CANNON RIVER WILDERNESS AREA

a Rice County Park

Forest Stewardship Program Inventory

May-June/1996

Inventoried and written by

Dan Milbert, Big Woods Project Forester
507-334-3129
and
Dick Peterson, Area DNR Forester
507-332-3247

With additions by
Hanna Dunevitz, DNR Plant Ecologist

CANNON RIVER WILDERNESS AREA

OVERVIEW OF THE STEWARDSHIP SITE

The 818.6 acre stewardship site is located midway between Faribault and Northfield, Minnesota, along the Cannon River in Rice County. There is parking lot and picnic area accessing the west side of the park from a driveway off of 151st Street East. Access to the east side of the park is by way of County Road 20. The site consists of a broad bottomland with a complex of plant communities including floodplain forest, hardwood swamp, shrub wetland, wet meadow, calcareous fen, and lowland hardwood forest, and adjacent uplands dominated by maple-basswood forest but including oak forest, early successional forest, old fields, dry oak savanna, and dry prairie. The bottomland soils are mainly Palms muck and Zumbro sandy loam; in the uplands Boone fine sands and rough, broken land are most common. The surrounding landscape is primarily agricultural, but includes an increasing number of rural homesites, often attached to the edges of the park or smaller forest fragments in the area. Some of these, as well as portions of the larger forest and wetland fragments approximately 2 miles to the southeast, have been identified as being of high quality by the the Minnesota County Biological Survey. The Cannon River drains the park to the north and east toward the Mississippi River at Red Wing.

Historical Notes:
The bottomlands on both sides of the Cannon River were heavily grazed until 1968. The uplands were subject to grazing as well, but steep slopes and other areas less accessible to cattle were not impacted as heavily.

Almost all of the forest areas have been lumbered at least once, in addition to selective cutting.

Heavy gullying has been noted as a problem at least since 1956.

The site became a county park in 1972, with additional land added in 1973, and dedication taking place in 1976.

An inventory of the Park was conducted in 1990-1991 by the Minnesota County Biological Survey.

The Friends of Cannon River Wilderness Area organized in January 1996 to assist in trail maintenance, public education, and restoration and management of park natural resources.

CANNON RIVER WILDERNESS AREA, RICE COUNTY, MINNESOTA

STEWARDSHIP UNITS AND DESCRIPTIONS

(Note: Refer to numbered stewardship unit map. Numbering begins in southwest corner.)

1. FLOODPLAIN FOREST

A silver maple dominated forest with a few large (38-40" dbh - diameter at breast height) cottonwood and green ash mixed in, and some smaller American elm. Silver maples average 9-15" dbh in the north half of the unit, where they are numerous. The south half contains some 42" silver maple, with a subcanopy of 7" box elder. The shrub layer, of low to moderate density, includes gooseberries, red elder, and some chokecherry and buckthorn in the west. The groundlayer is dominated by moneywort and cleavers, with wood nettle and jewel weed present, and, on higher ground in the northeast corner, hawthorn, false rue anemone, black ash, prickly ash, blue phlox, Virginia waterleaf, plum, etc.

2. FLOODPLAIN FOREST

Silver maple (13" av. dbh) and 15" American elm are the dominate canopy trees, with some 13" green ash and box elder mixed in. Six to 12" American elm and box elder, and sapling (1-5") American elm, and seedling hackberry and green ash are also present. The shrub layer contains gooseberries, red elder, and some chokecherry. The groundlayer includes moneywort, wood nettle, cleavers, violets, ground ivy, and tall meadow rue.

3. HARDWOOD SWAMP FOREST

A narrow seepage strip at the base of the adjacent slope containing pole size black ash, green ash, and some silver maple, with green ash, black ash, and box elder regeneration. Shrubs include nannyberry, gooseberries, and some chokecherry and buckthorn. Marsh marigold and jewelweed characterize the herbaceous layer.

4. PICNIC AREA

A mowed area, with parking lot and picnic shelter, green ash and silver maple shade trees on the west side.

5. MAPLE-BASSWOOD FOREST

A generally south-facing slope, of moderate steepness. Bur oak, northern pin oak, red oak, sugar maple, and red elm, 15-20" dbh, are the most common canopy trees, with smaller numbers of basswood, American elm, black walnut, butternut, green ash, and

hackberry. Red oak is well represented as 7-9" dbh poles, with bur oak, basswood, aspen, ironwood, sugar maple, hickory, and white oak also present. Smaller regeneration is dominated by sugar maple and ironwood, with hackberry and a few hickory, black cherry, and red oak present as well.

The maple-basswood canopy near the top of the slope grades into a red oak/northern pin oak/bur oak canopy downslope with younger sugar maple between the large oaks. MCBS quality ranking of BC.

The shrub layer, consisting mainly of gooseberries, is generally sparse. Some prickly ash, grape, gray dogwood, and greenbrier is occasionally found.

The herbaceous layer includes Virginia waterleaf, blue phlox, bloodroot, cleavers, false Solomon's seal, early meadow rue, wild geranium, sweet cicely, columbine, harebell, hare figwort, small jack in the pulpit, large flowered bellwort, poisen ivy, wild chervil, violets, zigzag goldenrod, woodbine, heart-leaved alexanders, sedges, and *Smilacina ecirrhata*.

There is a small bluff prairie at the south end above the river foot bridge dominated by Kentucky bluegrass and little bluestem and containing Pasque flower, hoary puccoon, long-bracted spiderwort, heath aster, Scribner's panic grass, silvery scurf pea, old-field goldenrod, prairie larkspur, purple prairie clover, and leadplant, with red cedar, sumac, prickly ash, bur oak, and ironwood at its margins. Erosion is a threat here and in the adjacent trail descending to the bridge.

6. LOWLAND HARDWOOD FOREST

A gentle, shallow slope between maple-basswood forest and floodplain forest where 10-20" dbh black walnut is the dominant tree, and Kentucky coffee tree (7-24") is found. American elm and basswood (15-20") are also present, and 5-10" red elm, hackberry, box elder and sugar maple. Smaller regeneration includes American elm, hackberry, sugar maple, and black walnut. The shrub layer contains low densities of gooseberries, chokecherry, prickly ash, and greenbrier, and some buckthorn. Cleavers, Virginia waterleaf, blue phlox, and wild ginger characterize the groundlayer.

7. FLOODPLAIN FOREST

Large (1-3') silver maple and black willow dominate the area adjacent to the river, with 8-12" av. black walnut, 5-10" av. hackberry, and pole green ash, American elm, and box elder mixed in. Green ash and silver maple are most common in the smaller regeneration. A scattering of chokecherry and gooseberries, some grape and brambles. A little buckthorn. Wood nettle, ground ivy, moneywort, cleavers are found in the groundlayer. The north

side is anchored by a small river channel pond containing yellow water buttercup and surrounded by dead elm, silver maple, ash, and nannyberry. To the east, reed canary grass, stinging nettle, moneywort, ground ivy, motherwort, and violets grow beneath and between box elder to 12", elm, some ash, black walnut and silver maple. Some sumac in the east.

8. OLD (BOTTOMLAND) FIELD

Area A: A reed canary grass and brome dominated open field edged and sprinkled with 3-7" box elder and some ash. Exotic honeysuckle and sumac are found in patches. Sandbar willow is invading the north end. Area B: A grassy matrix with sumac, prickly ash, goldenrods, some 1-4" ash, box elder regeneration, and black walnut, especially east.

