads, power lines, and roads; it is so narrow that the sights and sounds of civilization can be seen and heard nearly everywhere within the park; and human manipulation of the natural plant and animal communities is everywhere evident. Yet it fills a psychological need unmet elsewhere in the Lincoln Park System.

Much of the value of natural areas of any size lies merely in the contrast they present to the rest of the landscape. In a metropolitan area, wildland is a source of pleasure to many and in a prairie, woodlands are a refreshing contrast to the dominant aspect of cultivated fields and grasslands. The importance of Wilderness Park thus depends not upon what it actually is, but on what it appears to be. One has the illusion of wildness and of primitive nature, yet one is never far removed from evidence of civilization.

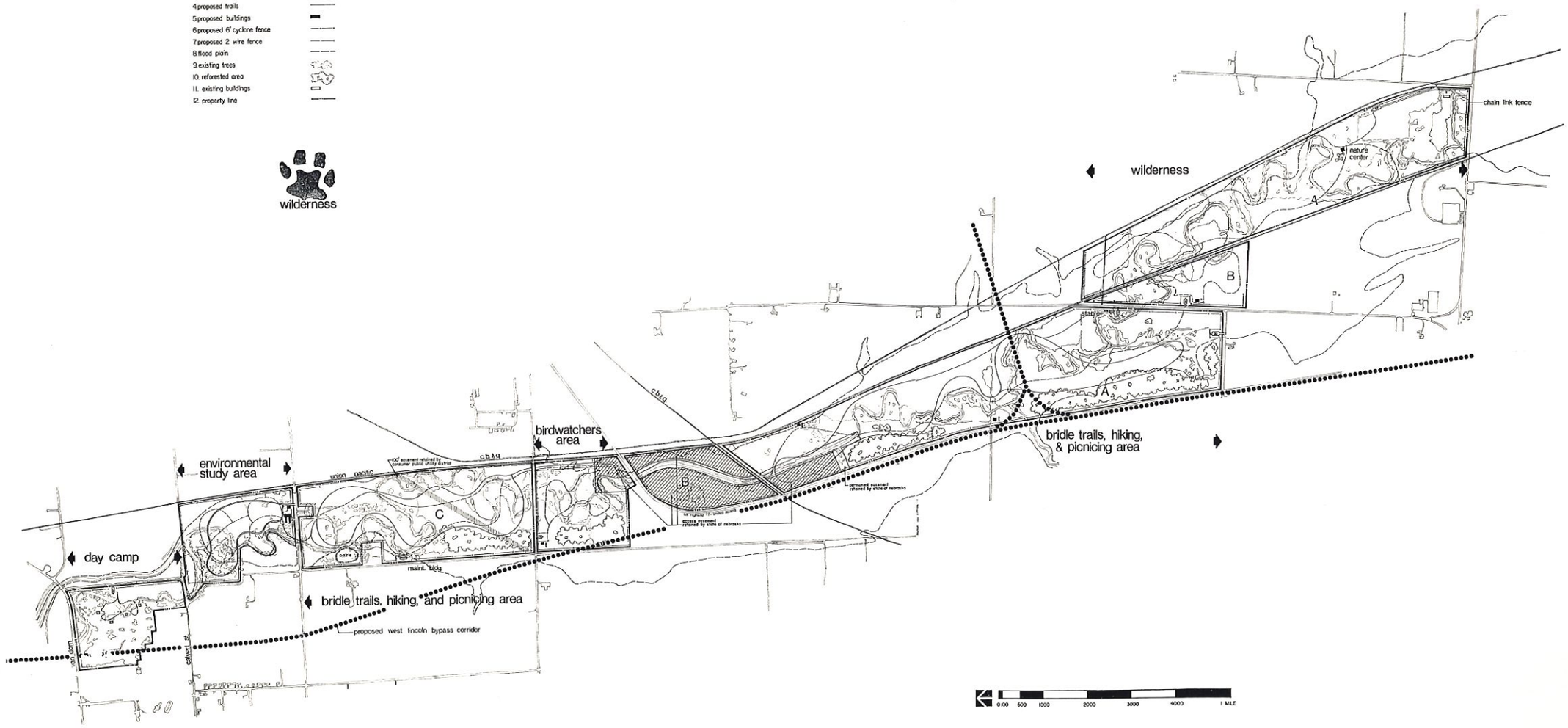
We believe the name "Wilderness Park" should be retained for this area to remind the citizens of Lincoln that it is a park different from all others within the system; that it should be used and enjoyed differently; that it requires different management techniques. Wilderness Park presents a challenge to the Park Department to develop and maintain the area so wilderness values are enhanced. It further challenges the users of the park to protect and appreciate the values of the wildness for which the park has been established.

Natural areas can not be created, they only can be set apart and allowed to operate without man's assistance or interference. They are not museums filled with static exhibits, but dynamic, ever-changing biotic communities. They are not zoos or gardens, although they contain an abundance of animals and plants. They are not parks where man-made recreational facilities provide entertainment. Natural areas are pieces of the native landscape of America in which the ecological realities of life operate for all to see. They are places where the citizens of a community can learn to understand nature and appreciate man's place in the interrelated communities of living things. They are investments in the future.

legend

1. proposed road
2. proposed parking
3. proposed path
4. proposed trails
5. proposed buildings
6. proposed 6' cyclone fence
7. proposed 2 wire fence
8. flood plain
9. existing trees
10. reforested area
11. existing buildings
12. property line

wilderness



HISTORY

The first settlers of Lancaster County chose home sites along Salt Creek in 1857 and several claims were established in or near the present Wilderness Park.[1] The village of Saltillo, located near what is now the southeast corner of the Park, came into being in 1857 with a nucleus of three or four families that settled near one another for protection.

Although the major emigrant trails to the West -- the Mormon Trail and the Oregon Trail -- bypassed Lancaster County to the north and the south, shortcuts and freight roads were soon crisscrossing the area as pioneers moved westward. One trail laid out in 1860 from Nebraska City to Fort Kearney, crossed Salt Creek near Saltillo and the southern boundary road of the Park follows the old trail across the Salt Creek bottom land.

Another bridge across the creek was constructed downstream in the Yankee Hill area in 1864. Immigration into the county apparently was chiefly from the south, travelers following the Nebraska City - Fort Kearney cutoff, and then moving northward along Salt Creek and up its larger tributaries. The woodland along the creek in Wilderness Park, therefore, must have been exploited by European man for more than one hundred years.

Pawnee and Otoe Indians roamed the area before this time and undoubtedly utilized the creek bottoms for food and shelter as well. One of the main routes of Pawnee travel north and south from the Platte River to the Beatrice area followed the west side of Salt Creek in the vicinity of Wilderness Park.

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[1]Much of the information concerning the early settlement of the area is contained in Elinor L. Brown, "History of Lancaster County, Then and Now", no pub., Lincoln, Ne. (?), 1971. 240p.

The village of Lancaster, later to become the city of Lincoln, was established in the fall of 1859, but the major settlement came after passage of the Homestead Act in 1862 and with the coming of the Burlington Railroad in 1870.

By the 1890's the exigencies of pioneer life in the Lincoln area had lessened. The Epworth League of the Methodist Church, taking their clue from the success of the meetings held at Lake Chautauqua in New York state, decided to bring culture and entertainment to Lincoln and in August, 1897, the first outdoor assembly of the Nebraska Epworth League was held in Lincoln Park, two and one half miles southwest of Lincoln on the banks of Salt Creek. Used as a campground by the Lincoln Boy Scout Council after its abandonment by the Epworth League, Lincoln Park today is part of Wilderness Park and is designated on the accompanying maps as "Day Camp".

