Milwaukee Road Corridor Study

Technical Appendix E

Title: RARE ELEMENTS OF NATURAL DIVERSITY ALONG THE ABANDONED RAILROAD RIGHT-OF-WAY BETWEEN LA CRESCENT AND SPRING VALLEY, MINNESOTA

By: MINNESOTA NATURAL HERITAGE PROGRAM
DEPARTMENT OF NATURAL RESOURCES
RESEARCH AND POLICY SECTION

Department of Natural Resources

RARE ELEMENTS OF NATURAL DIVERSITY ALONG THE ABANDONED RAILROAD RIGHT-OF-WAY BETWEEN LA CRESCENT AND SPRING VALLEY, MINNESOTA

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MINNESOTA NATURAL HERITAGE PROGRAM

The Minnesota Natural Heritage Program is an on-going inventory process for identifying and locating significant examples of Minnesota's plant and animal species, plant and aquatic community types, special wildlife habitats and special geologic features. The Heritage inventory focuses first on identifying the components, or elements, of natural diversity which are of special concern in Minnesota. An element is a natural feature of particular interest because it is exemplary, unique, threatened or endangered on a national or statewide basis.

Zoological and botanical elements include animals and plants whose biological requirements merit special consideration by land developers, conservationists and biologists. Among the criteria used to identify special animals and plants are:

1. Disjunct or relict populations.
   Chrysosplenium ioense (golden saxifrage), for example, is widely distributed in the arctic but in temperate regions is known only from northeast Iowa and the Root River Valley in Fillmore County.

2. Species restricted to a specialized or limited habitat.
   Colonial nest sites, for example, are a specialized habitat limited in availability and vulnerable to disturbance. The Hokah colony, located near the confluence of the Root River and Mississippi River, is among the largest colonies of great blue herons and great egrets in the state.

Other criteria may include species that are widely dispersed but generally uncommon everywhere, peripheral species that reach the limit of their natural range in Minnesota and species for whom the data available are so scarce their population status is poorly understood.

Within the Heritage data-base, geologic features or plant communities are also considered as elements. Geologic features or plant communities may qualify as elements if they are representative of Minnesota's natural environment, are unusual for the state or provide especially good illustrations of ecological or geological relationships or processes. To date, no plant communities or geologic features have been entered into the Heritage data-base.

PLANT OCCURRENCES

At present a total of sixty plants have been identified as elements by the Minnesota Natural Heritage Program. Locality information for all sixty elements has been coded from the records available at the University of Minnesota herbarium (St. Paul) and mapped onto the 1:24,000 scale U.S.G.S. maps. The data is currently awaiting entry into the program's computer files. Three of the sixty elements, *Botrychium dissectum* (grape-fern), *Hamamelis virginiana* (witch hazel) and *Chrysosplenium ioense* (golden saxifrage), are known from the Root River Valley. The first, *Botrychium dissectum*, is a small fern that is found growing on wooded slopes. It is known from three locations in Minnesota, one which is in the vicinity of the Root River in Houston County. *Hamamelis virginiana* is known from only two places in Minnesota. The only reproducing population is located about five miles south of the Root River in Houston County. *Chrysosplenium ioense*, the third element, was first reported in Minnesota in 1977 from bluffs overlooking the Root River. The species is widely distributed in the arctic but is known in temperate regions only from northeast Iowa and the Root River Valley in Fillmore County. Because it is very rare, prime consideration should be given to *Chrysosplenium ioense* in the planning of any development in this area.

The distribution and abundance of several other uncommon plant species found in the Root River Valley is currently under review. Most of these species reach the northern periphery of their range in southeast Minnesota and are perhaps more common in states further to the south. The Natural Heritage Program will continue to collect occurrence information on these species and will reach a decision as to their status in the coming months.

The following pages include a listing of each occurrence record within the vicinity of the Root River for the three plant elements discussed above and for 16 species currently being reviewed for possible element status. Records were obtained by a thorough search of the University of Minnesota herbarium (St. Paul). Each of the occurrences listed below have been located on the accompanying map of the proposed Root River trail (Appendix I). The numbers in the left hand column serve as an index to each record. Nomenclature follows that found in Gray's Manual of Botany (1950).

Elements

1. *Chrysosplenium ioense* (golden saxifrage)

   Two miles north of Root River. Moist, north-facing slope. Spring Valley Creek (more detailed information available upon request). 1977.

2. *Botrychium dissectum* (grape-fern)

   One mile from Root River. Growing on wooded bluffs. 1962.

3. *Hamamelis virginiana* (witch hazel)

   Four-five miles from Root River. Growing on a wooded slope of a deep ravine. 1979.

Potential Elements

4. *Solidago sciaphila* (goldenrod)

   Found growing along the Root River in rock crevices. Lanesboro.

5. *Blephilia hirsuta* (wood-mint)

   Found growing on hillside near the Root River. 1943.

6. *B. hirsuta*

   Found growing on wooded north-facing slope along the Root River.

7. *Aster Shortii* (aster)

   Found growing near the Root River on a wooded hillside.

8. *A. Shortii*

   Found growing in a hardwood forest near the Root River.

9. *Panax quinquefolius* (ginseng)

One and one-half miles south of the Root River.

10. *Athyrium pycnocarpon* (glade-fern)

Found growing near the Root River at the base of a bluff near the highway. 1936.

11. *Athyrium thelypterioides* (silvery spleenwort)

Found growing near the Root River at the base of a bluff near the highway.

12. *Iodanthus pinnatifidus* (purple rocket)

Common in bottomlands on south side of the Root River.

13. *Paronychia canadensis* (forked chickweed)

Two miles south of the Root River. Growing in a jack pine forest.

14. *Tephrosia virginiana* (goat's-rue)

One mile from the Root River. Growing in sandy soil in a grove of white pines. 1920.

15. *Muhlenbergia Schreberi* (drop-seed)

Growing on a wood road along north-facing bluffs of the Root River Valley. 1963.

16. *Dodecatheon amethystinum* (American cowslip)

Growing on moist, dolomite ledges on the south side of an isolated bluff. 1927.

17. *Asclepias amplexicaulis* (milkweed)

One mile from Root River. Growing in sandy soil on steep, open, south-facing hillside.

18. *Melica nitens* (melic-grass)

One mile from Root River. Growing in dry, half-loam, half-soil; with big bluestem, cup plant and cord grass. 1976.

19. *M. nitens*

Immediate vicinity of the Root River. Growing on sandy soil; common locally.

20. *Arisaema Dracontium* (green dragon)

Two-three miles from Root River. Growing in wet, mature, mixed hardwood forest along a dead-end slough in the Root River delta. Both scattered and in clumps. 1975.

21. *Gaylussacia baccata* (black huckleberry)

One mile from Root River. Growing on sandstone ledges along a creek.

22. *Gymnocladus dioica* (Kentucky coffee-tree)

One-two miles from Root River. Growing in woods along a road at the mouth of the Root River. 1942.

ANIMAL OCCURRENCES

Occurrence records for Minnesota's animal elements have just begun to be accessed into the data files of the Natural Heritage Program. Current locality information is being collected for 20 bird elements (including eight colonial nesters), 17 mammal elements, three amphibian elements, nine reptile elements, approximately 20 fish elements, 14 butterfly elements and approximately 10 mussel elements. At present the compilation of this information is nearly complete for colonial nesting birds and amphibian and reptile elements. The information on colonial nesters was provided by Carrol Henderson, MDNR non-game biologist. Information on amphibians and reptiles was assembled from the herpetology collection at the Bell Museum. Unfortunately the majority of herpetology records available from the Museum date back to the 1930s and 1940s; recent collections have been scarce. The accession of locality information for Minnesota's other animal elements will not be completed until the spring of 1980.

The present incompleteness of the Heritage Program's zoological data, coupled with the dirth of recent field information available for southeastern Minnesota, results in a rather incomplete assessment of the rare fauna that may occur along the Root River trail. Therefore, in addition to including the few collection and sighting records of animal elements that are known to exist along the river, the following evaluation will also include a brief summary of the elements that might be expected in the area. Records that have been placed on the accompanying map are noted in the following discussion. In addition, a complete summary of all the animal element occurrences that are mapped can be found at the end of the discussion.

