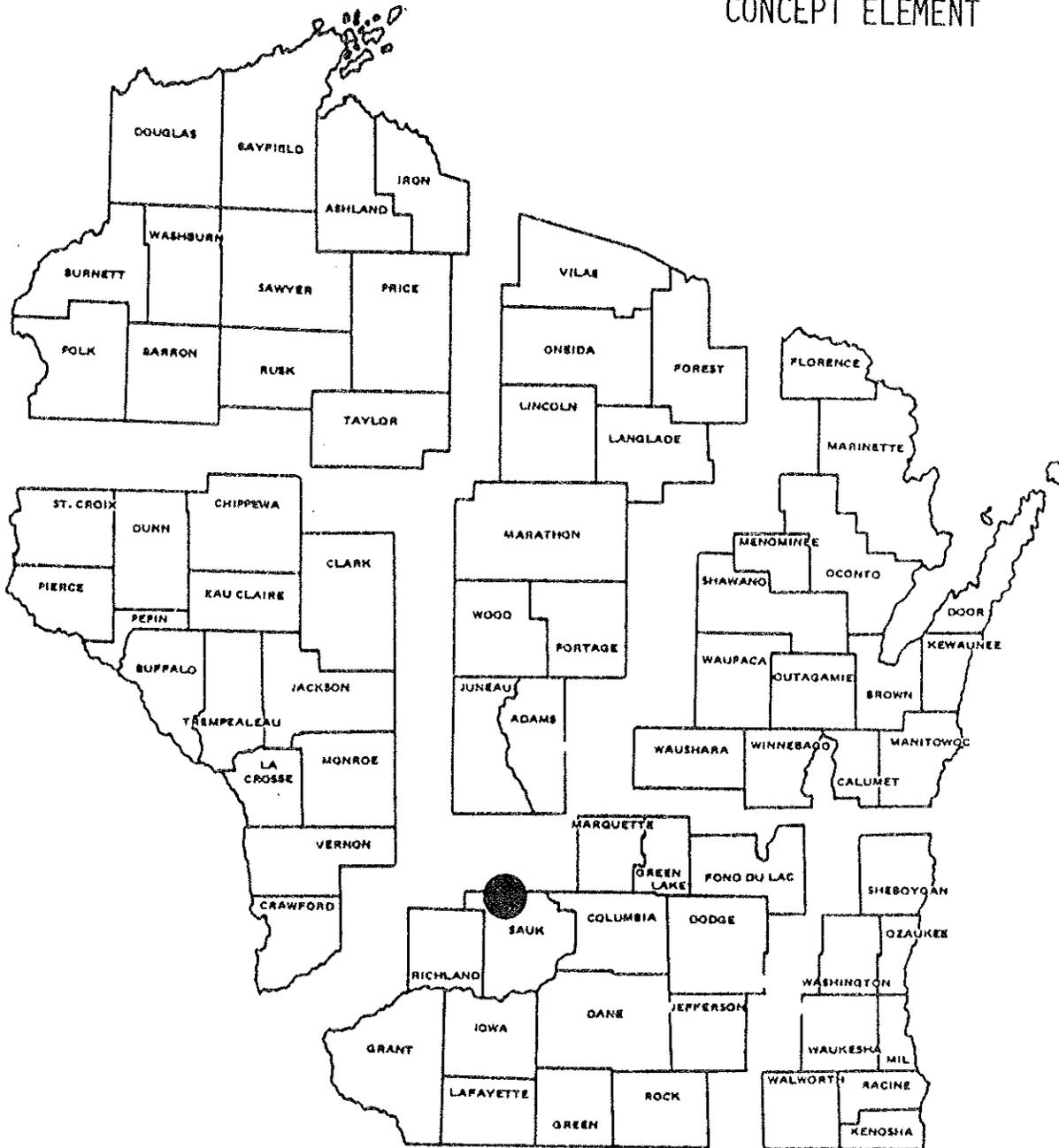


HULBURT CREEK FISHERY AREA  
 MASTER PLAN  
 CONCEPT ELEMENT



PROPERTY TASK FORCE:

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DATE

WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
 MADISON, WISCONSIN



Hulburt Creek Fishery Area  
Master Plan

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## TASK FORCE STATEMENT

Hulburt Creek, located in Sauk and Juneau Counties lies in a shallow, sheltered valley draining a portion of the driftless area of Wisconsin. Traditionally a brook trout stream, capable of highly adequate natural reproduction, Hulburt Creek has, in recent years, deteriorated badly. As the subject of a plan to privately dam and flood the valley, the watershed was logged, reverted to brush and was ultimately taken over and severely damaged by beaver.

Today, after the plan to flood the valley was rejected by the Department of Natural Resources and the courts, major portions of the trout-producing segment of the stream lie in shambles, beaver dammed, with extensive shallow, silted water-warming widespreads that limit trout natural reproduction and carrying capacity.

This master plan proposes the purchase of 550 acres of fee title lands controlling the watershed and 4.0 miles of stream thread in the valley. Of this amount, 325 acres or almost 60 percent are owned by a commercial bank that acquired the developer's lands, and the remaining 225 acres, or 40 percent are privately held by 3 separate landowners. An easement area, on 1.75 miles of the lower portion of the stream is also proposed.

Included in the proposed fee title lands are 3 natural areas encompassing 111 acres. They include scenic rock bluffs and outcrops, a waterfall, and various species of tree stands, including red and white pines.

Acquisition of the area includes lands rich in wildlife including deer, squirrels, rabbits and raccoon, to which the public would have access.

The Master Planning Task Force for the Hulburt Creek Fishery Area recommends approval of the initial concept of purchase of 550 acres approved by the Board of Natural Resources in order to move expediently on acquisition. A highly recommended additional alternative includes purchase of parcels of 3, 18 and 60 acres necessary for access and for protection of scenic values.

A goal of acquiring a secluded trout fishery in the southern part of the state is almost unheard of; a Class I brook trout fishery in the southern part of the state is almost unknown. Hulburt Creek is potentially both. Lack of action to acquire the lands by the DNR will inevitably result in the private development of the area and its possible deterioration. Acquisition of the area will be the first step in the restoration of this unique resource.

GOAL AND OBJECTIVES  
For  
Hulburt Creek Fishery Area

I. Goal:

- A. To protect and manage a naturally reproducing trout fishery while providing for other uses which are not detrimental to the fishery interests.

II. Objectives:

- A. To provide for the public, a scenic and "wild" type of trout fishing experience on 2.25 miles of stream.
- B. To provide public access for trout fishing along an additional 1.75 miles of stream.
- C. To provide for state fish habitat improvement and development rights along 4.0 miles of trout stream.
- D. To protect, manage and develop 8.0 surface acres of trout stream for a self-sustaining trout population having a fall standing stock of 100 pounds to 125 pounds of trout per acre.
- E. To provide for 2,100 man hours of public hunting on approximately 550 acres of land, including 1,000 hours of big game hunting, 400 hours of raccoon hunting, 500 hours of upland game hunting and 200 hours of waterfowl hunting.
- F. To manage the majority of the lands and vegetation not required for fishery management for the production of wildlife.
- G. To identify and protect specific limited areas of natural or scientific values.
- H. To crop forest products surplus to fish, wildlife and natural areas requirements.
- I. To provide for 4,000 man hours of day use activities including hiking, nature study and cross-country skiing where compatible with the other uses of the property.
- J. To provide for the activities of up to 20 trappers per year harvesting mink, muskrat, racoon and fox.

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## I. Background Information

### A. Introduction

It is proposed that the Department of Natural Resources acquire approximately 4.0 miles of Hulburt Creek in Sauk and Juneau counties as a new fishery area.<sup>1</sup> The primary objective of this purchase is to provide and maintain for public use an existing unique, scenic and "wild" type of trout fishing experience on a potential Class I trout stream. In order to provide for and protect this fishing experience, it is proposed to purchase the stream corridor, the valley walls and bluffs, and some adjacent uplands.