9. LOWLAND HARDWOOD FOREST

A low terrace streaked with old channels, some of which knit together into a floodplain forest to the north. A variety of trees share the canopy: Cork elm, black ash, hackberry, basswood, black walnut, Kentucky coffee tree, American elm, and bitternut hickory. Average diameters are 15-20", but some cork elms reach 28", and the few silver maples scattered through the unit reach 30"+ dbh. Black ash, green ash, hackberry, black walnut, and some hickory, American elm and box elder are present as 5-12" pole trees. The smaller regeneration is dominated by black ash and hackberry. Shrub densities are high in places, with chokecherry and gooseberries most common. Red elder, grape and some older hawthorn were noted as well. The lush ground layer contains an abundance of ostrich fern, false rue anemone, trout lily, wild ginger, buttercups, false lily of the valley, false Solomon's seal, wood nettle, cleavers, Virginia waterleaf, violets, and others.

There is a one acre hardwood swamp inclusion at the north end just south of the power line. There, a few mature black ash, and smaller (5") black ash, American elm, and silver maple are associated with marsh marigold, hummock sedge, jewelweed, sphagnum moss, angelica, and some reed canary grass.

The Minnesota Natural Heritage Database notes that jointed sedge, Davis' sedge, Grey's sedge, and green dragon have been reported in this area.

The area could be described as seepage swamp grading to lowland hardwood forest grading to floodplain forest. The old channels and series of terraces make it very interesting. The MCBS ranking of C for these communities is low because of the exxotic species, history of disturbance, and nearby areas dominated by reed canary grass. (See attached releves.)

10. FLOODPLAIN FOREST

Silver maple (5-25") and some 24" green ash are mixed with pole box elder and elm. Open soil (except along the river) with moneywort and cleavers is found beneath the canopy in the south. The forest is more successional on the north side of power line right of way, with a grassy ground layer. Included is an open area in the north along the river which receives a lot of silt from an eroded ravine just west. Here reed canary grass with sandbar willow, a few box elder and ash saplings, and some jewelweed constitute the cover.

11. MAPLE-BASSWOOD FOREST

For the most part a relatively young, diverse pole (5-15") stand of red oak, sugar maple, hackberry, hickory, elm, basswood, black walnut, black ash, and cankered butternut on this east-facing slope. There is some white oak south of the power line in a steep, sandy, eroded area. Seedling and sapling regeneration is not abundant. It consists mostly of sugar maple and ironwood, but includes hickory, black ash, red oak, and green ash. The power line right of way contains resprouts of ash, sugar maple, ironwood, and aspen in brambles. Ginseng has been observed in the ground layer according to the Minnesota Natural Heritage Database.

Part of this area contains large open-grown basswood ans sugar maple, with a groundlayer dominated by Kentucky blue grass, lots of prickly ash, and barbed-wire fencing present mid-slope - obviously heavily grazed in the past.

12. WET MEADOW

A seepage area dominated by hummock sedge and lake sedge, with swamp saxifrage, Joe pye weed, boneset, water dock, marsh marigold, cattail, a bulrush, tufted loosestrife, spring cress, chickweed, wild mint, horsetail, jewelweed, sphagnum moss, horseradish, some reed canary grass, scattered red-osier dogwood, bead fern at the edge, and some small scattered green ash and willow.

13. FLOODPLAIN FOREST

South end: a young (3-10") elm/ ash stand with a few large willows. Some shaded hawthorn, red elder, gooseberries, brambles, grape. A lush ground layer of Virginia waterleaf, cleavers, ground ivy, nettles, and motherwort. The central section is divided by an old grassy channel with mostly young black ash on either side and moderate densities of buckthorn mixed in with the otherwise similar understory. Hardwood swamp

and lowland hardwood forest interlace with floodplain forest. Along the river and to the north end of the unit there is mature basswood, green ash, elm, silver maple, bur oak, and hackberry. Smaller (8") red oak and silver maple, and sapling hickory, black walnut, and green ash are present, as are seedling black cherry, bur oak, and red oak in the slightly higher zones. (The narrow northern neck of the unit is predominantly a lowland hardwood forest inclusion.) Grey dogwood, gooseberries, chokecherry, nannyberry, plum, hawthorn, prickly ash (some thickets) as well as exotic buckthorn and honeysuckle make up the rich shrub component.

14. LOWLAND HARDWOOD FOREST

Black ash (15-16" av. dbh) is the dominant canopy tree. Mature cork elm, basswood, silver maple and green ash are laced through the stand. Smaller (6-12") green ash, basswood, box elder, American elm, and black ash also occur. Black ash and hackberry make up most of the regeneration. The shrub layer includes gooseberries, chokecherry, some prickly ash, and red elder. Green dragon was noted among the ground flora at the northwest edge (SWSENW34). Other herbaceous species: river bank grape, wood nettle, ground ivy, cleavers, Virginia waterleaf, Canada goldenrod, stinging nettle, and jewelweed.

15. WET MEADOW

Similar to unit 12. Hummock sedge, aspen and willow at edges, a red maple seedling south. Some 3-8" black walnut west, silky dogwood, wood nettle, reed canary grass, grape, some buckthorn and honeysuckle. Marsh marigold, goldenrod, Joe pye weed, red-osier dogwood, lake sedge, water dock, swamp saxifrage, etc. Bouncy peat soil.

16. WILLOW (SHRUB) SWAMP

Similar to adjacent wet meadow units but with no hummock sedge. Pussy willow, red osier and silky dogwoods, nannyberry, and some buckthorn and grey dogwood are present. Scattered American elm, and green ash (3-8"). Horsetail, some yarrow.

17. HARDWOOD SWAMP FOREST

Aspen, green ash, American elm to 10" dbh, and 5" black ash characterize this unit, with a rich shrub component including red osier, silky, grey dogwoods, beaked willow, highbush cranberry (especially east), some nannyberry, and buckthorn. Marsh marigold, swamp saxifrage, etc, are present in the groundlayer. Some poison ivy, and silver maple seedlings, are also present.

18. EARLY SUCCESSIONAL FOREST

An upland area with a southeast aspect surrounded by maple-basswood forest. Sumac, grey dogwood, some plum, and some pagoda dogwood are present. Clumps of ash, elm, sugar maple, and basswood (3-10") rise from a matrix of grasses and goldenrod, with other forbs including golden alexanders.

19. MAPLE-BASSWOOD FOREST

Similar to unit 11, except somewhat more mature, with more maple dominance. The separation from unit 22 on the east end is arbitrary and made for convenience of planning and management. See description for unit 22.

MCBS gave this area (units 19 and 22) an overall C quality rank. Portions may be somewhat better quality than unit 11. It was certainly heavily grazed in the past (dense prickly ash, barbed wire fence), but many trees are tall and straight. Lots of dead elm. The canopy is dominated by sugar maple with red oak and basswood common, and green ash and bur oak present. There is a subcanopy of ironwood, sugar maple, elms, and bitternut hickory. The groundlayer is rather low in diversity, with many species characteristic of disturbed, somewhat open forests.

20. OLD (UPLAND) FIELDS

Areas A., B., C., D., E., F., and G. These are small, generally level, former field fragments in the uplands along the west edge of the Wilderness Area. Except for area G, which is tilled as part of the adjacent field, these areas are grassy with broadleafs (esp. goldenrod), and some natural tree invasion (ash, elm, box elder, basswood, red oak, bur oak, and sugar maple).