Birds

Three of Minnesota's 20 bird elements have occurrence records within the vicinity of the proposed Root River trail. Two of the birds, the great blue heron and great egret, are colonial nesters that have established a colony along the Mississippi River floodplain, approximately five miles east of Hokah (Map #1). In 1977 the colony was reported to contain 505 pairs of great blue herons and 90 pairs of great egrets. With a total of nearly 600 nesting pairs, the Hokah colony registers among the largest rookeries in the state. It has been reported that the rare yellow-crowned night heron may also nest at the site.

The third bird element that has been reported in the valley of the Root River is the bobwhite (*Colinus virginianus*). A permanent resident in Minnesota, the bobwhite appears restricted to the southeastern counties. The limited number of observations that have been made during the last three years have come primarily from western Houston and Fillmore Counties. Along the proposed trail the most recent observation of the species was in January 1978 when a covey of 12 was reported near the town of Houston (Map #2).

Although the information gathered to date does not reveal any sightings from the Root River, another bird element, Bell's vireo (*Vireo bellii*), may also occur in the area. Limited primarily to the extreme southeastern quarter of the state, Bell's vireo is considered very scarce except in Winona and Houston Counties.

Other birds that may be added to Minnesota's list of rare elements in the future include the Acadian flycatcher (*Empidonax virescens*), Louisiana waterthrush (*Seiurus motacilla*), Cooper's hawk (*Accipiter cooperii*) and marsh hawk (*Circus cyaneus*). Although sighting records suggest that the Acadian flycatcher may be expanding its range further northward in Minnesota, nesting has only been confirmed in Houston County. On intermittent occasions (1968 and 1970), nesting has been reported in Beaver Creek Valley State Park, located approximately eight miles south of the town of Houston. Earlier, in 1940, nesting was also reported on the Root River, two and one-half miles east of Rushford (Map #8). In recent years scattered observations throughout southeastern Minnesota have also been made of the Louisiana waterthrush, marsh hawk and Cooper's hawk.

Two other bird species that are limited primarily to southeastern Minnesota and that are considered rather uncommon are the yellow-breasted chat (*Icteria virens*) and Carolina wren (*Thryothorus ludovicianus*). Neither, however, is consistently observed from year to year; instead, the recorded observations are erratic and inconsistent.

Mammals

Occurrence records for the mammal elements have yet to be compiled. Nevertheless, two of the 17 elements may be observed in the vicinity of the proposed trail: the eastern pipistrel (*Pipistrellus subflavus*) and the pine vole (*Microtus pinetorum*). Although very little information is available regarding the distribution and abundance of Minnesota's bat fauna, the

eastern pipistrel is probably the state's rarest species. The few distribution records that are available reveal that the bat is found primarily in southeastern Minnesota. The limestone caves that are characteristic of this region are used as quarters for winter hibernation. The second mammal element, the pine vole, has been collected only in Houston and Fillmore Counties. Considered an adaptable species, the pine vole may be found in a variety of situations in states to the south of Minnesota.

In the future, additional mammal species that are found in southeastern Minnesota may also be given element status by the Heritage Program. Potential candidates are the opossum (*Didelphis marsupialis*), silver-haired bat (*Lasionycteris noctivagans*), Keen's myotis (*Myotis keenii*) and least weasel (*Mustela rixosa*). Data available for two of the species, the silver-haired bat and least weasel, suggest that they are widely distributed throughout the state. Yet, despite their wide distribution, they are present in rather low numbers and their populations are often quite localized. The opossum and Keen's myotis, on the other hand, are primarily restricted to south-central and southeastern Minnesota. Although relatively common in the southern states, the opossum is a rather uncommon mammal in Minnesota, having worked its way north via the protected river valleys of the southeast. Like the eastern pipistrel, Keen's myotis is attracted to southeastern Minnesota because of the availability of limestone caves used for winter hibernation.

Reptiles and Amphibians

Three of Minnesota's four amphibian elements have occurrence records for Houston and/or Fillmore Counties: the pickerel frog (*Rana palustris*), bullfrog (*Rana catesbeiana*) and Blanchard's cricket frog (*Acris crepitans*). All three are rare species restricted to southern Minnesota. Known from the extreme southwest and southeast corners of the state, the cricket frog has a total of nine collection records available from Houston and Fillmore Counties. Although it is nearly 30 years old, one of the nine records is from the immediate vicinity of the proposed trail - a specimen collected in 1949 near the town of Hokah (Map #3). One of four records of the pickerel frog in Houston and Fillmore Counties is also near the trail - a specimen collected three miles south of La Crescent, again in 1949 (Map #4). The bullfrog, on the other hand, has been collected only once in Houston County at a site located three miles south of the town of Reno.

Among the nine reptilian elements in the state of Minnesota, five have collection or sighting records for Houston and/or Fillmore Counties: the six-lined racerunner (*Cnemidophorus sexlineatus*), prairie ringneck snake (*Diadophis punctatus arnyi*), black rat snake (*Elaphe obsoleta*), blue racer (*Coluber constrictor foxi*) and Blanding's turtle (*Emys blandingii*). With the exception of the Blanding's turtle, all of these reptiles are restricted to the southeast quarter of the state. The turtle, on the other hand, has been sighted as far north as Cass, Wadena and Crow Wing Counties.

Like most of the other reptiles and amphibians, the records available for the six-lined racerunner date primarily from the 1930s and 1940s. The collection records transcribed from the Bell Museum reveal that most of the specimens from Houston County were taken near the towns of Reno, Brownsville and Alba. Recent sightings, however, have also been reported from the Root River Valley, west of Hokah.

Although all three snake species have been collected in either Houston or Fillmore Counties, only the prairie ringneck and blue racer have records from the vicinity of the proposed trail. In 1948 a prairie ringneck snake was collected near the town of Rushford in Fillmore County (Map #5). This is one of eight localities where the snake has been collected. In 1949 a blue racer was collected five miles south of La Crescent in Houston County (Map #6). The record is one of 20 available for the racer. The third snake, the black rat snake, has only been collected a total of three times in Minnesota. The one record available for Houston County comes from a locality south of the town of Brownsville.

Of the two turtles that are designated as elements, the wood turtle and Blanding's turtle, only the latter has been sighted in Houston County. In Minnesota the Blanding's turtle is regarded as an inhabitant of the sandy, marshy areas found along three of the state's major rivers, the Minnesota, St. Croix and Mississippi. Very little information, however, is available regarding the distribution and abundance of Minnesota's turtle fauna. Two other turtles from the southeastern counties that may be proposed as elements in the future include the false map turtle (*Graptemys pseudogeographica*) and the smooth softshell turtle (*Trionyx muticus*). Both species are inhabitants of the Mississippi floodplain.

Fish

At present only a preliminary draft of potential fish elements has been drafted. In addition, collection records for the 50 species included in the list have been transcribed from the files of the University of Minnesota and Minnesota Department of Natural Resources. Review of the list reveals the presence of three potential elements that have been collected in the Root River: the pugnose shiner (*Notropis anogenus*), the highfin carpsucker (*Carpoides velifer*) and the pugnose minnow (*Opsopoeodus emilae*).

The original range of the pugnose shiner has decreased considerably to the point where it now occurs only in parts of Minnesota, Wisconsin and Michigan. Although collection records reveal that the shiner is found in all of Minnesota's drainages, it appears limited to undisturbed waters where the aquatic vegetation has not been weeded out. Collected from the Root River during the late forties, the pugnose shiner is considered one of our rarest shiners.

The second species, the highfin carpsucker, is restricted primarily to southern Minnesota. Collection records from the late 1940s reveal two specimens that were taken from the Root River. Although earlier reports suggest that the species was rather common in the smaller tributaries of the Mississippi River, there has been a recent decline in the species population.

The third species, the pugnose minnow, is not as high a priority as the two previous species. Restricted to southeastern Minnesota, historical records suggested that the minnow was quite uncommon. Recent collecting efforts, however, reveal that the species is more common than previously thought.