The folder of the First Nebraska Epworth Assembly describes the grounds of Lincoln Park in the following terms: "The Park consists of near 200 acres of wood and dell -- unquestionably the finest natural tenting grounds in the state. Magnificant forest shade trees and grassy plots invite the multitude seeking summer outing. There are miles of pleasant walks and shady driveways. The Park is watered by the Salt, affording delightful boating. Bridges and footwalks span the stream at intervals. Pure, cold drinking water is furnished in abundance by numerous wells, conveniently located".

One could take one of the electric cars which ran every five minutes on the double track electric line that connected the Park with the city to be transported where "everything on the line of amusement and recreation" would be provided for the eight-day session. "An unsurpassed mile track will tempt many to bring their

wheels. The switchback, a score of swings, and as many first class boats will add to the enjoyment. Electric light will thoroughly illuminate the grounds at night."

The lectures during this first assembly were given mostly by Methodist ministers and bishops, recruited at low cost to the Assembly, but a few musicians and magicians appeared on the program as well.

The meeting was a success. Nearly 2000 people camped in the Park and attended lectures in the big tent. Thus encouraged, the Epworth League Assembly planned another meeting for the following year, promising to supply better sanitation, fresh straw for the tenters' beds, but keeping the price of season tickets at $1 for adults, 50¢ for children, and 15¢ for teams.

Six annual assemblies were held in Lincoln Park. In 1903 the Epworth League purchased 40 acres of land adjacent to Lincoln Park for the permanent home of the Assembly. Epworth Lake Park provided "as fair a beauty spot as may be found in all Nebraska. Enchanting woodland of oak, walnut, ash, elm trees of just the right size and just far enough apart to let the sunshine in on the greensward carpet, Nature's own Axminister, all combining to form as inviting a lodge for the great assembly camp as the mind can picture".

"And then the lake, charming Epworth Lake, in which the trees delight to mirror themselves and in which reposes as beautiful an island gem as ever greeted the eye."

"The new auditorium with a seating capacity of 4000 people will be a delight to all who sit under its vast roof which will afford perfect protection from sun

or rain."[2] It was built from funds supplied by the business men of Lincoln and had a 24 ft. high roof and a clear span inside. It was the largest auditorium in Nebraska.

Trees were planted to augment the groves present naturally on the grounds, "a tree for every tent". One report says the "ground was pretty barren then, but the group put a lot of money into plantings, so that in time it became satisfactorily wooded".[3] Streets were laid out, a dining room-kitchen constructed, and other improvements made so the Epworth "Camp in the Woods" would provide a "still higher and more commanding position of usefulness".

In 1904 the grounds were, indeed, shady and inviting and the creek wide enough for relaxed boating (Figures 1, 2, 3). With continued assemblies and further improvements, Epworth Park and the August outdoor annual meeting of the Epworth Assembly flourished. Crowds came to hear Billy Sunday, William Jennings Bryan, Vice President of the U.S. Charles W. Fairbanks, General Pershing's original army band, Carrie Nation, Irvin S. Cobb, Booker T. Washington, a host of ministers, bishops, and evangelists, musicians, scholars, artists, scientists -- a huge variety show complete with mosquitoes, tents, straw beds, and a ten-day break from the daily routine of home.

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[2]1903 folder, Nebraska Epworth League Assembly. Nebraska Historical Society Library, Lincoln, Nebraska.

[3]Lincoln Sunday Journal and Star, Lincoln, Ne. August 14, 1940.