Other public uses that are intended to benefit significantly from this proposal are compatible, non-motorized day-use activities including hunting, trapping, hiking, cross-country skiing and nature study.

Areas of unique biological, aesthetic, natural and historical value have been identified and will be protected.

In the determination of the project<sup>2</sup> boundaries, there were four major considerations. The first was the protection of the "wild" and scenic values associated with fishing the stream from any intrusion of development on the adjacent bluffs and uplands. The second was to keep the purchase price as low as possible by including the least amount of high priced developable uplands possible. The third was to make the project as desirable as possible to the bank holding much of the property by leaving it with as much saleable and developable uplands as possible. The fourth was to have readily definable boundaries. The boundaries were set up a minimum of 300 feet back from the edge of the bluffs, and were then squared off to straight line parts of forties.

Three small parcels of land that are not necessary for the achievement of the primary project goal have been included within the project area. One parcel has possible archeological values; the second parcel has natural area values, protects the headwaters of the West Branch from erosion and siltation, and includes a wetlands; the third parcel protects the headwaters of the North Branch from erosion and siltation and provides access to the upper end of the North Branch from County Trunk "K".

The project as proposed includes approximately 2.25 miles of trout stream and 550 acres of land. At the present time, development within the project boundaries includes one older home with minimal outbuildings, one interior town road and a short stretch of a club snowmobile trail. The residence, currently a rental unit, would be purchased and razed. The town road would remain. The snowmobile trail is on the fringe of the property and will not significantly interfere with the other uses of the property. It will be left as is.

The land within the project is presently owned by four separate landholders including the bank. About 90 acres of existing or potential agricultural lands are included within the project boundaries.

The project area, although a considerable distance (1.5 to 3.0 miles) from the environs of the City of Wisconsin Dells, is annexed to it. All necessary and controlling parties have agreed in principal to the detachment of this area from the city upon optioning by the DNR of the Bank's property. Informational meetings held with the Wisconsin Dells city council and the Sauk County board in 1978 indicate good local support or acceptance of the project.

A secondary, but integral part of this proposal is the purchase of fish management easements along Hulburt Creek from the lower end of the fee title project area to the Fort Dells Amusement Park. This portion of stream is 1.75 miles long and has significant fishery values. Because of existing development and land use, the public use potential of this segment of stream does not demand fee title acquisition and can be realized through an easement program.

### B. Location

The project is approximately 1/3 of the distance from the Illinois border to the Michigan border on a due north line through Wisconsin Dells. It lies 3/5 of the distance from Lake Michigan to the Mississippi River on a due west line through Wisconsin Dells. This places the project area almost in the center of the southern half of the state.

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<sup>1</sup>References throughout the document to the fishery area include both the fee title area and easement area.

<sup>2</sup>References throughout the document to the project or project area refer only to the fee title area. References concerning the easement area specifically will be referred to as such.

The state highway map shows the location of many population centers that would be expected to contribute users to the project site. They include:

<u>City</u>	<u>Mileage</u>
Madison	53
Beaver Dam	56
Fond du Lac	76
Oshkosh	82
Janesville	87
Beloit	99
Milwaukee	116
Chicago	190

The project is located in the very northeast corner of Sauk County and the southeast tip of Juneau County. Approximately 90 percent of the proposed project area lies in Sauk County. The Cities of Reedsburg, Baraboo and Portage are within 20 miles of the project. The City of Lake Delton is within 3 miles of the project. The Wisconsin Dells recreation area lies approximately 2 miles from the project site. Hulburt Creek empties into the Wisconsin River approximately 0.25 miles below the Wisconsin Dells dam. (Figure 1)

Interstate 90-94 crosses the easement area of Hulburt Creek and has an interchange with State Highway 13 within ¼ mile of the project site. Highway 13 crosses Hulburt Creek one mile below the project site. County Trunk "H" and Highway 13 intersect near the Highway 13 bridge over Hulburt Creek. County Trunk "H" then crosses Hulburt Creek upstream at the lower end of the project area. A combination of Lage and Birchwood town roads cross Hulburt Creek in the upper 1/3 of the project area near the Sauk-Juneau county line. County Trunk "J" abuts the very northern edge of the project in Juneau County.