Butterflies

Information regarding the distribution and abundance of Minnesota's rare butterflies will also be accessed to the data-base of the Natural Heritage Program. At present a list of 61 uncommon butterflies has been compiled by Ron Huber (Science Museum of Minnesota). Fourteen of these species are particularly rare and have been designated elements in the Heritage data-base. There is some possibility that two of the species, the olive hairstreak (*Callophrys gryneus*) and wild indigo dusky wing (*Erynnis baptisiae*), may be observed in the Root River Valley. An inhabitant of juniper slopes, the olive hairstreak has been collected from Goodhue, Wabasha, Winona and Houston Counties. One of two localities where it has been recorded in Houston County is from the Houston town cemetery (Map #7). The second butterfly, the wild indigo dusky wing, inhabits sandy prairies and has been recorded only in Mower and Houston (near Alba) Counties.

Other Invertebrates

Although information pertaining to Minnesota's other rare invertebrate species is not being compiled at present, one additional record is worth noting. The rare tiger beetle, *Cicindella macra*, has been collected at only three localities in the state. One of these sites is on the shore of the Root River in the town of Rushford (Map #9). Southeast Minnesota represents the northwest periphery of the species' range.

Summary of All Mapped Collection Records

Elements

1. Colonial nest site

   The Hokah colony located five miles east of Hokah. A nesting count in 1977 revealed 505 pairs of great blue herons and 90 pairs of great egrets. Yellow-crowned night herons may also nest at the site.

2. *Colinus virginianus* (bobwhite)

   A colony of 12 observed near the town of Houston. January 1978.

3. *Acris crepitans* (cricket frog)

   A specimen collected near the town of Hokah, 1949.

4. *Rana palustris* (pickerel frog)

   A specimen collected three miles south of La Crescent, 1949.

5. *Diadophis punctatus arnyi* (prairie ringneck snake)

   A specimen collected near Rushford, 1948.

6. *Coluber constrictor foxi* (blue racer)

   A specimen collected five miles south of La Crescent, 1949.

7. *Callophrys gryneus* (olive hairstreak)

   A specimen collected from the Houston town cemetery (1970s).

Potential Elements

8. *Empidonax virescens* (Acadian flycatcher)

   A nesting pair observed two and one-half miles east of Rushford, 1940.

9. *Cicindella macra* (tiger beetle)

   A specimen collected on the shore of the Root River in the town of Rushford (1970s).

GEOLOGIC FEATURES

The Natural Heritage Program has yet to identify which geologic features in Minnesota will be included in the data-base. As a result, the staff has not begun to accumulate locality records for some of the features known in southeastern Minnesota and the brief summary that follows is based only on the available literature.

The Root River Valley is of interest geologically for at least three major reasons. First, there are the exposures of Cambrian stratigraphy that are revealed most fully in the lower reaches of the Root River,west of Hokah. The bedrock that is exposed in this region originated during the Paleozoic era when marine seas occupied the Hollandale embayment, extending northward roughly to the Twin Cities. Formations comprising the St. Croixan series, Minnesota's only Cambrian rocks, are exposed along the valleys of the St. Croix, Minnesota and Mississippi Rivers. The oldest formation - known until recently as a single formation, the Dresbach - is exposed up the Root River Valley as far as Hokah. Part of the overlying Franconia formation (also sandstones) is exposed as far upstream as Rushford, while the silty and sandy dolomitic rocks of the St. Lawrence formation (overlying the Franconia formation) are exposed as far west as Lanesboro. The overlying Jordan sandstone is exposed throughout the Root River drainage.

The second reason the Root River Valley is of interest geologically is the extensive development of caves, underground streams and karst topography found throughout the area. The limestone formations that are found in this region (the Galena, Dubuque and Maquokota formations) overly an impervious layer of Decorah shale. The shale serves as an aquiclude that prevents the downward seepage of underground waters from the pervious overlying limestones. As a result, underground streams, caves and dolines are formed within the limestone, creating a karst topography that is unique to the area. Several of the caves, springs and sinkholes occur near the proposed trail between the towns of Spring Valley and Fountain. These features are listed below and noted on the accompanying map.

A. Red Tail Sink and other sinkholes

Located one mile south of the Root River. Water collecting here flows into underground rivers. Nearby Zimmer Blind Valley contains 35-50 sinks enclosed by rather precipitous walls. The water rises as Forest Creek, three miles away.

B. Stagecoach Spring Group

Located one and one-half miles south of the Root River. This is among the most impressive springs in the area. The underground Rogue River resurges (is recharged) in this area.

C. Fountain Spring Group

Located less than one mile north of the Root River. One of the springs in this group, the Quarry Spring, is associated with a cave that contains a low water passage approximately 1000 feet long.

D. Green Gables Sinkhole

Located less than one mile from the Root River. Fifty feet in diameter and 100 feet deep, the sinkhole has been boarded up for several years. It is the largest sinkhole in the immediate vicinity of the river.

Finally, the third major reason the Root River Valley is of interest geologically is that, eastward from Lanesboro, the river flows through an area referred to as the "Driftless Area." Approximately 150 miles in diameter and expanding the political boundaries of southeastern Minnesota, southwestern Wisconsin, northeastern Iowa and northwestern Illinois, the "Driftless Area" remained unglaciated during the latest (Wisconsin) glaciation. The Quaternary history of this area has not been studied in detail. Nevertheless, one interesting feature is the conspicuous alluvial terrace that may be observed from the mouth of the river west to Preston. The headwaters of the Root River arise near the front of the Bemis moraine and outwash from glacial waters might account for the presence of the terrace. An alternative explanation is that, during glacial times, the higher base level of the Mississippi River (approximately 800 feet above sea level) resulted in the deposition of sediments in tributary streams. The Root River

presently enters the Mississippi at an elevation of 700 feet. Such terraces are not unique to the Root River but are also present along the Cannon, Zumbro and Whitewater Rivers.

References that were used to compile this brief summary are as follows:

Schwartz, G.M. and G.A. Thiel. 1954. Minnesota's Rocks and Waters. University of Minnesota Press.

Austin, G.S. 1972. Paleozoic Lithostratigraphy of Southeastern Minnesota. IN: Sims, P.K. and G.B. Morey, eds. Geology of Minnesota, a Centennial Volume. Minnesota Geological Survey.

Spong, R. 1979. Southeastern Minnesota Caves and Karsts. A Science Museum of Minnesota field trip road log.

PLANT COMMUNITIES

Specific occurrences (sites) for plant communities have not been entered into the Natural Heritage data-base to date. The available literature suggests that the following natural plant communities are to be expected in Houston and Fillmore Counties.

1. "Sloughs"

   Dominated by emergent rooted aquatics such as *Zizania aquatica* (wild rice), *Scirpus atrovirens* (bulrush) and *Typha latifolia* (cattail). Found primarily in the Mississippi floodplain.

2. Floodplain

   Dominated by *Acer saccharinum* (silver maple), *Ulmus americana* (American elm), *Salix nigra* (black willow), *Populus deltoides* (cottonwood), *Fraxinus pennsylvanica* (green ash), *Betula nigra* (river birch) with *Quercus bicolor* (swamp white oak). Along the Mississippi *Acer saccharinum* and *Ulmus americana* are more prevalent, whereas tributary floodplains tend to be dominated by *Populus deltoides* and *Salix nigra*.

3. Mesic deciduous north and east-facing slopes

   Dominated by mixtures of *Acer saccharum* (sugar maple), *Tilia americana* (basswood), *Quercus borealis* (northern red oak), *Quercus alba* (white oak) and *Pinus strobus* (white pine) with *Betula papyrifera* (paper birch) common on the upper slopes.

4. North-facing sandstone ledges

   Dominated by *Pinus strobus* (white pine), *Taxus canadensis* (yew) and *Betula lutea* (yellow birch).

5. North-facing limestone cliffs

   Dominated by *Abies balsamea* (balsam fir).

6. Cedar glades

   Slopes dominated by *Juniperus virginiana* (red cedar) may occur either on grazed prairies protected from fire or at the topographic contact between sandstone and limestone.

7. Xeric deciduous slopes

   Dominated by *Quercus alba* (white oak), *Quercus borealis* (northern red oak), *Quercus velutina* (red oak), *Quercus macrocarpa* (bur oak) and *Carpoides cordiformis* (shagbark hickory) along with *Betula papyrifera* (paper birch) and *Populus tremuloides* (aspen).

8. Bluff prairies

   Located primarily on south-facing slopes near major rivers and may be dominated by *Bouteloua curtipendula* (side-oats grama), *Andropogon scoparius* (little bluestem) and *Koehleria cristata* (grass).