Figure 1
Epworth Park Lake
Circa 1904

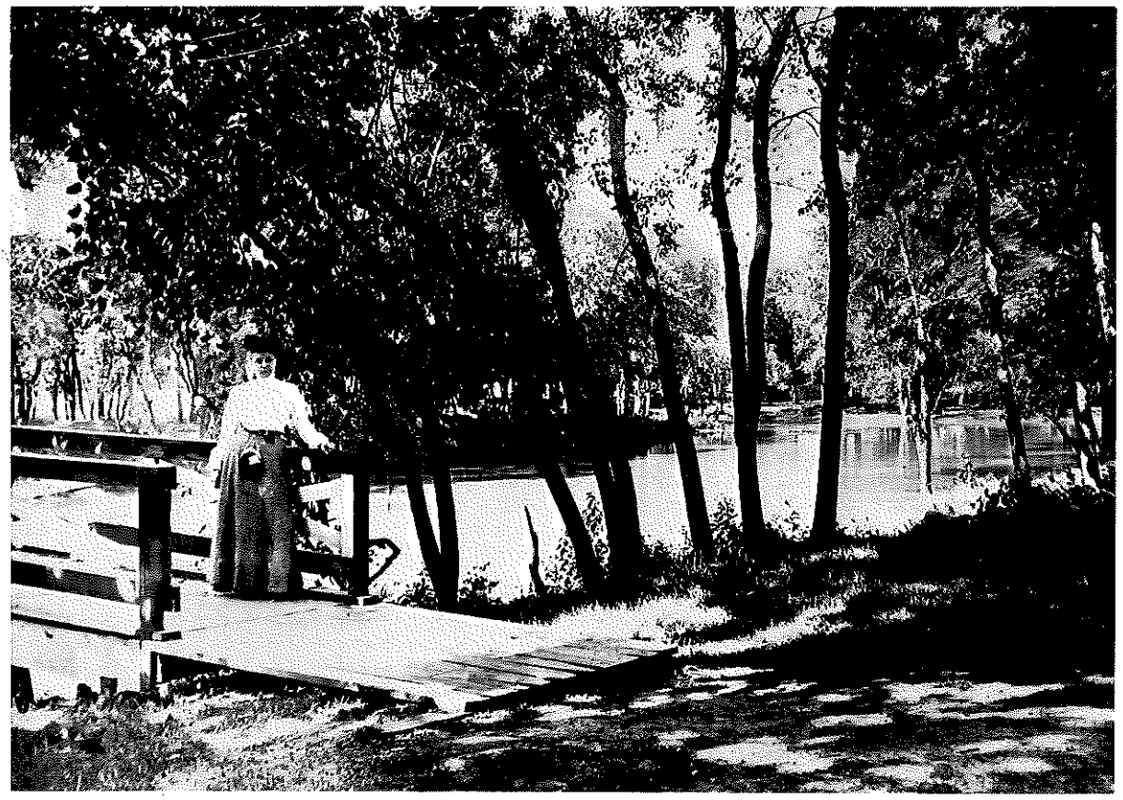

Figure 2
Footbridge to
Epworth Park Island
Circa 1904

Photos courtesy Nebraska State Historical Society

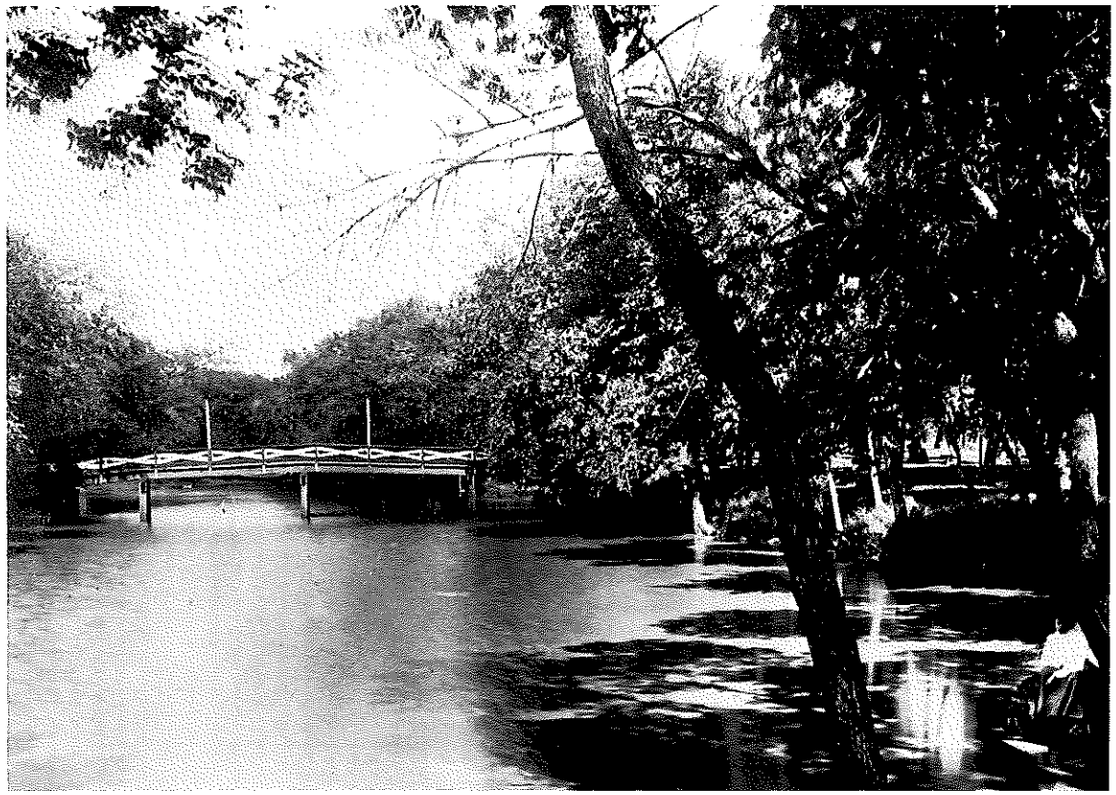

Figure 3
Salt Creek in
Epworth Park
Circa 1903

Figure 4
Kindernook at
Epworth Park, 1914

Photos courtesy Nebraska State Historical Society

In 1914 the grounds of Epworth Park were complete with a "kindernook" playground for the younger children (Figure 4), streets lined with tents (Figure 5), and a local committee that kept things running from a tent under the arching elms (Figure 6).

The Depression of the 1930's and the entertainment provided by the new invention, radio, cut attendance at the meetings. Debts accumulated. In 1940 the Epworth Assembly moved to Nebraska Wesleyan University for its annual meeting and the campground with its buildings stood idle. The coup de grace to the Epworth Park Assemblies was the Salt Creek spring flood of 1942, the worst on record. The Lincoln Sunday Journal and Star reported in 1943 that "The ninety cabins that once supplied lodging for occasional visitors are gone. Grounds are covered with silt. Trees that grew from saplings planted by the original incorporators carry high water marks.

"Flood water had lashed the buildings that remained. Now a pump house which used to keep romantic Epworth lake full is left as is a boy's dormitory with a capacity of 60, and a six-room house occupied by the park caretaker. Discouraged directors sold the auditorium to a wrecking company that used the lumber for a defense installation."

In 1943 Epworth Park was closed and sold. In 1970 upon the death of its owner, Arnott R. Folsom, it became the property of the city of Lincoln, with the express request in Folsom's will that it be made a part of Wilderness Park.

The thousands of summer visitors to Epworth Park for more than 40 years would scarcely recognize the place today. The creek has been channelized, its course

Figure 5
Tents at Epworth Park available for $2.00 per session, $3.00 including floor.

Figure 6
The Local Committee for 1914 Session

Photos courtesy Nebraska State Historical Society

changed; the lake is gone; a small cabin on the island is all that remains of the many buildings once present in the park; the footbridges have collapsed; the name "Epworth Park" is just barely discernible on the decaying gate (Figure 7); and the tent area is overgrown and piled with litter (Figure 8). But the woodland remains, filled not with native plants which elsewhere are abundant along Salt Creek, but containing, instead, the fellow travelers with man, the indicator plants of human disturbance.

CORPS OF ENGINEERS

The first reference to proposed work on the Salt Creek channel, upstream from Lincoln, was contained in the survey report on flood control for Salt Creek and its tributaries, from the Omaha District Engineer, Corps of Engineers, to the Division Engineer, and dated January 31, 1953. In a section entitled "channel improvements above Lincoln", the District Engineer was proposing to remove trees and brush from the channel banks, deepen the channel where necessary, and widen the channel where it was then seriously constricted. This proposed work would increase the carrying capacity of the channel, although it was recognized that flooding would continue to occur at intervals of only a few years. The report recognized that "general and rapid lateral erosion of the channel banks would probably take place", and that "flood discharges at Lincoln would be increased to an extent which might make attainment of a desirable degree of flood protection at Lincoln economically infeasible."

The report referenced above became a part of the authorizing documents for the Salt Creek and tributaries project, which was approved by the Congress in 1958.

In 1963, shortly after the formation of the Salt-Wahoo Watershed District, the Directors requested the District Engineer, and the request was approved, to defer any further consideration of "channel improvements" upstream from Lincoln because of the anticipated high maintenance costs, as well as high right-of-way acquisition costs, in comparison to the questionable amount of benefits which would result.

When discussions of community leaders regarding the possibility of acquiring land in the Salt Creek flood plain upstream from Lincoln, for park purposes, developed to the point that some type of land acquisition project appeared feasible, our District wrote a letter to the Corps of Engineers, dated April 25, 1966, asking for comments as to the advantages which might result if the Salt Creek flood plain area south of Lincoln "were retained in the present condition."

In their reply, dated May 9, 1966, the Corps of Engineers noted that "in the present unimproved condition the small tortuous channel tends to retard flood flows by spreading and storing water over bank in much the same manner as a detention reservoir." Also that "if the Salt Creek channel upstream of Lincoln were to be improved to permit urbanization of the flood plain it would reduce the degree of flood protection along the improved channel thru Lincoln."

Under these circumstances, our District concurred in the concept of acquiring the flood plain for public purposes, and has cooperated with the City, and the County, in the Wilderness Park project.[4]

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[4]Information in this section supplied by Mr. Hal Schroeder, General Manager, Lower Platte South Natural Resources District.

THE ECOLOGY OF WILDERNESS PARK

INTRODUCTION

The woodlands and adjacent fields along Salt Creek within Wilderness Park are typical examples of the floodplain vegetation which grows along waterways in eastern Nebraska. Kept in a state of flux by nature and by man, the vegetation is in all stages of succession from stands of early pioneering plants to mature, stable forests. Several recently abandoned fields, for example, are filled with broad-leaf weeds, while those idle for longer periods have dense stands of young tree seedlings and saplings. Much of the woodland is filled with standing dead and dying American elms, recent victims of Dutch elm disease.

The ecological reconnaissance studies conducted through the park in the summer of 1971 had three objectives: a) to identify and characterize the vegetation of the park using standard ecological procedures and measures; b) to determine the successional trends within the park to anticipate and plan for probable short- and long-term changes in the vegetation; and, c) to provide a logical basis for public use of the park. The exact methods used and the data gathered in these studies are presented in the Appendix, page 1.