C. Setting

Hulburt Creek originates in a series of picturesque hills and glens. The stream drops quickly out of these hills into a narrow, steep-walled valley and finally into a wide flat floodplain. The project surrounds the stream as it comes out of hills and down through the narrow valley. The hills, glens and valley are "wild", scenic and relatively undisturbed. Not only is development virtually nonexistent within the project boundaries but with the exception of the one house, development is not visible from the main part of the valley floor. A combination of agricultural lands and forested lands surround the project.

The lower part of the stream runs through a wide, flat floodplain and is not at all secluded. This part is within sight and sound of agricultural lands, highways and some limited development. A fish management easement is proposed for this portion of the stream. (Figure 2)

Before the lower section of the stream empties into the Wisconsin River it flows through a series of concrete canals for the Fort Dells Amusement Park. The water in the canals is impounded by a small dam operated by Fort Dells. No acquisition is planned on this portion of the stream.

D. History of the Project Area

Because of its proximity to Wisconsin Dells, Hulburt Creek has long been influenced by this hub of outdoor recreational activity. Of particular consequence have been past attempts to impound the main stream or its tributaries.

In 1933, a concrete dam was built across the West Branch of Hulburt Creek. The dam is six feet high and 25 feet long. The impoundment behind this dam is approximately 0.1 surface acre and was probably intended to serve as a trout pond. The impounded area is full of silt and has no fish potential. In fact, it probably never did function properly because of location and flood problems. This dam lies immediately above a scenic waterfall, is within the project boundaries and detracts from the aesthetics and naturalness of the area.

In 1949, a landowner on Hulburt Creek proposed to construct an earthen dam across the stream in the middle of the project area. The purpose of the impoundment was to create a private fishing lake. This dam would have flooded a large segment of the tamarack swamps that existed there at that time, and seriously damaged water quality below the site. The dam was not built.

As previously mentioned, a dam below the fishery area presently exists across Hulburt Creek at Fort Dells. In the late 1950's, the Wisconsin Public Service granted the Riverview Boat Line a permit to construct this dam across the very lower end of Hulburt Creek. The purpose of this dam was to raise the water level two feet "to facilitate the operations of a recreational park". The impounded waters do not effect any portion of the stream scheduled for either easement or fee title acquisition.

In the late 1950's and/or early 1960's, a series of impoundments were created on a tributary of Hulburt Creek that lies adjacent and parallel to Trout Road. This tributary joins Hulburt Creek at the very lower end of the proposed easement area. These ponds are presently licensed as a private fish hatchery. Neither the ponds nor the tributary are included in the proposed easement area.

In January 1970, N. E. Isaacson and Associates, Inc., proposed to construct two dams across Hulburt Creek. The primary dam was to be constructed just upstream from County Trunk "H". It would have been 1,000 feet long and 58 feet high. The resulting impoundment would have covered approximately 300 surface acres and had a maximum depth of 30 feet. The elevation of the surface of the proposed impoundment would have been 880 feet Mean Sea Level. A second and much smaller dam and impoundment was to be constructed on the West Branch of Hulburt Creek approximately 1/4 mile upstream from Birchwood Road. Its purpose was to enlarge and deepen the flowed area on the upper reaches of this branch of Hulburt Creek. A residential development of approximately 2,000 lots was envisioned around the perimeter of the two flowages.