The presence and relative frequency of specific communities along the proposed trail is summarized in the field survey report prepared by Dennis Allen, DNR Regional Naturalist, and the DNR Scientific and Natural Areas staff. Their report summarizes the results of their recent systematic inventory of natural areas along the abandoned right-of-way.

References that were used to compile this brief summary are as follows:

Cahayla-Wynne, R. and D.C. Glenn-Lewin. 1978. The forest vegetation of the Driftless Area, northeast Iowa. American Midland Naturalist, 100:307-319.

Curtis, J.T. 1959. The Vegetation of Wisconsin. University of Wisconsin Press.

Hartley, T.G. 1960. Plant communities of the LaCrosse area in western Wisconsin. Proc. Iowa Acad. Sci., 67:174-188.

Hartley, T.G. 1962. Flora of the Driftless Area. Ph.D. Thesis. State University of Iowa

Pammel, L.H. 1905. A comparative study of swamp, clay and sandstone areas in western Wisconsin, southeastern Minnesota, northeastern, central and southeastern Iowa. Proc. Davenport Acad. of Sci., X:32-126.

MINNESOTA NATURAL HERITAGE PROGRAM

Summary: Rare Elements of Natural Diversity along the Abandoned Railroad Right-of-Way between La Crescent and Spring Valley, Minnesota.

The Minnesota Natural Heritage Program is still a relatively young program. The data-base developed over the past six months does not yet adequately represent the existence and distribution of uncommon species and unique natural areas in Minnesota. As a result, the information presented in this report represents only data that are presently available for the Root River.

With information provided by secondary sources, the Minnesota Natural Heritage Program has identified the following elements of natural diversity along the abandoned railroad right-of-way. Elements are natural features of particular interest because they are exemplary, unique, threatened or endangered on a national or statewide basis.

Rare Plants

Three of the 60 plants that have initially been designated as elements in Minnesota are found in the Root River Valley: *Botrychium dissectum* (grape-fern), *Hamamelis virginiana* (witch hazel) and *Chrysosplenium ioense* (golden saxifrage). The latter is widely distributed in the arctic but is known in temperate regions only from northeast Iowa and the Root River Valley. Prime consideration should be given to the species in the planning of any development in the area.

Sixteen additional plants that are uncommon in Minnesota and that are potential candidates as elements in the future are also known from the Root River Valley.

Rare Animals

Three of Minnesota's 20 bird elements have occurrence records near the proposed trail: the great blue heron, great egret and bobwhite. Both the heron and egret are found at the Hokah colonial nest site. With a combined total of nearly 600 nesting pairs, the Hokah colony is among the largest in the state. Recent observations of the third element, the bobwhite, suggest that it is restricted to western Houston and Fillmore Counties. In January 1978, a covey of 12 was observed near the town of Houston. Although there are no recorded sightings from the valley, the Bell's vireo, another element, may also occur in the area. Other birds that have been sighted in the valley

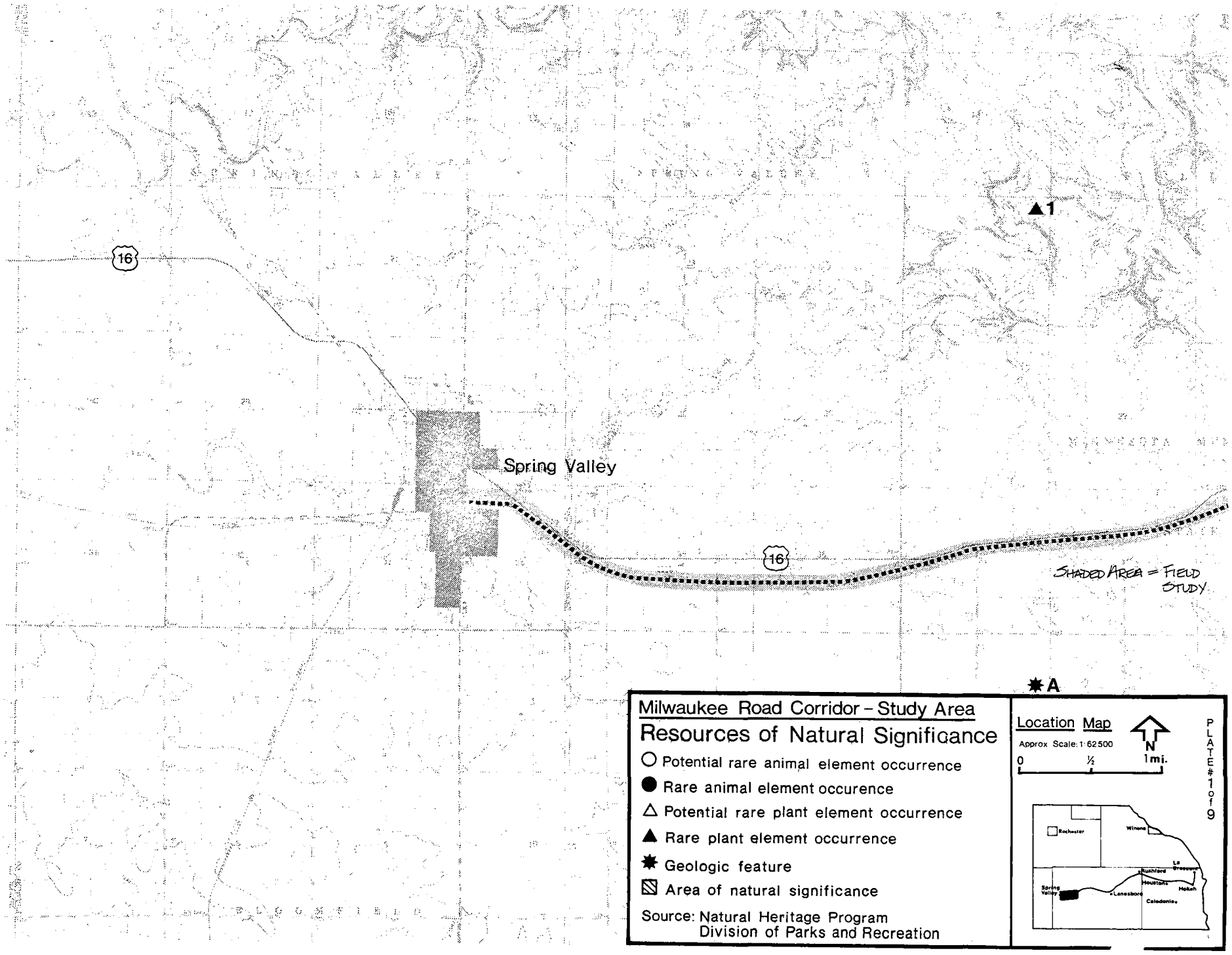
ROOT RIVER REPORT

ADDENDUM

Geologic Features (page 14)