21. WET MEADOW

Flora is similar to unit 12. Some areas of hummock sedge dominance, some without. Scattered shrubs (a few small canopy areas) - red-osier dogwood and pussy willow - and a few small elm and ash. Lots of nannyberry north.

Part of this unit appeared to be an old field, dominated by exotic species.

22. MAPLE-BASSWOOD FOREST

Sugar maple (16" dbh) is very dominant in many areas, with basswood and red oak canopy components. In the central area sugar maple and basswood reach 24-36"+, red oak to 40"+. Pole

basswood and sugar maple are found throughout the unit, with smaller areas of hackberry, elm, hickory, black ash, bur oak, and aspen. The shrub layer consists of scattered gooseberries and some prickly ash on ridge tops. Virginia waterleaf, cleavers, white snakeroot, blue cohosh, wood nettle, some bloodroot and maidenhair fern characterize the ground layer. Small upland openings include clammy ground cherry, field sorrel, and panic grass.

The unit is topographically dominated by a broad ravine with a central "island" ridge, but again, there is no floristic significance to the boundaries separating this unit from contiguous maple-basswood forest units.

23. MAPLE-BASSWOOD FOREST

Similar to unit 22. The aspect is southern and southeastern.

24. LOWLAND HARDWOOD FOREST

Some 14" bur oak, green ash, with lots of 7-9" black ash, butternut (cankered), red oak, basswood, and lesser amounts of elm, black cherry, and sugar maple. Black ash, elm, and sugar maple are most common among the smaller regeneration. In the shrub layer, gooseberries are most common, but buckthorn is common in some areas, and chokecherry, prickly ash, honeysuckle, red elder, pagoda dogwood, and brambles are also present. Virginia waterleaf, wild geranium, jack in the pulpit, cleavers, small flowered buttercup, golden alexanders, and woodland sedge are some of the herbaceous plants present.

25. FLOODPLAIN FOREST

Mature silver maple dominance, similar to units 1 & 2.

26. BLACK WALNUT FOREST

A lowland hardwood forest area dominated by black walnut. The black walnut is well stocked in places, spotty in others. (0-24")

27. WET MEADOW

Similar to unit 12, but shrubbier in places (esp. red osier dogwood). Scattered 3" elm. Trembling aspen and willow also present. Meadow species include hummock sedge, woolly sedge, the sedge *Carex hystericina*, reed canary grass, the loosestrife *Lysimachia quadriflora*, the cinquefoil *Potentilla norvegica*, common St. John's wort, bugleweed, Canada goldenrod, throughwort,

common yarrow, a horsetail, yellow avens, swamp milkweed, mountain mint, hoary vervain, swamp saxifrage, the hedge nettle *Stachys tenuifolia* and Joe pye weed.

On both the east and west edges of the central sedge meadow, (in bands approx. 100' wide) the flora changes to one that is goldenrod dominated with plants such as cup plant, stinging nettle, wild geranium, bloodroot, feverwort, and bergamot in association. Brome grass is also present. Some buckthorn and honeysuckle, as well as prickly ash, grey dogwood, nannyberry, woodbine, and greenbrier make up the shrub layer here.

28. MAPLE-BASSWOOD FOREST

Sixteen to 22" dbh sugar maple, basswood, and red elm (and some red oak), and pole sugar maple, red oak, black cherry, elm, and ironwood are the chief trees. (Cankered butternut, 8-16"+, are also present - unevenly.) Sugar maple dominates the smaller regeneration as well, with ironwood, red oak, black ash, and hickory also noted. The shrub component and ground layer are very sparse in places. In other areas old hawthorn, some prickly ash, buckthorn and Virginia waterleaf, jewelweed, violets, false rue anemone, sweet cicely, and trillium are present. The southwest corner above the slope is a younger stand for the most part with 2-9" green ash, elm, some basswood, sugar maple, and hickory. There are a few mature basswood. Regeneration is mainly sugar maple, basswood, and hickory. Shrubs include gooseberries, grape, and some low density, young buckthorn. The rather open groundlayer is of poor diversity (exotic grasses, dandelions, violets), suggesting a more severe grazing and logging impact than on the slopes.

Near the eastern margin of units 23 and 28 is an area of disturbed old oak forest with a savanna-like structure, with scattered red and white oak, some very large and open grown. Some small red pine interplanted. Grassy openiongs have mostly disturbance species (Kentucky bluegrass, quackgrass, yarrow, white clover).

29. FLOODPLAIN FOREST

An isolated stand of willow, 15" av. dbh, 1 or 2 large (42") cottonwood, at least one 24" silver maple, some smaller (8") American elm, and (on the northwest side), black walnut (to 9"). Regeneration is represented by black walnut, American elm, and box elder. Scattered gooseberries, red elder and some grape and woodbine form the shrub component. (Some buckthorn and honeysuckle are present at the west end.) And Virginia waterleaf, violets, hog peanut, burdock, stinging nettle, cleavers, motherwort, and blue phlox are found in the ground layer, where some old trash is also evident..

30. OAK FOREST

Scattered, open grown 30" dbh red oak and basswood with 3-8" red oak, some 3-8" aspen, and some hawthorn on a sandy southeastern slope. Thin, grassy ground layer with woodbine and prickly ash. Surrounded by maple-basswood forest. There is a sitting bench and mowed area at top.

31. WET MEADOW

Similar to unit 27, but less brushy and with discontinuous higher ground on the west edge.

32. LOWLAND HARDWOOD FOREST

The stand is made up of pole size black walnut, basswood, black ash, with larger (18-24") basswood, sugar maple, hackberry, bur oak, white oak, and silver maple, especially near the river. Buckthorn, gooseberries, nannyberry, chokecherry, honeysuckle, grey dogwood, prickly ash and some areas of brambles make up the shrub layer. The groundlayer (on the river side of an old cattle fence) includes wild ginger and blue cohosh. The forest canopy is interlaced with some open grassy and especially shrubby areas. The buckthorn component here is one of the most significant of any area in the park. There is a pond surrounded by reed canary grass and some cattails in the central portion of the unit. The northern third of the unit is similar but includes black walnut, black ash, and red elm to 18", American elm to 15", and green ash to 26" dbh. Tufted loosestrife is present. A floodplain inclusion, located near the north end, contains 24" cottonwood, some 12"+ willow, and pole size elm.

33. WILLOW (SHRUB) SWAMP

A shrub willow and dogwood dominated area, interspersed with hummock sedge meadow flora including swamp saxifrage, and lots of marsh marigold. (See unit 12. flora.)

34. HARDWOOD SWAMP FOREST

Black ash (2-10") with buttressed, mossy roots. A few 3-9" aspen at the west edge. (*Viola nephrophylla* is present.)

35. MAPLE-BASSWOOD FOREST

Sugar maple (24-36" dbh), and in places red oak (20") are the dominant canopy trees. Butternut (12"), though generally cankered, is co-dominant in places, as is basswood, green ash,

and hickory (12-16" av. dbh). Pole size butternut and black cherry are also present. Black ash is found with butternut and hickory in the valleys. Regeneration includes sugar maple, ironwood, hickory, elm, and black ash. The shrub layer is a sparse scattering of gooseberries and hawthorn. The groundlayer includes Virginia waterleaf, violets, cleavers, jewelweed, blue phlox, and bloodroot. Parts of the east-facing slopes are sumac covered.