Some of the animal inhabitants of the park were inventoried and species lists of three groups of vertebrates are presented in the Appendix, pages 17-25. Since animals depend so closely upon plants for their existence, it is possible to predict what sorts of animals will be found in an area on the basis of the vegetational analysis of a site. The animal species included on the lists in the Appendix were either seen in the park, are represented in collections from the area now in the University of Nebraska-Lincoln Museum, or else are common

throughout the area and undoubtedly occur within Wilderness Park. Small rodents were live-trapped, identified, and released in the park for a period of several weeks in the fall of 1971. No fishes were collected from the creek, nor was an attempt made to survey the invertebrate populations.

The physical factors of the environment were not measured in the present study, but data from other works are available to assist in the interpretation of the total ecology of Wilderness Park. The soils map (Appendix, page 31-32) was prepared from data supplied by the Lincoln office of the Soil Conservation Service, U.S. Department of Agriculture.

VEGETATION

Between 750-800 acres, about 54% of Wilderness Park, is covered with trees. The remaining 600-650 acres, 46% of the total park acreage, is non-wooded and presently consists of cultivated fields (row crops as well as pastures), abandoned fields, hedge rows, railroad and highway rights-of-way, Salt Creek, dwellings, dumps, and the like which have a mixed vegetative cover or none at all.

WOODLANDS

There is a great natural diversity in the forested portion of the park, but for convenience all of the wooded areas have been classified on the basis of species composition as either: a) mixed hardwood or, b) bur oak stands. Some wooded areas appear relatively undisturbed with only occasional introduced

plant species, while in others the native species have been replaced by a wide range of exotics.

Mixed Hardwoods. This is the most abundant woodland type in the park. Some stands are large, 100 acres or more in extent, but most are narrow fringing strips, 50 yards or less in width, paralleling the creek bank. Over ten species of trees are of regular occurrence in them and several other species are represented by a few individuals present in localized situations. Figure 9 is a view of a typical stand.

The tree canopy is two-layered, the top reaching heights of 60-100 feet with an understory layer 10-40 feet in height. The uppermost canopy is composed of the crowns of American elm, hackberry, honey locust, black walnut, boxelder, green ash, Kentucky coffee tree, bur oak, hickory, silver maple, cottonwood, and peachleaf willow. The canopy is not continuous, but is broken irregularly by diseased or wind-damaged trees. The understory trees are either transgressives, i.e. younger individuals of the top canopy species, or else are species such as mulberry, osage orange, or hawthorn which ordinarily do not reach large stature.

A common feature of the mixed hardwood stands is the presence of large numbers of downed trees and broken limbs on the forest floor. Some of the decaying wood can be attributed to the recent attack of Dutch elm disease, but much is the result of wind and flood damage.

The mixed hardwood stands vary in composition from site to site. Some of the diversity can be explained by the physiological tolerances of different species. Some tree species, for example, endure long periods of flooding and live on soils with a high water table; others require drier sites. Selective cutting in the recent past is also responsible for variations in species composition within the hardwood stands while a third influence is the current stage of succession. In eastern Nebraska, cottonwood and peachleaf willow are pioneer species on floodplains. They do not reproduce in their own shade, so stands of willow and cottonwood are followed by other kinds of trees. In Wilderness Park, succession has progressed beyond the cottonwood stage in most areas, but a few old cottonwoods are scattered throughout the park. Successional change to a more diverse stand is seen in the central section of the park where old cottonwoods form the canopy of the woodland, but young hackberries, green ash, and elm are the understory species. As senescence of the cottonwoods occurs, their numbers are replaced by the growth of the saplings beneath.

Three mixed hardwood stands considered to be representative of the park as a whole were selected for extensive measurement. Two of the stands were some distance from the creek while the third was on the creek bank. The data from the analyses appear in the Appendix, pages 3-11.

In the drier areas of the floodplain, tree densities of 154-195 trees per acre were recorded. American elm is the dominant species and all sizes (and presumably ages) of elms are present. A large number of dead elms, 13-36 trees per acre, were found. Most were larger trees, although all sizes except

the very smallest, appear to be affected. Wherever the canopy is opened and light now penetrates to the forest floor, there is a rank growth of saplings, shrubs, and herbs. This thicket growth, combined with the dead tree branches and trunks makes walking difficult through these stands.

The most frequently encountered shrubs are coral berry and gooseberry, both of which are adapted to the low light intensitities of the undisturbed forest. Herbs are seasonal in their appearance. During the spring when the canopy has not yet completely leafed out, bedstraw and water weed form dense mats up to a foot in height. In summer, the herbaceous layer is taller and much more formidable for many of the plants have stinging hairs or sharp spines. Woodnettle is the dominant plant in the shaded summer woods. In openings where more light penetrates, tall cone flower, winged stem, cup plant, stinging nettle, and other large herbs reaching heights of 5-7 feet predominate. Sprawling across the herbs and shrubs and twining into the lower branches of the trees are large numbers of herbaceous vines and woody lianas.

The mixed hardwood stands in proximity to the creek are different in structure and species composition. Figure 10 is a view of a representative stand. In the stand sampled, there were 335 trees per acre with American elm again the dominant species. The number of dead elms is very high, 94 per acre in this stand. There are fewer species present in the creek bank stands in comparison to other mixed hardwood sites. Boxelder and green ash are the principal subdominants and cottonwood, peachleaf willow, and silver maple are restricted almost entirely to the creek banks. Scattered individuals of hackberry, honey locust, bur oak,

Figure 7
Gate to Epworth Park
July 1971

Figure 8
Tent City at Epworth Park
July 1971

Figure 9
Mixed Hardwood Type

Figure 10
Mixed Hardwoods along
Salt Creek

Figure 11
Bur Oak Stand

Figure 12
Grassed area cut for hay
with hardwoods along stream
bank in background.

mulberry and black walnut grow adjacent to the creek, but their numbers are greater farther back on the floodplain.

Growth forms and ages of the trees along the creek reflect the history of disturbance of this habitat. Trees are smaller with a greater number of laterally spreading branches. Large logs and other debris, presumably washed in by high waters, cover the forest floor. Young samplings of boxelder, American elm, hackberry, and green ash grow in dense stands, averaging 744 per acre in the site sample.

Gooseberry and plum are the most abundant shrubs, with smaller numbers of coral berry and hawthorn present. The herbs, for the most part, are tall perennials, e.g., giant ragweed, hemp, tall cone flower, stinging nettle. Reed canary grass is often abundant in spots.

Bur Oak Stands. The second type of woodland in the park is that dominated by bur oak (Figure 11). The density of trees in these stands is low, 114 per acre, and bur oak constitutes two-thirds or more of the individuals. The large oaks average 18-24 inches in diameter 4½ feet above the ground and are widely spaced and quite uniform in height. In contrast to the dense appearance of the mixed hardwood stands, the bur oak stands are open and park-like. Trees less than 6 inches in diameter are rare and there are no young transgressives forming a layer below the oak crowns.

Shrubs with a maximum height of 3-5 feet form a particularly dense cover under the oaks. In the stand sampled there were 5600 shrubs per acre, 86% of

which were coral berry, gooseberry, or raspberry. In this low woody layer there is an abundance of seedlings of tree species of the mixed hardwood stands. Herbs are shorter in stature in the bur oak stands than elsewhere in the park, perhaps because of the more continuous nature of the oak canopy which reduces the light reaching the forest floor. Wood nettle is the dominant herb in summer, but large numbers of grasses, sedges, violets, and other species are seasonably prominent.