E. Mystery Cave

Located approximately two miles south of the proposed trail. Privately owned and commercially operated, Mystery Cave is an extensive limestone cave.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Spring Valley
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SHADED AREA = FIELD STUDY
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Milwaukee Road Corridor - Study Area
Resources of Natural Significance
○ Potential rare animal element occurrence
● Rare animal element occurence
△ Potential rare plant element occurrence
▲ Rare plant element occurrence
✸ Geologic feature
▨ Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx Scale: 1:62500
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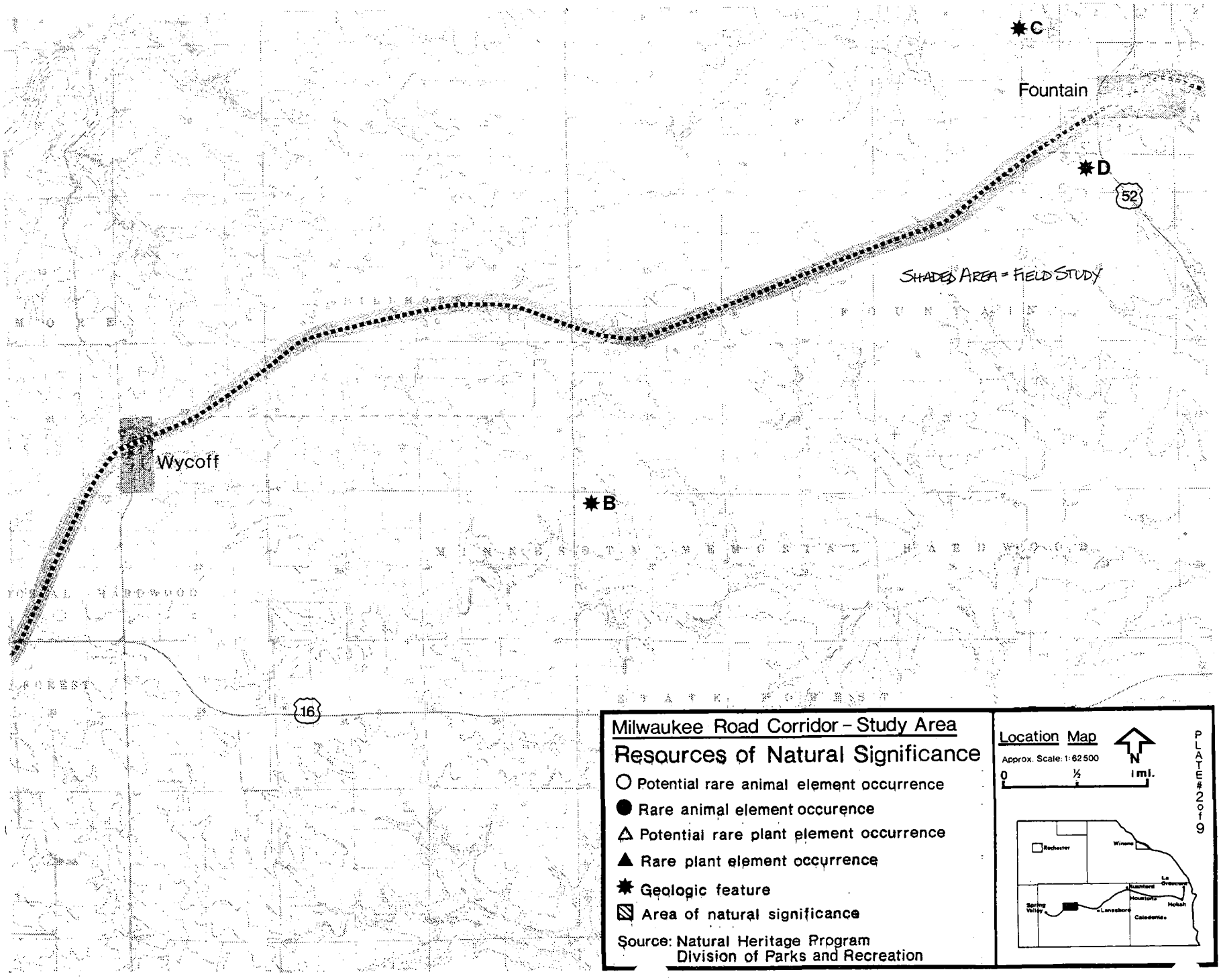
Winona
Spring Valley
Lanesboro
Houston
Caledonia
Hokah
PLATE #1 of 9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SHADED AREA = FIELD STUDY
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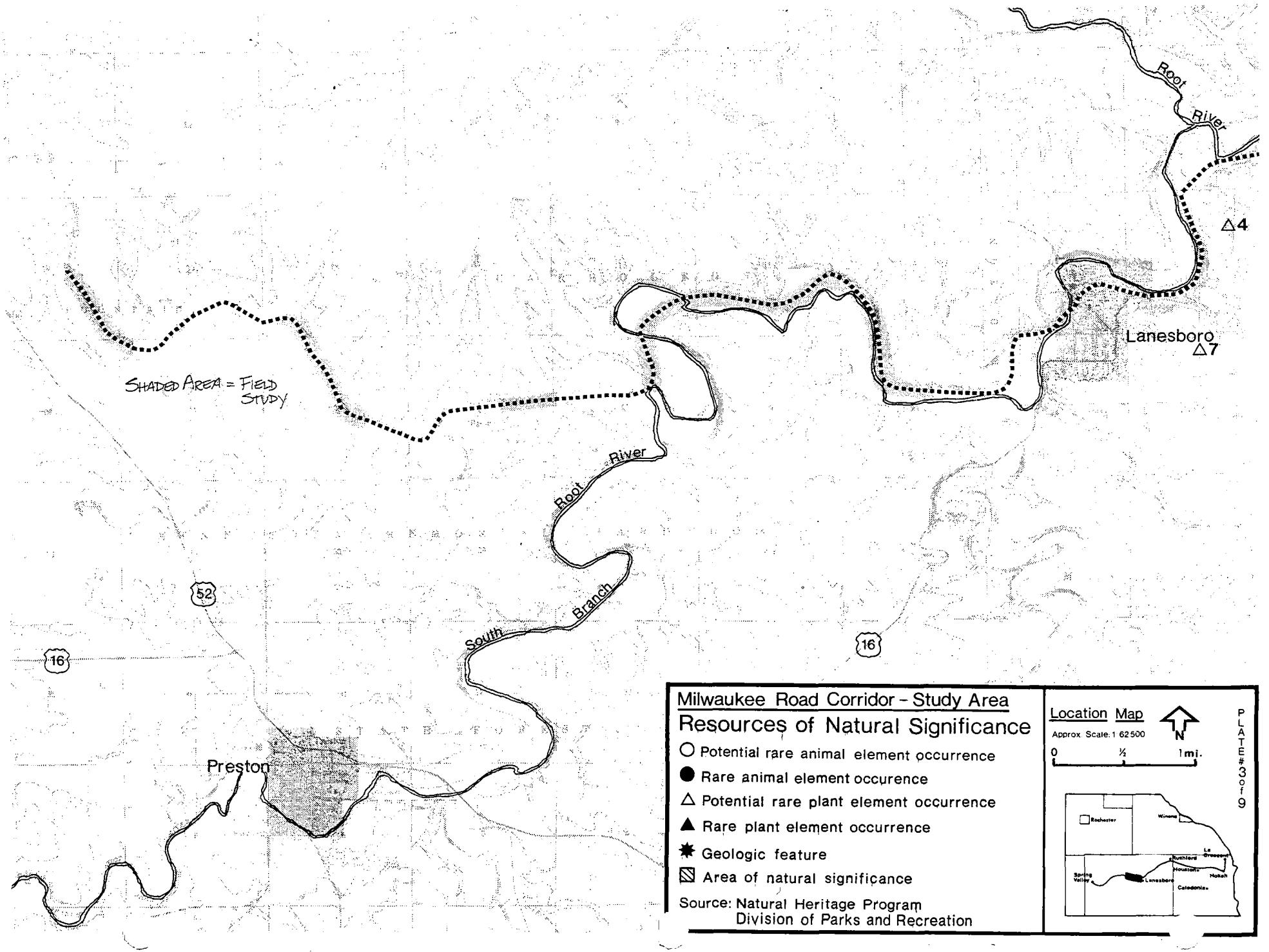
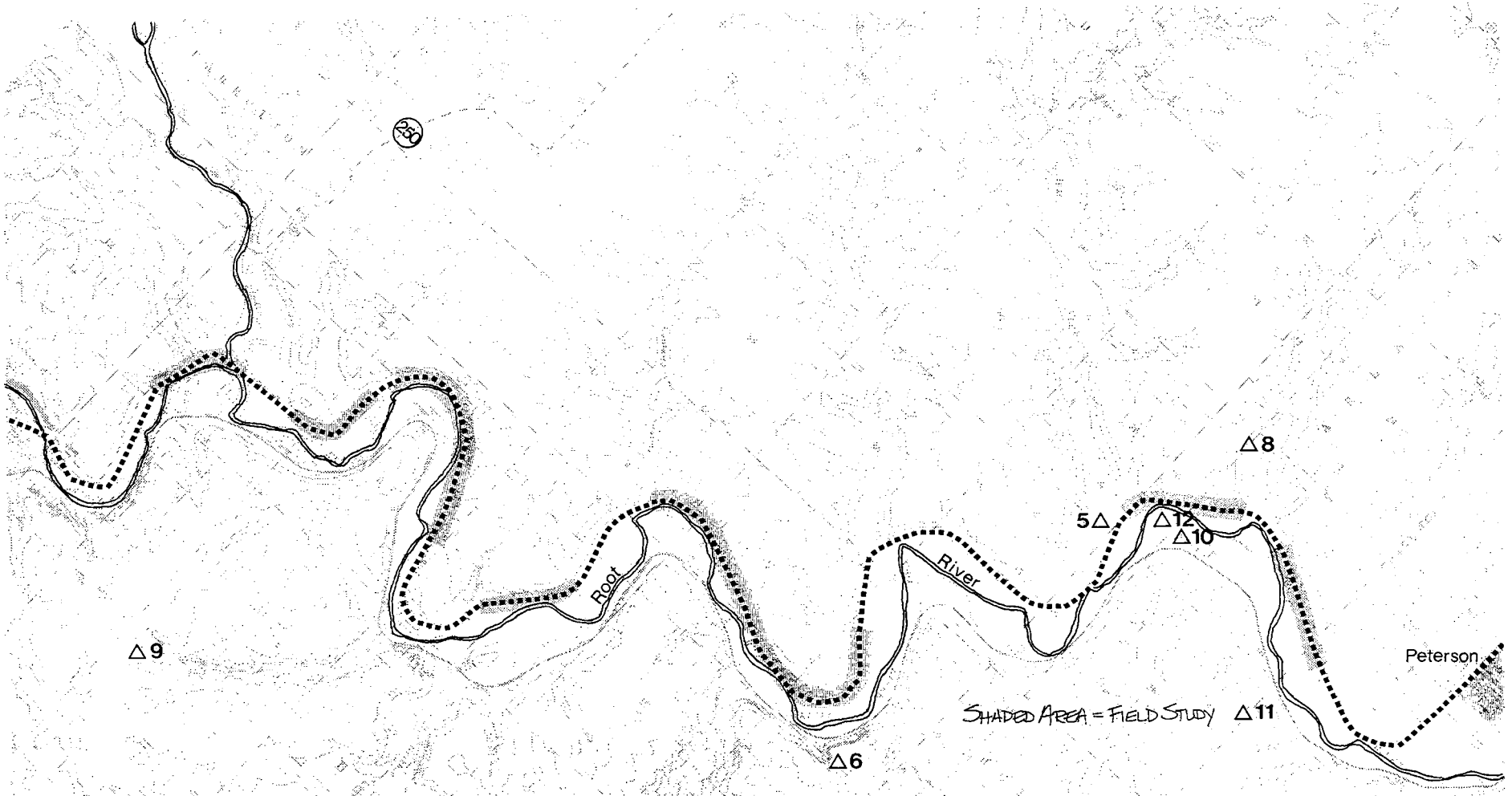
Milwaukee Road Corridor - Study Area
Resources of Natural Significance
Potential rare animal element occurrence
Rare animal element occurence
Potential rare plant element occurrence
Rare plant element occurrence
Geologic feature
Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx. Scale: 1:62500
N
0
½
1 mi.
PLATE #2 of 9