36. WET MEADOW

Similar to unit 12. Bouncy peat soil. The northeast edge includes a strip of hardwood swamp. North of the adjacent floodplain area the vegetation changes to reed canary grass, goldenrods, and scattered sandbar willow on non-organic soil. Beyond the creek lined with cottonwood and willow, at the far north corner, nannyberry, red osier dogwood, some prickly ash, brambles, and a patch of flowering amur maple grow lushly together with goldenrods, bergamot, and some red oak seedlings.

37. MAPLE-BASSWOOD FOREST

Basswood (15-36" and butternut (12-15") are scattered among a mostly pole stand of sugar maple, American elm, red elm, green ash, hackberry, and some hickory. In the central ravine (just above a deep, forked gully), mature butternut, though not unaffected by canker, nonetheless are producing thousands of nuts. In the southeast scattered remnant sugar maples of a pre-grazing stand remain: 30-48"+ dbh. There is a small aspen inclusion north central. Regeneration is dominated by sugar maple, with ironwood, and American elm contributing. Buckthorn is the most common shrub, reaching moderate concentrations in the north. Red elder, some prickly ash, and woodbine are also present. The rather sparse herbaceous layer includes cleavers, Virginia waterleaf, violets, some bloodroot and Jack in the pulpit.

38. OAK WOODLAND-BRUSHLAND

A very brushy zone, with lots of prickly ash, interlaced with some grassy openings and clumps of hardwoods, including occasional large open grown sugar maple and oaks, and smaller elms, and an aspen grove in the west.

39. MAPLE-BASSWOOD FOREST

A much broken stand of maple-basswood lined with prickly ash and grey dogwood and plum and punctured by grassy (mostly bluegrass) pockets and knolls with brambles, bergamot, Canada goldenrod, and poison ivy. The original maple-basswood forest has been

converted to a savanna-like structure by intense grazing and logging. Large spreading maples and red oak up to 36" dbh are not yet engulfed in younger hardwoods. There are some areas of pole sugar maple and elm, and some 6" pin oak. The east side is a continuous young maple-basswood stand with a nice black cherry component.

40. DRY OAK SAVANNA

A very abrupt vegetative change from all sides defines this sandy unit. The sand is exposed in places. Dwarf cinquefoil, field sorrel, yarrow, spiderwort, Scribner's panic grass, clammy ground cherry, horsetail, small patches of bergamot, and, at the southwest edge, feverwort are present. Mats of the moss *Ceratodon purpureus* were found in 1991 to support small numbers of rough-seeded fameflower. The dry prairie matrix is interrupted by a single 4" pin oak (east side), its attendant hawthorn and prickly ash, and scattered pin oak and red oak seedlings - some apparently a number of years old - yet no more than a foot or so high. An 8" dbh American elm grows nearer the creek to the south. An old hawthorn west central, some stunted Siberian elm, and a few defoliated but candling stunted pines are present as well.

CANNON RIVER WILDERNESS PARK

EAST SIDE INVENTORY

41. OLD FIELD

This is an abandoned agricultural field that occupies a mesic, level to gently north facing slope. The current vegetation is dominated by goldenrods and ragweed. Boxelder, 2-4' tall, is scattered throughout the site and the site can be expected to succeed to boxelder forest in the absence of disturbance.

42. WET MEADOW

This is a wet swampy area dominated by tussock sedge and lake sedge. The areas between the hummocks are wet. Forb diversity in this area is low, although some, including joe-pye weed and great water dock are present and scattered. Willows and patches of reed cannary are present.

43. WET MEADOW

This is a damp to wet reed canary dominated wetland. Touch-me-not is present in the understory, but other species are mostly lacking. Some willow is present, mostly on the perimeter of the type. It is likely that this was a former wild hay gathering area.

44. LOWLAND HARDWOOD FOREST

This is a transitional forest community occurring at the lower portion of a northwesterly slope. The site was formerly pastured and in early photos appears much more open with more scattered trees. Currently there is an irregular canopy of butternut, black walnut, hickory, black cherry, elm, black ash, paper birch, sugar maple with a more or less continuous layer of shrubs. Shrubs include raspberries, plum currants and gooseberries, elderberry, dogwood, and hawthornes. Vines are common. Nettles, bedstraw, and snakeroot are conspicuous forbs in the understory. Buckthorn is present and locally common.

45. MAPLE-BASSWOOD FOREST

This site is a moderately steep to steep northwest facing slope. The upper portion of the site is transitional to an agricultural field and includes open grown bur oaks. An older field access road passes throught the site connecting the upper and lower agricultural fields. The moderate slopes are mostly of poorer quality maple-basswood forest with smaller trees and poor forb diversity. In these areas, 6-12 inch hickory, basswood, sugar maple, green ash, and hackberry are the common overstory species with ironwood ubiquitous beneath. Large, dead elms are plentiful. Virginia waterleaf dominates the forb layer. In the steeper, north facing slopes located in the northeastern portion of the site, a richer assemblage of ground flora is present along with larger maples, basswood, and red oak. Bush honeysuckle, a locally uncommon shrub of northern affinity, is present on the steepest slopes.

At the cliff just north of this unit, a state special concern species, the Louisiana waterthrush, was observed attempting to nest during the MCBS fieldwork period.

46. WILLOW SWAMP

This is a poorly defined site that grades into old fields, wet meadows, and mixed hardwood swamp. The willows include pussy willow, sandbar willow, black willow, shiny willow, and peachleaf willow. Elm, cottonwood, aspen, and black ash are present. The understory is variable, with reed canary common, tussock sedge less common. Forb diversity is low.

47. OLD FIELD/EARLY SUCCESSIONAL LOWLAND HARDWOOD FOREST

This was farmed and abandoned beginning perhaps 15 or more years ago. Dogwood, both red and gray, are the dominant vegetation, although willows, aspens, ash, and other species are present. Open areas contain reed canary grass.

48. OLD FIELD/ EARLY SUCCESSIONAL FOREST/BLACK WALNUT PLANTATION

Black walnut was planted throughout this abandoned agricultural field about 15 years ago. Some areas, notably the northeast, contain a reasonable stocking of 8-15' tall, 2-4" dbh walnut trees. The bulk of the site, however is poorly stocked with walnut, but well stocked with smaller dogwood, willow, some aspen saplings, and some open reed canary wetlands.

49. FLOODPLAIN FOREST

This is a narrow strip adjacent to the Cannon River. An old stream channel occurs within the site. The pedestrian bridge connecting the east side to the west side of the river is located within this site. The canopy consists of scattered large silver maple, cottonwood, and willow, with a shorter canopy of more or less continuous 4-12" dbh elms, willows, black and green ash, and silver maple. Shrubs are a minor constituent, with some gooseberry present. Both wood nettles and stinging nettles are common. Creeping charlie and moneywort are common and conspicuous weeds. A mowed picnicing and camping area is located adjacent to the bridge.

50. MIXED HARDWOOD SWAMP

This is a poorly defined area of swampy ground adjacent to the steeper portions of the adjacent slope and grading into wet meadow, willow swamp, lowland hardwood forest, and floodplain forest. Small to large black ash dominate the overstory, while willows, silver maple, American elm, and paper birch are present. Small, open areas of good quality wet meadow are present as inclusions in the site. Red dogwood is a common shrub along with pussy willow. Tussock sedge and lake sedge are common, although reed canary areas intrude in places. Joe-pye weed, marsh marigold, water dock and other wetland plants are common. A small creek flows through the site on the south end.