Isaacson and Associates purchased or optioned over 1,500 acres in the area, including several farms. Almost all houses and outbuildings within their project boundaries were removed prior to 1970. Extensive logging of the creek valley was carried out by the developer in 1969 and 1970. Of particular note is the logging of a stand of large tamaracks, an uncommon species in southern Wisconsin. Following a nine-day hearing in March 1970, the Department of Natural Resources in December 1970 denied the permit for the dam on the basis of navigability, water quality and protection of the many natural and ecological values. A petition in Dane County Circuit Court for judicial review of the permit denial was dismissed in June 1972.

Twice in the mid-1970's, the Wisconsin Dells City Council approved resolutions directing the city to take action supporting construction of the dam with N. E. Isaacson as developer of the uplands. Neither resolution was pursued.

In 1976, Midland National Bank assumed ownership of the stock of N. E. Isaacson and Associates and in the next year ownership of Isaacson's land passed to the Bank. In 1977, Midland Bank encountered problems and was purchased by a holding company, First Bank System, Inc., of Minneapolis, and became the First Bank-Midland. The Bank currently owns approximately 1,063 acres of land in and adjoining the fishery area.

In mid-December 1976, field personnel of DNR fish management became aware that the lands on Hulburt Creek owned by N. E. Isaacson and Associates had been placed in receivership by the Midland National Bank and that these lands were to be sold off. Initial contacts were made with the Bank in late December of 1976 and efforts were begun to obtain Natural Resources Board approval of a fishery area on Hulburt Creek. In January 1977, the Board authorized the Department to proceed with a feasibility study. In July 1977, the Board approved the feasibility study on the Hulburt Creek Fishery Area and authorized the Department to proceed with project planning and the Environmental Impact Statement. Work on the EIS, in the form of a Preliminary Environmental Report, commenced. In December 1978, work on the PER was halted until objections voiced by some DNR personnel were addressed by the Master Plan Task Force.

In mid-January 1979, work on the PER resumed and work on the Master Plan commenced in earnest. Public meetings on the project proposal have been held in Wisconsin Dells and in Sauk County. One preliminary real estate appraisal on the property has been made.

## II. Management Policies

The acquisition, management, use and development of the Hulburt Creek Fishery Area will be guided by Statutes, Administrative Code and Handbooks relating to the Department of Natural Resources. These policies will be applied to the property in accordance with the assignment of the "uniform classification system of land uses" to the various portions of the property. The land use classifications have been assigned based on the approved "Hulburt Creek Feasibility Study" and on the proposed "Goal and Objectives".

## III. Resource Capability

### A. Geology

The geologic structure of eastern Sauk County consists of Cambrian sandstone over pre-Cambrian rhyolite granite. The fine-to-coarse grained fractured sandstone contains carbonate and iron oxide cement and is permeable. The rhyolite granite is a crystalline igneous rock and is impermeable. The sandstone in the Central Wisconsin River Basin reaches its maximum thickness of 440 feet in the Wisconsin Dells area.

### B. Glacial History

The topography and soils surrounding Hulburt Creek are the result of the area's atypical glacial history. During the Pleistocene Ice Age starting approximately two million years ago, four different continental glaciers covered a large part of the northern hemisphere. During all of these glaciers, including the last advance in the Sauk County area 18,000-20,000 years ago, the southwest portion of Wisconsin, either escaped glaciation or was only thinly covered with ice. Thus, the region is known as the driftless area, and the Hulburt Creek fishery area is included in it. The westernmost edge of the glacier stopped just to the east of the Wisconsin Dells and southeast of Hulburt Creek, leaving a terminal moraine. Between the western edge of the glacier and the resistant hills of the "driftless area" located further to the west, a huge lake with an irregular shoreline was formed. This lake, known as Glacial Lake Wisconsin, covered most of what is now Juneau County, Adams County, the northwest quarter of Columbia County, and portions of other counties. The southern end of the lake which was located in what is now Sauk County including the Hulburt Creek area, is known as Glacial Lake Baraboo. When the glacier melted, the lake was drained by numerous streams leaving glacial lake and outwash deposits behind.