Root River
△4
Lanesboro
△7
SHADED AREA = FIELD STUDY
Root River
South Branch
52
16
16
Preston
Milwaukee Road Corridor - Study Area
Resources of Natural Significance
○ Potential rare animal element occurrence
● Rare animal element occurence
△ Potential rare plant element occurrence
▲ Rare plant element occurrence
✸ Geologic feature
▨ Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx. Scale: 1:62500
N
0
½
1 mi.
Rochester
Winona
La Crescent
Rushford
Houston
Spring Valley
Lanesboro
Caledonia
Hokah
PLATE #3 of 9



Milwaukee Road Corridor - Study Area

Resources of Natural Significance

- ○ Potential rare animal element occurrence
- ● Rare animal element occurence
- △ Potential rare plant element occurrence
- ▲ Rare plant element occurrence
- ✸ Geologic feature
- ▨ Area of natural significance

Source: Natural Heritage Program
Division of Parks and Recreation

Location Map

Approx. Scale: 1:62500

0 ½ 1 mi.

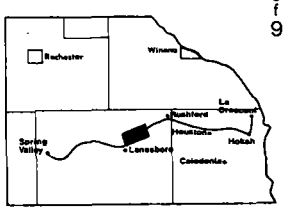
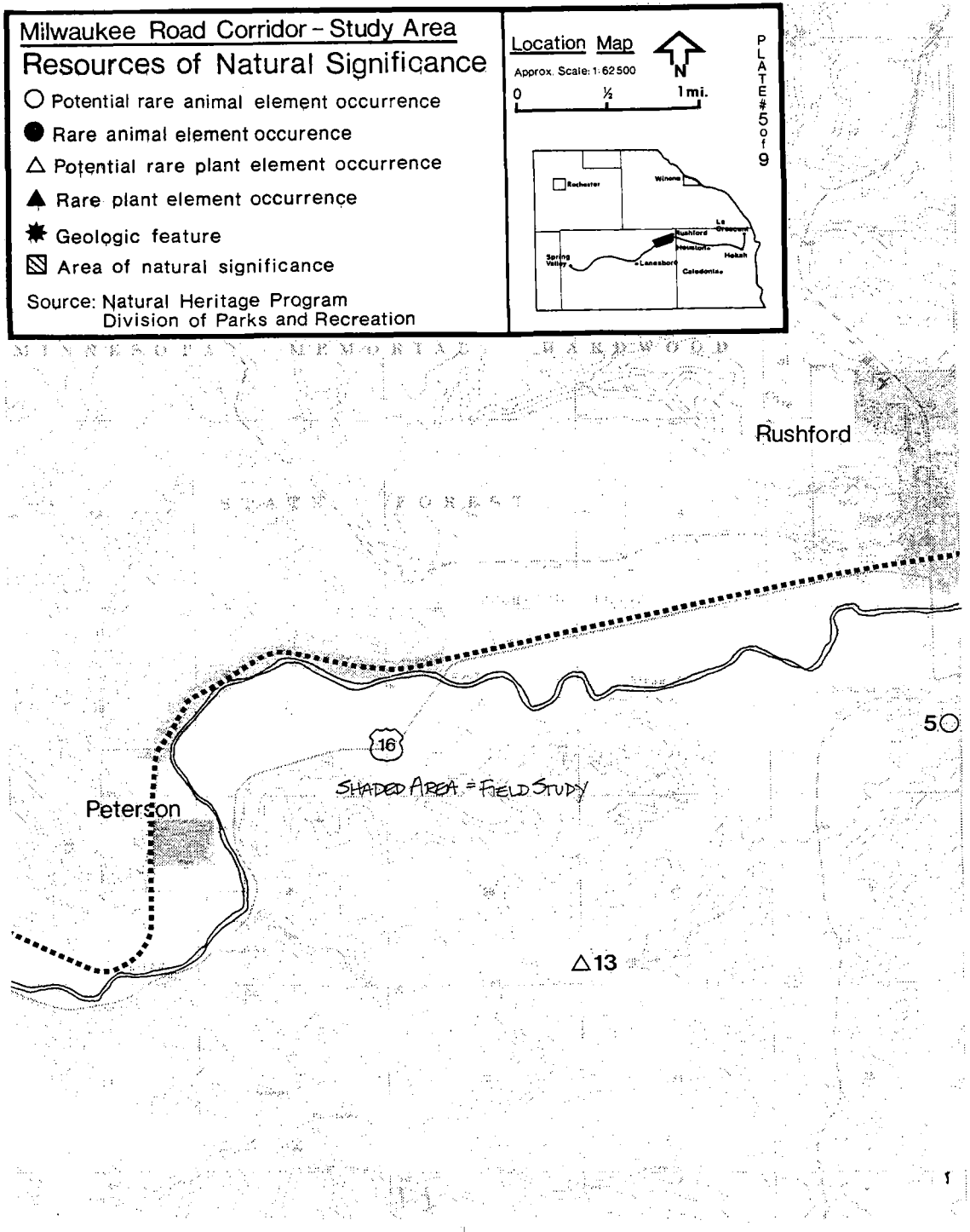
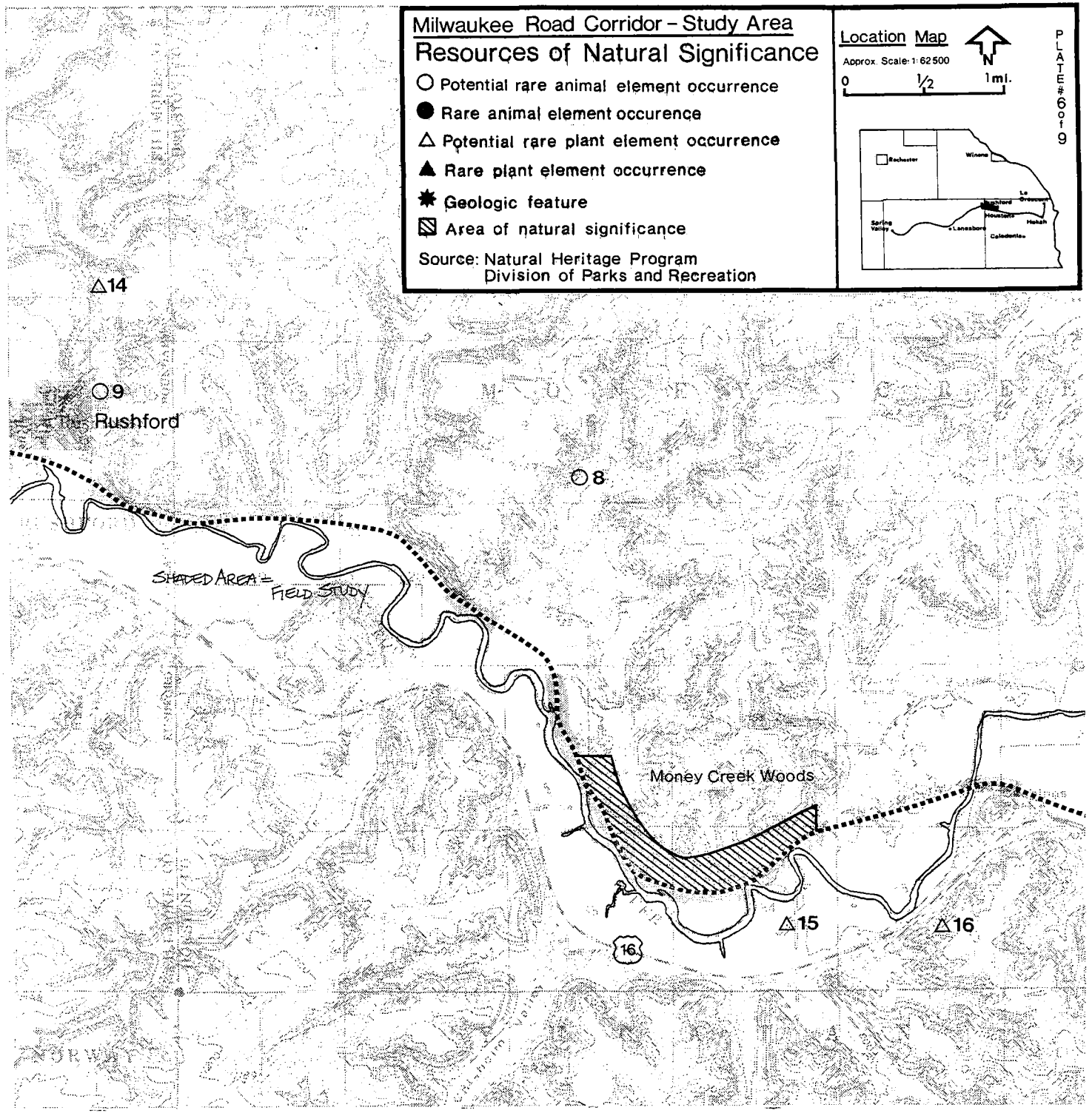
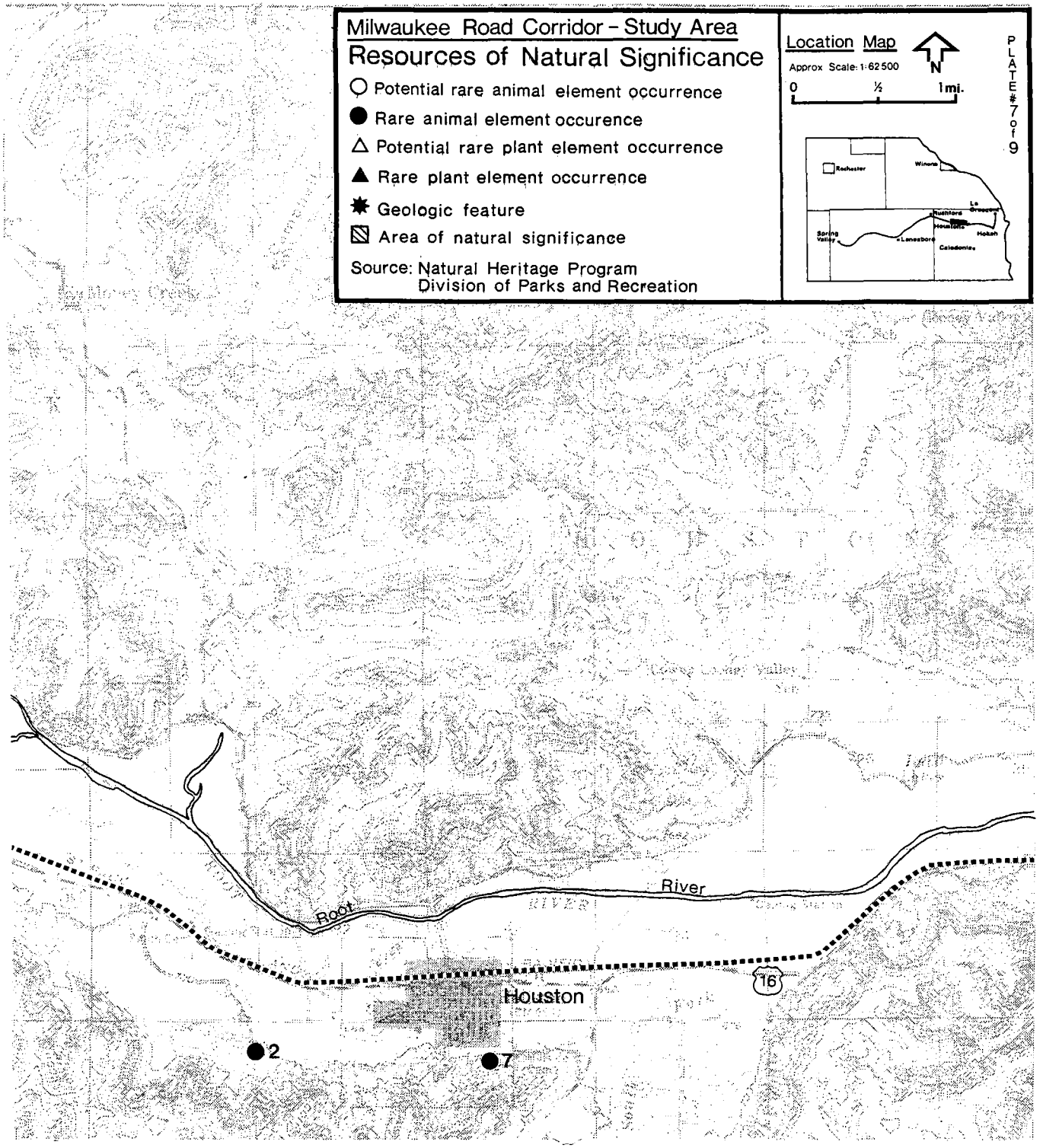


PLATE #4 of 9


Milwaukee Road Corridor - Study Area
Resources of Natural Significance
Potential rare animal element occurrence
Rare animal element occurence
Potential rare plant element occurrence
Rare plant element occurrence
Geologic feature
Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx. Scale: 1:62500