51. MAPLE-BASSWOOD FOREST

Steep north, northwest, and westerly slopes are characteristic of this site with occassional abrupt drops to the river. The overstory is characteristically dense and composed of second

growth 12-14" dbh red oak, sugar maple, big tooth aspen, paper birch, and green ash. A few red maple occupy a steep sandy cliff microsite. The understory is mostly open with some small ironwood and sugar maple saplings and seedlings. Few common juniper patches are present. This site has a rich mesic forb layer including a diversity of ferns, early meadow rue, wild ginger, wild sarsaparilla, miterwort, and others. The upper field edge is brushy with prickly ash, plum, poison ivy, and juneberry common.

Small inclusions of other communities include portions of a bluff prairie, dry oak savanna, and moist cliff.

52. DRY PRAIRIE/DRY OAK SAVANNA-HILL SUBTYPE

This steep, southwest facing slope contains less than 1 acre of open prairie with surrounding area of overgrown savanna. Blue grass is common, however a good representation of dry prairie grasses and forbs is present including little blue stem, dropseed, sideoats grama, larkspur, prairie clover, spiderwort, bush clover, and leadplant. The bur oak and red oak savanna has overgrown with young maple, cedar, and prickly ash. Need to define the property line to determine location of this area relative to the park.

53. MAPLE-BASSWOOD FOREST

A northward tending coulee with several ridges and moderate slopes is characteristic of this site. 10-16" dbh white oak are common on the drier ridge tops with 16-20" red oak, sugar maple, and basswood replacing the white oak on the mid to lower slopes. 2-4" ironwoods are common in the understory and with a scattered sugar maple seedling and sapling layer. Shrubs are uncommon. Wild ginger is common in patches, while Virginia waterleaf is common elsewhere.

54.

55. MAPLE-BASSWOOD FOREST

This site occupies a moderately steep to very steep mostly westerly facing slopes. This is a well stocked, dense stand of all aged sugar maple, 8-18" dbh. Other trees are uncommon, but include ash, basswood, ironwood, paper birck, and, just outside of the park boundary to the south, yellow birch. The understory is open with shrubs uncommon. Forb diversity is fair to good.

Dwarf trout lily occurs here and in unit 60. Groundlayer species noted for this area containing the dwarf trout lily: white trout

lily, false rue anemone, wild ginger, Dutchman's breeches, Virginia waterleaf, large-flowered bellwort, a sedge (*Carex pennsylvanica*), Bishop's cap, large-flowered trillium, sharp-lobed hepatica, blue phlox, yellow violet, maiden hair fern, zig zag goldenrod, greenbrier, cleavers, bloodroot, spring beauty, blue cohosh, and wild leek. Shrubs include chokecerry, gooseberry, elderberry. These forests were given a B quality rank by MCBS.

56. FLOODPLAIN FOREST

Silver maple 12-30" dbh along with basswood, boxelder, peachleaf and black willow, hackberry and elm are the dominant canopy trees. In places, almost pure stands of silver maple are found. Understory is generally open with a few smaller elm and scattered currants and gooseberry. Dense wood nettle is found in the groundlayer.

57. MAPLE/BASSWOOD FOREST

This is a beautiful maple/basswood forest on either west facing slopes or west trending coulees with short slopes and ridges. The canopy is generally closed and consists of 12-20" dbh red oak, sugar maple, and basswood with a few white oak nearer the ridge tops. Mostly open beneath with a scattered subcanopy of 6-10" sugar maple a occasional ironwoods. Shrubs are uncommon. Wood nettle is common and dominant on moist slopes, elsewhere a richer diversity of ground flora including goldenrod, blue cohosh, liverleaf, waterleaf, meadow rue, etc. On steeper west slopes there is often more shrub layer including chokecherry, gooseberry and with a less diverse forb layer. Coulee bottoms often brushier with basswood, hackberry, elm and black ash common. A powerline corridor crosses the site east to west, and is mostly brushier composition including sumac, chokecherry, elderberry, raspberry, plum, woodbine, moonseed, and black cherry.

58. FLOODPLAIN FOREST

This is dominated by larger silver maple 12-25" dbh with occasional large willow or cottonwood nearer the bank. Small elm and boxelder are in the subcanopy. Shrubs are rare to very common, and wood nettle and reed canary are common in the herb layer. Creeping charlie and moneywort are both found here.

59. OAK FOREST

This site occupies a steep, dry northwest slope with sand substrate and rock outcrops. Upper dry slopes with stunted white

oak, bur oak, and red oak, low ironwood. Both paper birch and yellow birch in the lower slopes. Common juniper present. On the steeper, cooler microsites and slopes popypody fern, hair cap moss, Canada may flower is present.

60. MAPLE/BASSWOOD FOREST

Moderately steep northwest slopes with a continuous canopy of 12-18" dbh red oak, sugar maple, basswood, white oak; samller 4-10" sugar maple, basswood, hickory. Open understory with few maple and ash seedlings. Goldenrod, wild ginger, liverleaf, northern bedstraw, violets, wood asters, etc. common in the understory.

Dwarf trout lily present. See unit 55.

61. MAPLE/BASSWOOD FOREST

This is an upper level to gently west facing slope with heavy grazing apparent in past. There are scattered large red oak and basswood with smaller scattering of 8-12" sugar maple. Ironwood saplings and sugar maple saplings common. Buckthorn patchy, with prickly ash in shrub layer. Forb layer poor; Virginia waterleaf most common.

62. FLOODPLAIN FOREST

This contains portions of lowland hardwood forests and hardwood swamp forests in a complex of higher ground, seeps, and old stream channels. Silver maple, willow are common on the banks, basswood spotty, and black ash frequent in the wetter swampy ground. Hackberry, green ash, and boxelder also present. There is a small black ash swamp at the extreme south end. Black ash seedlings and saplings, elms, buckthorn, several species of vines are prsent along with gooseberry, nannyberry, etc in the brushier portions of the understory. Open black swamp areas with sedges, marsh marigolds, ferns common. Nettles common elsewhere.

63. LOWLAND HARDWOOD FOREST

This site occupies side slopes and bottoms of tributary stream entering river from east-southeast. Ash, maple, basswood, hackberry and elm are common trees; dogwood and elderberry present in the shrub layer. This site merges with floodplain forest and black ash swamp.

64. BLACK ASH SWAMP

This is a swampy area of young black ash 4-10" dbh common overstory tree. Willows and red dogwood common shrubs. Some

reed canary patches. Showy lady slipper located north end of this site.

65. MAPLE/BASSWOOD FOREST

This is a rich forest on north to northeast facing slopes. A smaller area of oak forest present on section of west slopes. The dense canopy is made up of 10-20" sugar maple, red oak, basswood, with scattered butternut, green and black ash, red elm, and hickory. Younger, smaller maple and hickory along with ironwood in subcanopy. Rich diverse forb layer. Some areas of gullying present, although not as significant as elsewhere.

66. WET MEADOW

This is a complex wetland with willow swamp, lowland hardwood, hardwood swamp inclusions. The common vegetation is tussock sedge with lake sedge less common. Joe-pye weed, swamp milkweed saxifrage, water dock, sensitive fern, marsh fern etc. common on hummocks. Willows present and locally abundant. Areas of trees including elms, aspen along stream channels. Needs additional mapping.