NON-WOODED AREAS

The array of vegetation types included in this category varies from areas covered by weedy herbs, e.g. railroad and highway rights-of-way, to planted brome grass pastures, to fields idled for the last three or four years. The characteristic in common of all these sites is the absence of large, closely-spaced trees. Tree seedlings, however, abound in some areas classed by us as non-wooded, and a few sites have occasional discrete individual trees. Non has a continuous stand of trees (Figure 12).

To make the study of these sites manageable in the time we had available, areas of diverse non-woody vegetation and locally of small extent were excluded from analysis, leaving two principal types of sites: a) savanna and grassland, and b) old fields.

Savanna and Grassland. One small area of apparent native prairie occurs on a rock outcrop at the highest point in the park in the NW^4NW^4 of Sec. 11. This area has escaped cultivation, but not pasturing and only a few of the native grassland species remain. Little bluestem, Indian grass, beard tongue, lead plant, prairie clover are prominent at present. Prickly pear cactus is

also found at this site and nowhere else in the park.

All other grasslands and savannas appear to have been planted and pastured, or cut for hay. All have mixtures of species different from native prairie. The most extensive of these grasslands occur along the creek in sites which were disturbed during channelization by the Corps of Engineers and then replanted to grasses and legumes. Other planted areas along Highway 77 have dense stands of smooth brome and hairy vetch and yellow sweet clover. Although reed canary grass is abundant along the creek and in moister areas throughout the flood-plain, smooth brome is the dominant grass species in the grasslands of the park.

Most of the grassy areas that have not been mowed regularly contain numerous small tree seedlings. American elm, Chinese elm, and honey locust are the most common invaders.

Old Fields. Land once under cultivation or being cultivated at the present time is included in this category. Some of the fields have been idle for many years while a few are still being used in 1971. Most of these fields have been disced or mowed annually, but a few have not been disturbed for a period of years and are changing into woodlands as tree seedlings invade and grow.

Several grasses are abundant in all the old fields. Crabgrass, bluegrass, and foxtail have the highest importance values. Broad-leafed herbs are much more conspicuous, however, and include many species considered undesirable. In fields only recently abandoned, annuals such as smartweed, horseweed, fireweed, pigweed, prickly lettuce, and cocklebur are very abundant. In older fields, perennials such as sorrel, dock, cinquefoil, milkweed, bindweed, and various

thistles assume increasing importance. Along fencerows or edges of the woodland where mowing has not been possible, hemp, ragweeds, sunflowers, and goldenrods are especially plentiful.

SUCCESSION

Ecologists call the changes which occur in the composition of vegetation on a site "succession". Such changes are expected and predictable. In Wilderness Park the old fields are undergoing rapid and noticeable changes, whereas the changes also occurring in the woodlands are more subtle and take longer to complete.

Comprehensive studies of old fields in the Midwest and elsewhere indicate a series of regular stages in the succession. Upon retirement from cultivation, fields stay in an annual weed stage for one to three years. The perennial weed stage which follows may last from 2-10 years, depending upon site conditions and previous treatment, i.e. type of herbicides used, crops grown, etc. Next stage in the succession is one in which tree and shrub species predominate. The first trees to appear in the fields are those with small, wind-blown seeds such as American elm and green ash. Hackberry, honey locust, black walnut, and other trees with larger seeds carried by animals establish later. As woody plants grow, reduced light beneath them restricts the sun-loving pioneer species of the fields and herbs characteristic of woodlands begin to appear. After another 10-15 years, old field species have disappeared and a young woodland exists on the site.

Successonal changes in native grassland in eastern Nebraska appear to culminate in woodland also, although the dense prairie sod delays establishment of many tree species and prolongs the early stages of the succession. Disturbance favors the short-lived herbs rather than the trees, but if the cover is broken, woody invaders often succeed. Prairie fires which once swept across Nebraska, prolonged the grassland stage, but now that fires are controlled, woodland is advancing onto grassland.

When the first Europeans visited eastern Nebraska, woodlands were confined almost entirely to narrow bands along the creeks. Away from the watercourses, tall-grass prairie occupied the land. Switch grass, Canada wild rye, and prairie cord grass grew in the moister sites and little bluestem, big bluestem, and Indian grass were the dominants on the drier uplands. A variety of broad-leafed herbs were interspersed among the grasses. Mixed hardwoods not unlike those we see today were prevalent on the floodplains with bur oak in groves on the drier terraces or along the banks on rock outcrops.

The present-day fields of Wilderness Park, therefore, were once prairies which extended across the drier terraces to the creek bank in many places. Woodlands were present along the creek, but undoubtedly less extensive than they are today.

Both woodland and prairie have been used extensively by man, yet only the woodland retains its identity. A prairie, plowed and planted to corn, doesn't revert back to prairie when man leaves it alone, but a woodland, cut and brushed out, looks like a "wilderness" only three or four years after cessation of cutting.

The reason for the difference in response lies in the evolutionary history of the two types of vegetation.

Woodlands along creeks have been subject to flooding since the beginning of time. The species which grow there are adapted to disturbance. They are rapid growers and short-lived. They reproduce readily, either vegetatively or with seeds. Their roots can survive burying under layers of silt. They are, in short, adapted to the particular vicissitudes of life on a floodplain.

Prairie plants, on the other hand, grow on the uplands where water is less available. They are better adapted to drought than trees and they survive when trees are killed by lack of moisture. But when water is readily available for plant growth, the woody growth form is better adapted than the herbaceous, and trees replace herbs. The prairie is not self-perpetuating, therefore, unless assisted by outside forces. Fire, for example, destroys trees, but not prairie herbs.

Succession from grassland to woodland takes longer than do the successional changes which occur within woodlands. On the prairie, the succession is from a herbaceous growth form to a woody one. In the woodlands, succession is from one kind of woody plant to another, so the same kind of growth forms are involved. A more pronounced change in the habitat is necessary when succession is from one growth form to another, hence change from grassland to woodland takes longer.

Changes in woodland composition are sometimes rapid. One such accelerated change is taking place in Wilderness Park at the present time due to the death of mature elm trees attacked by Dutch elm disease. Approximately one quarter of the elms, primarily the largest ones, are dead or dying. As individuals die, the canopy is opened and subdominant species are filling the spaces. Mulberry and honey locust have increased their importance as have boxelder and hackberry in areas closer to the creek. Complete elimination of American elm from the forest appears improbable, at least for a long period due to the large numbers of smaller trees which are unaffected as yet. Small elms are abundant in the shrub layer and many of these will reach sexual maturity before dying. A seed supply is guaranteed for many years, but it seems probable that American elm will no longer occupy a prominent position in the creek bank forests in this area.

The oak woodlands are not now reproducing themselves, but they are maintaining the present structure by limiting the establishment of other tree species. There are practically no oak seedlings to be found in the present oak stands. It may be that favorable conditions for oak reproduction occur only once or twice in a century, still often enough, however, for the long-lived trees to persist. Even if the oak stands in Wilderness Park are not replacing themselves, oaks will be present for a long time, barring disease or fire or cutting.