0 ½ 1 mi.
N
PLATE #5 of 9
Rushford
Peterson
16
5○
△13
SHADED AREA = FIELD STUDY


Milwaukee Road Corridor - Study Area
Resources of Natural Significance
Potential rare animal element occurrence
Rare animal element occurence
Potential rare plant element occurrence
Rare plant element occurrence
Geologic feature
Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx. Scale: 1:62500
0
1/2
1 mi.
N
PLATE #6 of 9
Rochester
Winona
Rushford
Houston
Lanesboro
Caledonia
Spring Valley
Hokah
△14
○9
Rushford
○8
SHADED AREA = FIELD STUDY
Money Creek Woods
△15
△16
16


Milwaukee Road Corridor - Study Area
Resources of Natural Significance
Potential rare animal element occurrence
Rare animal element occurence
Potential rare plant element occurrence
Rare plant element occurrence
Geologic feature
Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx Scale: 1:62500
0
½
1mi.
N
PLATE #7 of 9
Rochester
Winona
Rushford
Houston
Hokah
Spring Valley
Lanesboro
Caledonia
Root
River
Houston
16
2
7

Milwaukee Road Corridor - Study Area

Resources of Natural Significance

- ○ Potential rare animal element occurrence
- ● Rare animal element occurence
- △ Potential rare plant element occurrence
- ▲ Rare plant element occurrence
- ✸ Geologic feature
- ▨ Area of natural significance

Source: Natural Heritage Program
Division of Parks and Recreation

Location Map

Approx. Scale: 1:62500

0 ½ 1 mi.