67. FLOODPLAIN FOREST

This is a narrow, irregular forest of silver maple, cottonwood, and willow. Brushy and viny with some open areas of tall, rank nettles or low moneywort/creeping charlie patches.

68. OLD FIELD/PASTURE

This is an upland mostly north facing slope with blue grass common. Patches of raspberry, dense sumac, some aspen are present. Generally poor quality native plant community.

69. CALCAREOUS FEN

This is a poorly defined sedge community that occurs downslope of sand benches. Sedges dominate the ground layer; willows with bog birch are present throughout. Needs additional work. A releve needed.

Species noted in the past (from collections by Welby Smith and Tom Morley) include the state threatened sterile sedge, state threatened valerian, the sedges *Carex prairea, C. tetanica, C. interior, and C. hystericina*, swamp saxifrage, bog birch, marsh marigold, stargrass, cowbane, flat-top aster, a blazing star (*Liatris ligulistylis*), lesser fringed gentian, wood betony, grass of parnassus, swamp thistle, whorled loosestrife, and

turtlehead.

70. DRY OAK SAVANNA

Southwest, sandy slopes with little blue stem, big bluestem, dropseed, sideoats grama, grass present. Blue grass common. Fair forb diversity including the rare rough-seeded fameflower (state endangered), one-flowered cancer root (special concern), dissected grapefern (no status), and Canada frostweed (no state status). Threatened by sumac and oak invasion.

Species list from 1991 releve: Scattered red oak with some wild plum, smooth sumac, and elm in matrix of little bluestem, nut-grass (*Cyperus lupulinus*), Indian grass, sand reedgrass, hairy panic grass, porcupine grass, fowl meadow grass, prairie dropseed, three-awn grass, June grass. Scattered presence: pinweed, prairie smoke, frostweed, gray goldenrod, (*Achillea millefolium*), spearscale, sweet everlasting, alum-root, round-headed bush-clover, common evening-primrose, sheep sorrel, ground-cherry, rough cinquefoil, rough-fruited cinquefoil, prairie bird-foot violet.

71. & 72. BLUFF PRAIRIE

Two sites. Steep, southwest upper slope dominated by little bluestem, sideoasts, and hairy grama grasses. Bluegrass present and frequent. Bur, red, and pin oak encroachment. Forb layer fair with larkspur, spiderwort, leadplant present. Shrubs also encroaching.

Species list from 1990 releve: A few red oak and American elm in matrix of little bluestem, side-oats grama, Canada bluegrass, hairy grama, Scribner's panic grass, Kentucky bluegrass. Scattered presence: butter-and-eggs, tall cinquefoil, rough-fruited cinquefoil, hairy blue vervain, yarrow, common ragweed, thimbleweed, plantain-leaved pussytoes, the milkweed *Asclepias verticillata*, prairie smoke, mock pennyroyal, round-headed bush-clover, rough blazing star, hoary puccoon, narrow-leaved puccoon, purple prairie-clover, Canada goldenrod, gray goldenrod, mullein, prairie bord-foot violet, prairie pinweed, wild bergamot.

73. LOWLAND HARDWOOD FOREST

This is a narrow site between the valley walls with seepage areas throughout. Includes some upper benches with better drainage. 10-20" sugar maple, basswood in overstory. Black ash common in seeps. Open understory with good spring wildflowers; wood nettle common and dense in early summer. Kentucky coffee tree present.

74. MAPLE/BASSWOOD-OAK FOREST

On the steeper upper portions of this mostly southwest facing site, oak forests of 10-20" red and bur oaks are common. These are usually rocky sites with brushier understories of prickly ash, gooseberry, and with poorer forb diversity. Geraniums, snakeroot, common. On more mesic, shallower slopes a richer maple basswood community with maple, basswood, red oak, hickory, and ironwood and richer forb flora. Moist cliff microsites with fern and bryphyte flora needs better inventory.

75. MAPLE/BASSWOOD FOREST

This is a mostly level to slightly west sloping site with a more recent and more extensive logging and grazing noted. Stumps are common, tree size is smaller, and forb diversity is poorer than steeper sloping maple basswood forests on adjoining slopes. 10-16" white oak, red oak, basswood are common overstory dominants with subcanopy of 6-10" ironwood, sugar maple, hickory, and basswood. Prickly ash, gooseberry have a low presence in shrub layer along with abundant sugar maple seedlings. Violets, waterleaf, geranium are common forbs.

76. ASPEN FOREST

This is a heavily grazed lower north and northeast slope with early successional forest of aspen, willows, sumac, dogwood, hazel. Goldenrods, bluegrass, prairie phlox, hyssop, and other forbs of prairies and meadows are present.

77. WILLOW SWAMP, MIXED HARDWOOD SWAMP

This is a variable site, mostly swampy with wet meadows, willow dominated areas, and elm/ash dominated areas. The dominant trees are 6-12" elms, black ash, some (at least one) red maple, box elder, aspen, and hackberry. Elderberry, pussy willow, red and gray dogwood, buckthorn, gooseberry, prickly ash present. Touch-me-not, jack in the pulpit, wood nettle in better drained areas, while tussuck sedge, marsh marigold, water dock, and marsh fern in swampier sites. Reed canary in between.

78. MAPLE/BASSWOOD FOREST

Steep to some level upland areas on mostly north and northeast slopes characterize this site. Red oak, sugar maple, and basswood common canopy dominants, with butternut, white oak, elm less common. Shrubs uncommon with a rich forb diversity. Some serious gully problems.

79. LOWLAND HARDWOOD

This site occupies the mostly level areas between the slopes with creek flowing through. A scattered to continuous canopy of 12-20" hackberry, sugar maple, boxelder, basswood, butternut, and cottonwood with smaller hckory, butternut, boxelder, elm and sugar maple common. Bladdernut is common in the shrub layer along with elderberry. Wood nettles dominate the ground flora. Serious and extensive active gullies. A small area of larger aspen is present. Portions of the site are wet and swampy, merge into willow swamp, hardwood swamp, and floodplain forest.

80. OAK FOREST/WOODLAND

Moderate to steep south and west slopes. Composed of continuous to irregular canopy of mostly 8-20" bur oak, red oak with some bigtooth aspen. 2-12" green ash, hackberry, hickory and elms between the widely scattered oaks. Often rocky, sometimes brushy with gooseberry, buckthorn, prickly ash. Forb diversity low except lower slopes with larger red oak canopy has richer forb diversity.

81. AGRICULTURE

Currently croped level, upland field.

82. MAPLE/BASSWOOD

North slopes and gentle west slopes. Dominated by larger 16-24" red oak with sugar maple, bur oak, basswood, black ash codominant. Pole size hickory, ironwood, elm, hackberry, boxelder. Elderberry is a common shrub. Rich to fair forb diversity. Some serious gullying in places. There is a ginseng record near here (element occurrence #72).

83. MAPLE/BASSWOOD

Good quality maple basswood forest on lower west slopes dominated by large red oak, with sugar maple/basswood present. Good to fair forb diversity.

84. MAPLE/BASSWOOD-OAK FOREST

Top slopes steep, rocky west facing dominated by bur oak 8-18" with some red oak, green ash, boxelder. Lower down sugar maple, basswood appear. Gooseberry, prickly ash, some buckthorn in shrub layer. Poor to fair forb diversity with geranium, waterleaf common.

85. JACK PINE PLANTATION

Small sandy west, northwest facing bench with about 40 year old planted jack pine 8-12". Natural red oak present.