Change is the order of the day in Wilderness Park and succession is one of the most important stories the park can tell to its visitors. The old fields and abandoned pastures are being colonized by woody plants and will change to

woodland if left undisturbed. The species composition of the woodland is changing because of the death of American elm and also because of previous selective cutting. Under the present climatic regime, all areas of the park appear destined to become woodland, the species composition of which remains to be seen. If man wishes to perpetuate grassland in the park, he will have to supply management technique. This is a woodland ecosystem.

ANIMALS

Although no specific study of the animals of Wilderness Park was conducted for this report, animals were observed wherever possible during the survey and species list of several groups compiled (Appendix, pages 17-25). The forest-edge communities of the Midwest are the best known animal associations in the area. Although their species composition varies from east to west and from north to south, all have certain kinds of animals in common. The whitetail deer, for example, is an important browser in creek bank forests throughout the Midwest and the cottontail rabbit is a characteristic smaller component. Bobwhite quail are the most universally present birds, while red fox, raccoons, coyotes, striped and spotted skunks, ground squirrels and other small rodents live in the shrub-filled edges of woods. Small birds, too, find the forest-edge attractive and catbirds, brown thrashers, goldfinches, robins, and field sparrows nest in the margins between woodland and grassland. Hawks such as the red-tailed, sparrow, and Cooper's, perch in the trees and swoop over the grasslands. Where fruit-bearing trees are abundant, e.g. in plum thickets or mulberry groves, animals congregate when the fruit is ripe.

Several insect visitors are characteristic of these sites and the dense undergrowth of the floodplain forests supports a host of insect species.

The eastern Nebraska woodlands are drier than those farther east and there are fewer invertebrate animals in the forest litter. Land snails, for example, are abundant in the eastern deciduous forests, but are not plentiful in Wilderness Park. Nematode worms, ordinarily occurring by the thousands in decaying litter, are much reduced in numbers in these woodlands. Thick, moist, moldy-smelling layers of decaying leaves and twigs do not form in the Salt Creek woodlands and without this sort of habitat, the forest floor invertebrates are restricted in number and kinds.

Animals other than man are influential in producing vegetational changes in woodlands and grasslands. A dynamic equilibrium exists at all times between vegetation types in the floodplain areas of the Midwest. Climatic swings favor grassland at the drier periods, woodland during the moister times. There is thus a constant change in the border between grassland and woodland, in the zone inhabited by a wide number of animal species. The animal constituents of these communities can affect some of the plant changes by disseminating fruits and seeds or by destroying specific kinds of plants.

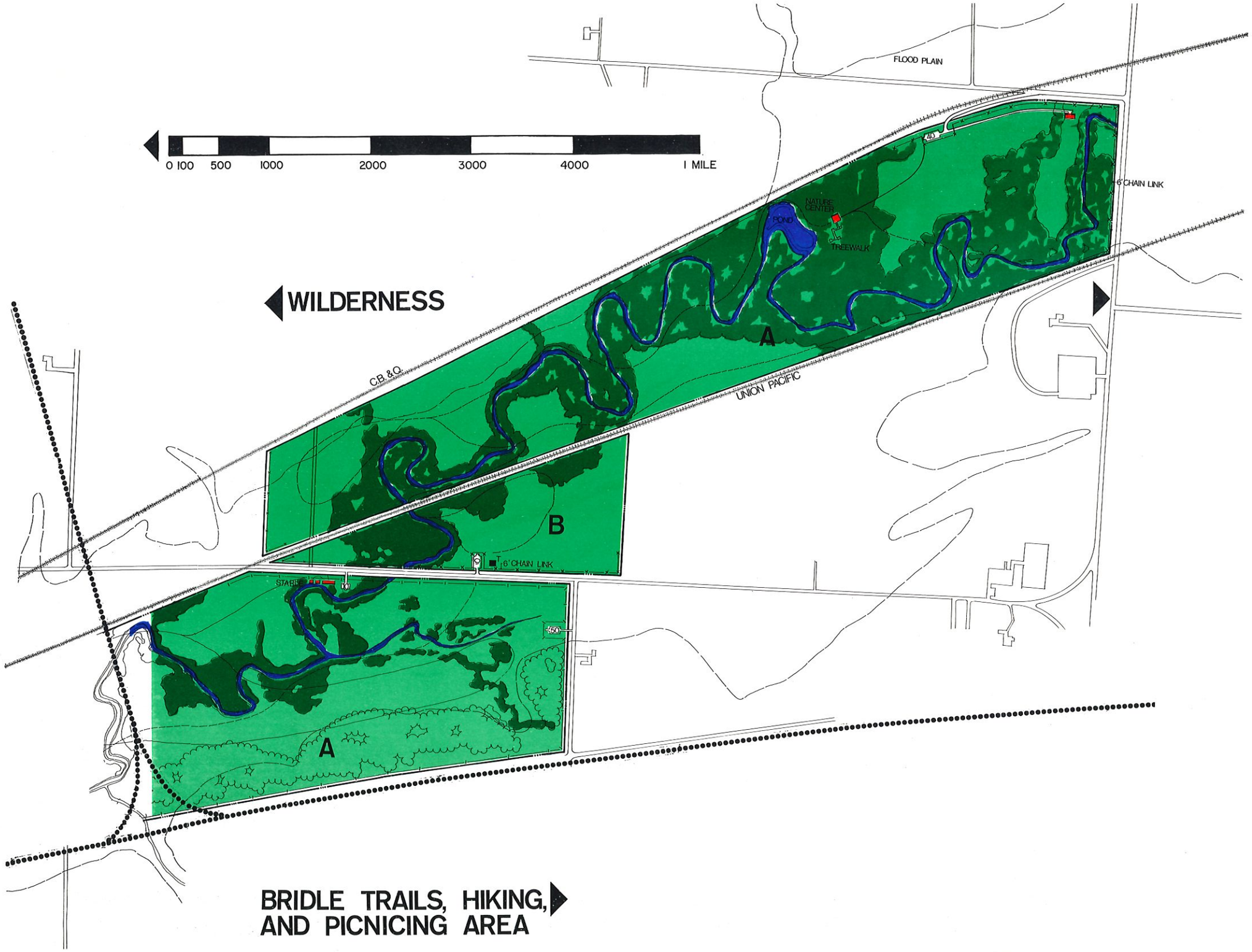
Seeds often have hard coats which inhibit germination for long periods. If the seeds are passed through the alimentary tract of an animal, however, the coats are softened and germination can take place. Seeds in rabbit pellets, in fox or coyote feces, or in bird droppings often germinate before the organic matter which surrounds them has decayed. The seeds and young

seedlings thus benefit from the high moisture content of the fecal material as well as higher nutrient levels for a period of time.

Animals also influence vegetation by partially destroying it or by disturbing the habitat and checking the succession. Large browsers such as deer consume quantities of twigs yearly and keep many kinds of shrubs and trees severly pruned. Rabbits often cut low shrubs to ground level or girdle larger trees, killing them. Bobwhite quail keep large areas on the edge of shrub thickets free from plant growth by repeatedly dust bathing in the dry soil.

In these and a myriad of other ways animals influence plants, reiterating again that all components of an ecosystem -- animals, plants, physical environment -- are interrelated and all must interact for its proper functioning. In Wilderness Park we are preserving a functioning ecosystem, not just protecting animals from hunting or trees from being chopped down. Our management plans should keep this in mind at all times.