N

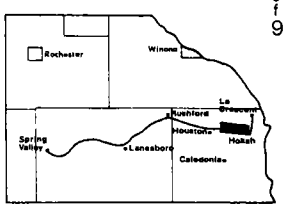
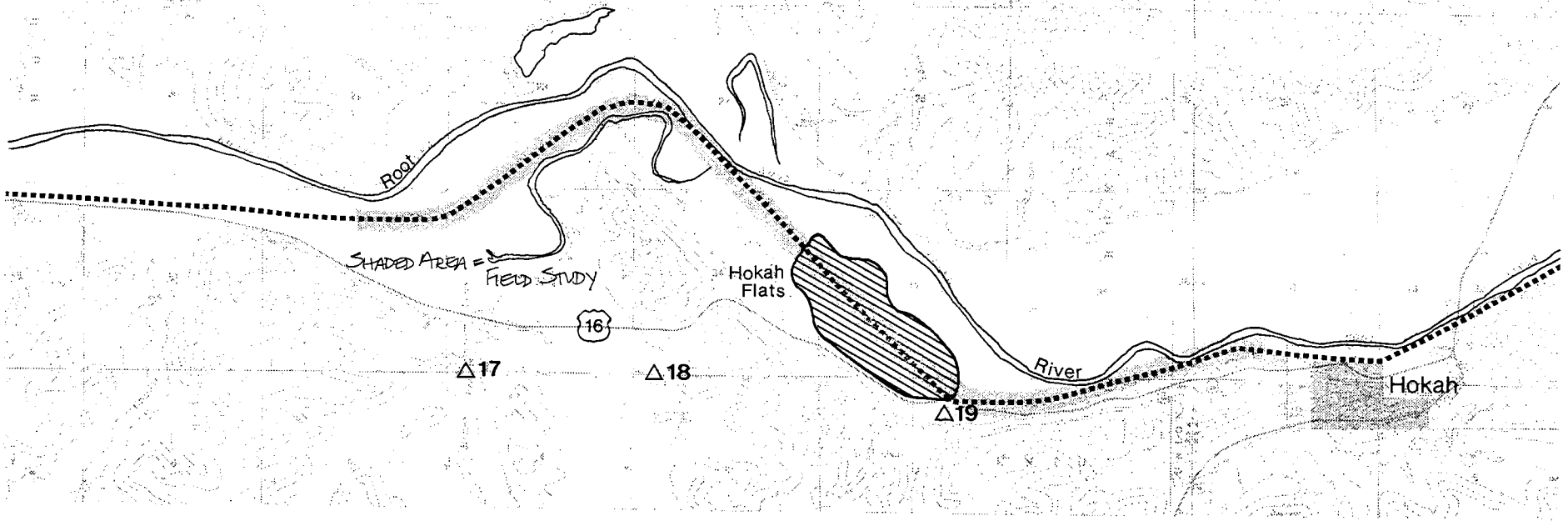
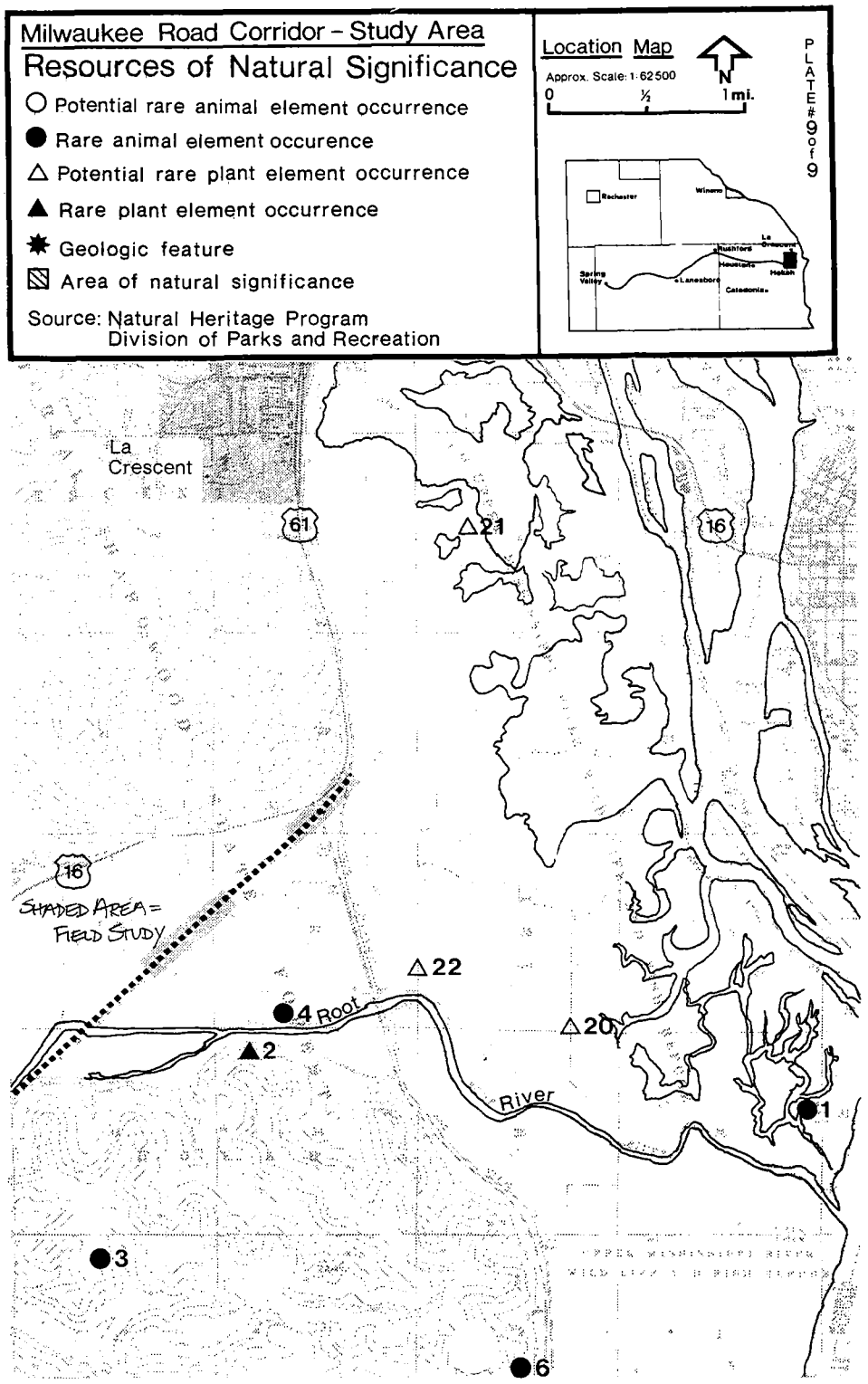


PLATE #8 of 9




Milwaukee Road Corridor - Study Area
Resources of Natural Significance
Potential rare animal element occurrence
Rare animal element occurence
Potential rare plant element occurrence
Rare plant element occurrence
Geologic feature
Area of natural significance
Source: Natural Heritage Program
Division of Parks and Recreation
Location Map
Approx. Scale: 1:62500
0
½
1 mi.
N
PLATE #9 of 9
Rochester
Winona
Rushford
Houston
Lanesboro
Caledonia
La Crescent
61
16
△21
△22
△20
16
SHADED AREA = FIELD STUDY
●4 Root
▲2
River
●1
●3
●6