86. MAPLE/BASSWOOD

Steep to moderate north facing slopes features good stand of maple, basswood, butternut, with red oak common. Good forb diversity. Bad gullies in small area.

87. OAK WOODLAND/FOREST

Moderate to steep south/southwest slopes with poor quality overgrown oak woodland of scattered open grown bur oak and red oak. Prickly ash, buckthorn, and gooseberries in understory.

88. FLOODPLAIN FOREST

A silver maple dominated floodplain forest with areas of black ash swamp present.

89. LOWLAND HARDWOOD FOREST

Much of this is 2nd growth lowland hardwood forest recovering after extensive grazing. 6-10" aspen, basswood, hickory, black and green ash, black cherry and butternut are present. Poor forb diversity. Prickly ash, gooseberry, and buckthorn present. Floodplain forest inclusion with larger silver maple. Also a nice wet seep, with wet meadow diversity in south end.

90. RIVER

Wood turtles (state threatened) have been recorded here.

MANAGEMENT RECOMMENDATIONS

1. PROTECTION AND MANAGEMENT OF NATURAL RESOURCES

A. INCREASE THE MANAGEMENT OF NATIVE BIOTIC COMMUNITIES AND THREATENED AND ENDANGERED SPECIES. The remnant habitats of the Wilderness Park support an incredible diversity of plant and animal species native to the area. Many of these habitats are deteriorating due to inadequate resources available to manage them. For example, without a prescribed burning program, the rare prairie communities in the park will be reduced as brush and trees overgrow the sites. Other habitats at risk include the calcareous fen, wet meadow, shrub swamp, and oak savanna, all communities requiring some level of fire management. Units requiring fire management include: 5, 28, 30, 40, 51, 52, 59, 69, 70, 71, 72, and 76.

Partnerships between the County Park and the Friends of Cannon River Wilderness, the Department of Natural Resources, the Nature Conservancy and other groups may provide some of the additional resource management required.

Most of the Wilderness Area is made up of relatively high quality natural plant communities (mapped by the Minnesota County Biological Survey), all of which are rare on the landscape and deserving of protection. Within these habitats, rare or uncommon species, some, like the Minnesota dwarf trout lily or rough-seeded fameflower, are state or federally listed as rare, require special protection management. Units containing rare or uncommon species: 9, 11, 14, 40, 45, 55, 59, 60, 64, 69, 70, 82, and 90.

B. EXPAND AND INTENSIFY PLANT AND ANIMAL SURVEY AND CENSUS ACTIVITY. Additional survey work is recommended to identify and map occurances of all of the park's resources. Systematic surveys of plant communities, plants, and animals have been conducted by the Minnesota County Biological Survey and by the current survey, however, new surveys can provide additional information that can provide the level of knowledge needed for sound management. Additional censusing is particularly recommended in units: 66, 69, and 74.

The local colleges, together with the Friends, the Department of Natural Resources, the Rice County Bird Club, and other groups and individuals can provide a more comprehensive and systematic survey of the park's resources. The Friends of Cannon River Wilderness can coordinate, compile, and organize the resource surveys.

C. CONTROL AND ERADICATE PROBLEM SPECIES. Exotic species (non-native plant and animal species) have invaded a number of communities in the park and now threaten to displace native species in some areas. Well known examples include common buckthorn, kentucky blue grass, and moneywort that occur in oak

forests/woodlands, prairies, and floodplain forests, respectively.

Units containing European buckthorn are: 1, 3, 6, 7, 13, 15, 16, 17, 24, 27, 28, 29, 32, 37, 44, 61, 80, 87, and 89. Note: the highest buckthorn densities are found along the west bank of the river in the north half of the park. Units containing other problem species (e.g. moneywort, exotic honeysuckle, reed canary grass) include: 1, 2, 7, 8, 9, 10, 12, 13, 15, 24, 27, 29, 32, 36, 40, 42, 46, 47, 48, 49, 50, 58, 64, 67, and 77.

Scout groups and other volunteer groups, under the guidance of Friends members or other resource professionals should begin control efforts where the exotics are most threatening to native species.

D. DEVELOP A PROGRAM TO CONTROL AND REHABILITATE GULLIES. Severe gullying is threatening several areas in the park. These are active gullies that have deepened and expanded in recent years.

Work with the Natural Resource Conservation Service, the Soil and Water Conservation District, and the Department of Natural Resources to identify the best approach to gully control and rehabilitation. Utilize grants and other funding to begin a program of gully stabilization and rehabilitation.

Significant gullying or erosion problems are found in units: 5, 10, 37, 65, 78, 79, and 82.

E. WORK WITH NEIGHBORING LANDOWNERS AND PARTICIPATE IN BROAD SCALE PARTNERSHIP EFFORTS TO PROTECT AND MANAGE COMMON RESOURCES. Natural resource boundaries or ecological boundaries seldom coincide with ownership lines and that is true of the wilderness park. The park is affected by what happens outside its boundaries and likewise can affect neighbors and others downstream.

There are many active organizations operating at a larger scale. These groups offer opportunities to work toward common solutions to problems over a larger landscape or watershed. Becoming an active partner is critical towards that end.

2. LAND ACQUISITION

A. IDENTIFY HIGH PRIORITY PROPERTIES, WILLING SELLERS, AND FUNDING OPTIONS FOR ACQUIRING CRITICAL LAND. Growing recreation demand, increasing county population, increasing development of adjacent properties provides a case for acquiring additional lands to add to the Wilderness Park.

There are a variety of sources of public and private funds available as sources of funding for public land acquisition. These funds can be used to leverage local tax dollars.

3. FACILITY DEVELOPMENT AND REHABILITATIION.

A. DEVELOP FACILITIES NECESSARY AND CAPMPATIBLE WITH THE WILDERNESS PARK GOALS. New facilities, including trails, must be carefully thought out. There are many sensitive sites in the park which cannot tolerate heavy use. There is also a need to provide some facilities for appropriate uses of the park. Hiking, nature study, picnicing, canoeing, camping, skiing, and similar activities are currently the main activites of the park. Picnic shelters, parking lots, trails, camp sites, canoe accesses, and bridges are the existing developments currently in the park.

Additional trail opportunities may be the single best opportunity to direct appropriate use in the park. There may be a need in some instances to close and reroute current trails taht have developed in sensitive areas. Additionally, some seasonal closing may be needed to protect seasonally sensitive species such as nesting birds. Grants may be available for facility development. In many cases, solunteer groups such as Scouts may provide an effective and economical work force to install new facilities. Consider polling users and county residents or using some other public forum to establish facility needs for the park.

B. REHABILITATE EXISTING FACILITIES. Neglecting to maintain and rehabilitate facilities usually results in prohibitively large and expensive projects down the road.

There needs to be sufficient budget and staffing to maintain the existing structures, trails, etc. Priority projects need to be indentified and presented to the County Board of Commissioners for funding along with opportunities to leverage funding.

4. VISITOR SERVICES AND INFORMATION.

A. PROVIDE INFORMATION ABOUT THE PARK TO CURRENT AND POTENTIAL PARK USERS. There is a critical need to provide some minimal level of information to park users including signs, maps, and brochures to inform users of appropriate use, to direct their use, and ensure a safe visit.

Work with volunteer groups such as the Friends to develop informational material for the park. Grants may provide money for printing costs, while volunteers can install signs, etc.