DESIGN FOR ACTIVITIES WITHIN DESIGNATED AREAS


0 100 500 1000 2000 3000 4000 1 MILE
FLOOD PLAIN
6' CHAIN LINK
NATURE CENTER
POND
TREEWALK
WILDERNESS
A
C.B.&Q.
UNION PACIFIC
B
6' CHAIN LINK
STABLE
A
BRIDLE TRAILS, HIKING,
AND PICNICING AREA

The southernmost area shown on the sectional plan ("A & B") has been designated as a "Wilderness". This land is most removed from man's activities and has been subject to less change than most other portions. It, therefore, seems logical to preserve this portion as nearly as possible in its existing condition permitting only that development which would make it accessible for study and observation as a natural area.

The area would first be fenced along the sections exposed to the public so that access is controlled from the two parking areas. No vehicles would be permitted beyond those points and from which paths would explore the various areas along the stream and the open field and wooded areas. A sufficient number of toilets would need to be provided and, wherever these locations fall below the flood plain, the installation would be a self-contained type. No other changes would be made in the area except in the immediate vicinity of the "Nature Center". This Center is intended to serve the purposes of surveillance, instruction and record keeping. It would include the following:

Reception Area
Interpretation Center and Herbarium
Study Collections
Library
Workshop for Exhibits
Darkroom
Audio Visual Storage
Kitchenette and Staff Lounge

Such a facility would handle groups of 25-30 for lectures and instruction. Leading from the building would be a walkway built at a level high enough to penetrate the tree cover and provide observation points in a variety of locations.

It is also proposed to widen a portion of the stream to develop a pond which would encourage organisms that thrive in still water. Excavation from the pond would serve to prepare a site for the building above the reach of the flood water.

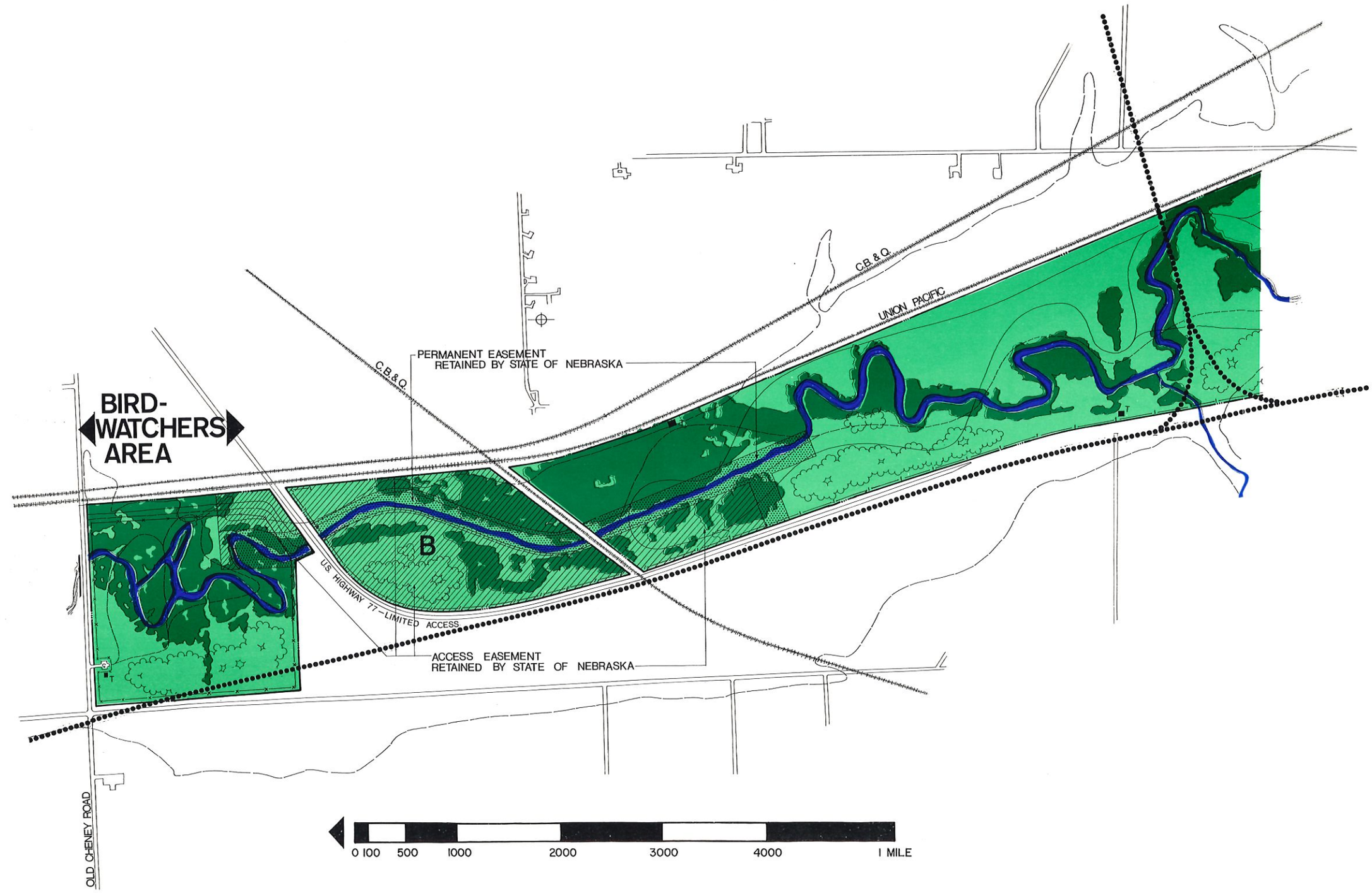
This area then is intended to provide classrooms within a sanctuary where nature's processes may be observed and recorded with no interference or assistance from man except as distant developments may bring about change. Whether the resulting landscape is attractive or pleasant is of no importance to meet the objectives of the interpretive program.

Adjoining the wilderness preserve to the north and shown as Area "A" on the preceding plan and "B" on the second sheet, is an area designed to accommodate greater numbers of people who may be less serious as students of nature, but still interested in observing the processes at work. This long stretch would therefore include bridle trails, hiking paths and areas for picnicking. In this section the trails would be laid out in a manner which would utilize identifying markers calling attention to slowly emerging changes in erosion, the dominance of certain plants, effects of animal life, etc. The area is accessible only at the south end where a parking lot is provided. All other boundaries are secure by reason of rail lines, or the limited access provisions of Highway 77.

It will be noted that one of the proposed routes of the highway bypass corridor transects the park. If this should come to be, it is proposed that rigid requirements be imposed on the development of the road at this point in order that sight and sound of the traffic may be insulated from the park by berms and dense planting. Experiments conducted at the University by David I. Cook and David F. Van Haverbeke indicate that plants alone (without the land forms) can produce effective shielding in depths of 450 ft. from the source.

Birdwatcher's Area

This area would be reserved exclusively for those interested in bird watching. While it is true that birds could be observed anywhere in the park, it is important that some area for this passive activity be free of traffic and other interferences. No improvements are needed other than a trail through the woods with the simplest possible crossings of the stream. Toilet facilities would be provided at the entrance parking lot and the entire area would be fenced. A continuation of the foot trails leading to the other sections of the park would be along the east edge, outside the fence. To enhance the area for birds, some of the open area may be seeded to grains or other plants attractive to birds.