B. BUILD KNOWLEDGE AND UNDERSTANDING OF NATURAL RESOURCES THROUGH ENVIRONMENTAL EDUCATION AND INTERPRETIVE PROGRAMS. The park is a wonderful outdoor classroom to teach people about our natural world. Teaching people about the park and its unique resources can help foster an environmental ethic, which is a long-term investment in our park's future. Interpretive and informational programs, hosted by the newly formed Friends of CRWA group, have begun to take place.

Interpretive staff with the Department of Natural Resources, River Bend Nature Center, and other groups can provide on-site programming activities that together with information brochures and other programs can stimulate public interest in the park and generate support fo the park.

SUMMARY

The Cannon River Wilderness Area is a unique resource in the county. Rare and significant occurances of plant communities, plants, and animals abound in the park. The challenge of managing the park in the face of rsource threats, increasing recreational use and demand, and diminishing budgets is great.

Recommendations have focused on four areas: resource management, land acquisition, facility maintenance and development, and visitor services. Acquisition of additional land must be balanced by the need to maintain and protect the existing natural resource base. New facility development must be tempered by limited budgets and staff to properly care for the current infrastructure. The public must be properly informed through programs and interpretive service so that they continue to be supporters for natural areas and parks.

If the park is to thrive, it will continue to rely on partnerships with a knowledgeable and committed public, county park staff, and county commissioners. It will be important to continue to work with many partners to help plan, develop, and implement the goals of the park.

THE SOILS OF
CANNON RIVER WILDERNESS AREA

Abbreviations and Brief Descriptions

Ad: Alluvial land. Well drained or moderately well drained soil material (loam to sandy loam on the surface) that has been recently deposited by streams. It is nearly level and occupies areas adjacent to major streams and tributaries. It is on higher bottomlands and subject to occasional flooding and scouring.

Af: Alluvial land, frequently flooded. Well drained or moderately well drained soil material (loam to sandy loam on the surface) that has been recently deposited by streams. It is nearly level and occupies areas adjacent to major streams and tributaries. It is subject to frequent flooding, scouring, and stream cutting.

Bc: Biscay loam, 0 to 2 percent slopes. A nearly level, poorly drained, loam. This soil is wet; runoff is slow to ponded. This soil is on broad outwash plains and valley trains. The native vegetation was principally water-tolerant prairie grasses.

Bk: Biscay loam, seepy variant, 4 to 18 percent slopes. A gently sloping to moderately steep, poorly drained, loamy soil. This soil is wet; runoff is slow. The native vegetation was mainly water-tolerant prairie grasses.

BoC: Boone fine sand, 2 to 12 percent slopes. A gently sloping , excessively drained, sandy soil that has sandstone bedrock at a depth of 20 to 40 inches. Permeability is very rapid, the available water capacity very low. The content of organic matter and natural fertility are low. This is a droughty soil; and there is a moderate hazard of water erosion and soil blowing. The native vegetation was oak and hazel brush.

BoD: Boone fine sand, 12 to 25 percent slopes. Similar to BoC above, except the slope is steeper, and the surface layer more likely to consist mostly of subsoil material.

BoF: Boone fine sand, 25 to 40 percent slopes. Similar to BoD above, except the slope is steeper still, runoff is rapid, and the hazard of erosion is severe.

Ct: Colo silty clay loam, 0 to 2 percent slopes. A nearly level, poorly drained, silty soil, on bottom lands adjacent to streams. This soil is wet, and is occasionally flooded. The native vegetation was water-tolerant prairie grasses.

DoC: Dodgeville silt loam, 6 to 12 percent slopes. An undulating, well-drained, silty soil. Moderately droughty; runoff is medium. The hazard of water erosion and soil blowing is moderate. The native vegetation was prairie grass and a few stands of oak or brush.

DoD: Dodgeville silt loam, 12 to 18 percent slopes. Similar to DoC except steeper. Runoff is rapid, and the hazard of water erosion severe

EtC: Etter fine sandy loam, 6 to 15 percent slopes. A moderately sloping, well-drained, loamy soil that formed over sandstone. Burrowing rodents have disturbed the surface layer. This soil is moderately droughty; runoff is rapid, and the hazard of water erosion and soil blowing is severe. The native vegetation was deciduous trees and tall prairie grass.

KaA: Kasson silt loam, 1 to 3 percent slopes. A nearly level, moderately well-drained, multipl-layered soil which is seasonally wet. Runoff is slow to medium, the hazard of erosion slight. The native vegetation was dominantly oak or brush.

Mf: Maxfield silty clay loam, 0 to 2 percent slopes. A nearly level, poorly drained, silty soil. This soil is wet; runoff is slow. Depth to the water table commonly ranges from 0 to 3 feet. The native vegetation was principally water-tolerant prairie grasses.

Pa: Palms muck, 0 to 2 percent slopes. A nearly level, very poorly drained muck soil that formed in decomposed reeds and sedges. Permeability is moderately rapid. Runoff is slow to ponded. The water table is at a depth of 0 to 3 feet.

OtB: Ostrander silt loam, 2 to 6 percent slopes. A gently sloping, well-drained, loamy soil. Runoff is medium, and the hazard of erosion is moderate. The native vegetation for this soil was mainly tall prairie grass.

OtC2: Ostrander silt loam, 6 to 12 percent slopes, eroded. Similar to OsB above, except that the slope is moderate, and a few cobblestones and pebbles are at the surface in some places.

OsD2: Ostrander loam, 12 to 18 percent slopes, eroded. A steep, well-drained, loamy soil. Runoff is rapid, and the hazard of erosion is severe. The native vegetation for this soil was mainly tall prairie grass.

RnB: Renova Silt loam, 2 to 6 percent slopes. A gently sloping, well-drained, loamy soil on uplands. Runoff is medium, the hazard of erosion is moderate. The native vegetation was deciduous trees.

Ru: Rough Broken Land. This land consists of areas of narrow, steeply sloping glacial drift and shallow bedrock adjacent to major streams and lakes. Slopes are more than 30 percent.

Runoff is very rapid, and the hazard of erosion is very severe.

SaC: Salida gravelly sand loam, 4 to 12 percent slopes. This is very droughty soil. Runoff is medium, and the hazard of erosion is moderate. The native vegetation was probably tall grass prairie.

SaD: Salida gravelly sand loam, 12 to 30 percent slopes. This very droughty soil is on gravelly knolls and steep side slopes. Runoff is rapid, and the hazard of erosion severe. The native vegetation was tall prairie grass.

SoE: Sogn stony loam, 18 to 35 percent slopes. A steep to very steep, well-drained to excessively drained soil. This soil is very droughty. Runoff is rapid, and the hazard of erosion is very severe. The organic-matter content and natural fertility are low. The native vegetation was tall prairie grass.

TeB: Terril loam, 1 to 6 percent slopes. A nearly level, moderately well drained, loamy soil. It is found on toe slopes of the more rolling soils. Wetness is a slight limitation that affects the use of this soil. Runoff is medium. The native vegetation was tall prairie grass and deciduous trees.

TeC: Terril loam, 6 to 12 percent slopes. Similar to TeB above, except sloping. The hazard of erosion is moderate.

Zu: Zumbro sandy loam, 0 to 2 percent slopes. A nearly level, moderately well drained, somewhat sandy soil which is subject to occasional flooding. This soil is moderately droughty; runoff is slow to medium.

Source: The Soil Survey of Rice County, Minnesota; Soil Conservation Service (March 1975)