C.B.& Q.
UNION PACIFIC
PERMANENT EASEMENT
RETAINED BY STATE OF NEBRASKA
C.B.& Q.
BIRD-
WATCHERS
AREA
B
U.S. HIGHWAY 77 – LIMITED ACCESS
ACCESS EASEMENT
RETAINED BY STATE OF NEBRASKA
OLD CHENEY ROAD
0 100 500 1000 2000 3000 4000 1 MILE

Bridle Trails, Hiking and Picnicking

Area "C" is to be treated in a manner similar to No. 2 and would be connected to it by the bridle trails and paths passing along the east edge of the birdwatcher's area. Thus, a system of bridle paths and trails would cover a distance of 3½ miles, with a total length of 7 miles in one course. The proposed maintenance building located along the west edge on South 1st Street would provide housing for all equipment required to maintain the park and would serve as headquarters for administration.

A portion of native prairie is identified for preservation.

Environmental Study Area

This section is the most parklike. It has some of the nicest stands of trees, less undergrowth than other areas and includes some ornamentals introduced during its use as a Chautauqua grounds, etc. It is therefore intended as an arboretum and as such would serve the purposes of experimentation and instruction in the effects of modification of the natural conditions, the development of new ornamental species for the region and, because of the appeal of such places, it would function as a park through which people might drive or walk. A greenhouse would be provided for propagation and experimentation. Certain architectural elements might be used to enhance the setting for the purposes described. A tight fence enclosure would be needed with controlled access at the gate.

Day Camp

This area has been in use as a day camp by the City Recreation Department. It seems well suited to this function by reason of the nature of the area and its convenience to the city. It is recommended that the area be continued for day camp purposes and only such improvements be permitted as will further its use on a somewhat expanded basis as a day camp.

BIRD-
WATCHERS
AREA
ENVIRONMENTAL
STUDY AREA
DAY CAMP
C.B.&Q.
100' EASEMENT RETAINED BY
CONSUMER PUBLIC UTILITY DIST.
UNION PACIFIC
C
prairie
SOUTH 1ST STREET
MAINT. BLDG.
PROPOSED WEST LINCOLN BYPASS CORRIDOR
BRIDLE TRAILS, HIKING,
AND PICNICING AREA
VAN DORN
CALVERT ST.
WEST PIONEER BLVD.
WEST OLD CHENEY ROAD
FOLSOM ST.
0 100 500 1000 2000 3000 4000 1 MILE

PROPOSED BUDGET FOR WILDERNESS PARK
JANUARY 11, 1972

WILDERNESS AREA

A.	7,100	L.F.	6 Ft. Chain Link Fence @ $3.25.....	$ 23,075	
	45,000	S.F.	Paving @ $.50/SF.....	22,500	
	22,000	L.F.	Cleared Paths @ $.10/LF.....	2,200	
	4		Crossings @ $500/Each.....	2,000	
	22,000	C.Y.	Pond Excavation @ $.50/CY.....	11,000	
	2,800	S.F.	Nature Center @ $22.00/SF.....	62,000	
	800	S.F.	Tree Walk @ $5.00/SF.....	4,000	
			Signs, Contingencies, etc.....	2,000	$128,775
B.	3,960	L.F.	6 Ft. Chain Link Fence @ $3.25/LF.....	12,870	
	3,500	S.F.	Paving @ $.50/SF.....	1,750	
	6,000	L.F.	Cleared Paths @ $.10/LF.....	600	
	1		Toilet.....	2,500	17,720

HIKING, RIDING & PICNICKING

A.	525	L.F.	6 Ft. Chain Link Fence @ $3.25/LF.....	1,700	
	12,000	L.F.	2-Wire Fence @ $.75/LF.....	8,000	
	14,625	S.F.	Paving @ $.50/SF.....	7,300	
	14,500	L.F.	Trails @ $.25/LF.....	3,625	
	6,000	L.F.	Cleared Paths @ $.10/LF.....	600	
	3		Crossings @ $1,000/Each.....	3,000	
	1		Toilet.....	2,500	
	5		Shelters @ $500/Each.....	2,500	
			Reforestation.....	2,000	
			Signs, Contingencies, etc.....	2,000	33,225
B.	7,200	L.F.	2-Wire Fence @ $.75/LF.....	5,400	
	10,500	L.F.	Trails @ $.25/LF.....	2,625	
	8,580	L.F.	Paths @ $.10/LF.....	858	
	2		Crossings @ $750/Each.....	1,500	
	1		Toilet.....	2,500	
	3		Shelters @ $500/Each.....	1,500	
			Reforestation.....	1,000	
			Signs, Contingencies, etc.....	2,000	17,383

C.	9,200 L.F.	2-Wire Fence @ $.75/LF	$ 7,000	
	16,500 L.F.	Trails @ $.25/LF	4,125	
	14,500 L.F.	Cleared Paths @ $.10/LF	1,450	
	6	Crossings @ $1,000/Each	6,000	
	5	Shelters @ $500/Each	2,500	
	3,200 S.F.	Maintenance Bldg. @ $6.00/SF	20,000	
		Reforestation	5,000	
		Signs, Contingencies, etc	1,500	47,575
		BIRDWATCHERS		
	7,600 L.F.	6-Ft. Chain Link Fence @ $3.25/LF	24,750	
	3,700 S.F.	Paving @ $.50/SF	1,850	
	7,900 S.F.	Cleared Paths @ $.10/SF	790	
	2,600 L.F.	Trails @ $.25/LF	650	
	6	Crossings @ $500/Each	3,000	
	1	Toilet	2,500	
	1	Shelter	500	
		Reforestation	500	
		Signs, Contingencies, etc	1,000	$ 35,540
		ENVIRONMENTAL STUDY AREA		
	9,240 L.F.	6-Ft. Chain Link Fence @ $3.25/LF	30,000	
	128,000 S.F.	Paving (16') @ $.50/SF	64,000	
	8,000 L.F.	Gravel Walks @ $1.00/LF	8,000	
	2	Crossings @ $5,000/Each	10,000	
		Gatehouse and Toilets	10,000	
		Greenhouse	90,000	
		Tool Shed	8,000	
		Architectural Effects	10,000	
	50 Acres	Irrigation @ $1,750/Acre	87,500	
		Initial Planting	10,000	
		Signs, Miscellaneous	5,000	$332,500
		DAY CAMP		
	4,000 L.F.	2-Wire Fence @ $.75/LF	3,000	
	7,500 S.F.	Paving @ $.50/SF	3,750	6,750
				$619,468

INTERPRETIVE CENTER

Reception Area	150 S.F.		
Interpretive Center and Herbarium	400 S.F.		
Study Collections	400 S.F.		
Library	225 S.F.		
Workshop for Preparation of Exhibits	400 S.F.		
Darkroom	100 S.F.		
Audio Visual Storage	225 S.F.		
Kitchen	80 S.F.		
Lounge	150 S.F.		
		2,130 S.F.	
Circulation, Mechanical & Electrical Space, 30%		600 S.F.	
		2,730 S.F.	
Say 2,800 S.F. x $22.00/SF = $61,600, say			$62,000
Tree Walk & Observation Points - 800 S.F. @ $5.00/SF			4,000
			$66,000

ARBORETUM GATEHOUSE

Reception and Information Area	150 S.F.		
Office	120 S.F.		
Toilets, Public	100 S.F.		
		370 S.F.	
Circulation, 20%		70 S.F.	
		440 S.F.	
440 S.F. x $22.00/S.F. = $9,680, say			$10,000
Shop & Tool Shed - 600 S.F. x $12.00/S.F. = $7,200, say			8,000
			$18,000

MANAGEMENT RECOMMENDATIONS