Many of the prominent pre-physiographical features in Sauk and Juneau Counties are pre-glacial in origin. They have been formed by streams eroding away the sandstone and cutting dramatic valleys and side glens with exposed sandstone walls. The largest of these features is the Wisconsin River Dells with vertical sandstone walls as much as 100 feet high along its seven mile length. Hulburt Creek is a small scale example of these erosional forces.

C. Topography

The topography in the project vicinity is quite varied. Rolling uplands dissected by 40 to 60 foot deep steep-walled valleys surround the project and extend east to the Wisconsin River gorge. The uplands lie at elevations of 900 to 940 feet MSL. Some small low-lying marshes are found just to the south of the project. A finger-like series of high ridges and deep valleys lie to the west with elevations from 846 MSL to 1,240 feet MSL.

D. Soils

The soils of Sauk County vary greatly due to the differences in glacial history. According to soil surveys conducted in the 1930's<sup>3</sup>, five soil series, plus peat and rough broken land are found in Sauk and Juneau counties. The five soil series are Boone, Clinton, Dunning, Vesper and Wabash. Soils in the project area are included in an association known as the "sandy soils of the sandstone uplands".

Boone and Clinton are the predominating soils on the slopes and upland areas in the vicinity of Hulburt Creek. These soils are easily erodible, light-colored, low organic forest soils. The most commonly found of these soils in the area are the Boone fine sand and the Boone fine sandy loam. Both of these soils are derived from sandstone, originally were timbered with hardwood and pine and are acidic.

The Boone fine sand is of low agricultural value due to its droughty nature, low fertility and tendency to blow. The Boone fine sandy loam is a fairly good agricultural soil, except on steeper terrain where it is subject to water erosion. The third soil found in this area is the Clinton silt loam. This soil is derived from loess, originally supported hardwood forests and is well drained. This is an important agricultural soil. Rough broken land with sandstone outcrops occur on the bluffs bordering the valleys.

Soils of the Hulburt Creek valley floor in the project area are composed of strips of peat up to 10 feet thick interspersed with small areas of Dunning fine sandy loam, Vesper silt loam, Wabash fine sandy loam and Wabash silt loam. Most of these areas are low, lack natural drainage and are poor agricultural lands. The few limited areas where Wabash silt loam is found on the lower slopes can be considered good agricultural lands.

In the easement area, Vesper silt loam is common along the stream. Associated areas of Boone loam and Clinton silt loam are also found here.

E. Minerals and Mining

Mining in Sauk County is quite limited. The only records of mining of metallic minerals in Sauk County in the past concerns the mining of iron ore around the 1850's in the northwest corner of the county near the Village of Ironton and in the Baraboo Range in the east central part of the county.

Mining today in Sauk County is generally limited to the quarrying of non-metallic mineral deposits such as sand, sandstone and limestone for use in road construction in the area. Some quartzite is quarried in the Baraboo Range and some active sand and gravel pits are located in eastern Sauk County. Some peat exists in the county but little is removed.

In the vicinity of Hulburt Creek, no metallic or non-metallic mineral exploration is known to have taken place and no metallic mineral deposits are known to exist. Most metals do not occur in sandstone which is the upper bedrock material in this area. Some local sand and sandstone has been used in the construction of local roads and building foundations. While peat deposits exist in the main valley of Hulburt Creek, it has not been mined.

F. Weather

The weather station nearest the project area is located at Wisconsin Dells, with other stations located at Reedsburg (Sauk County), Portage (Columbia County) and Dalton and Montello (Marquette County). The area has a continental climate, characterized by four definite seasons and a large annual temperature range. Winters are long, cold and snowy; summers are warm; spring and fall often are short with highly changeable weather. Based on Wisconsin Dells data, January is the coldest month with a mean temperature of 16.60F. July is the warmest month with a mean temperature of 71.20F. Very cold and very hot days are both common in the area. Over a 15-year period at Reedsburg, temperatures 32°F and below were recorded an average of 158 days per year including an average of 30 days per year at 0°F or below; temperatures 90°F and above were recorded an average of 15 days per year. Average annual precipitation at Reedsburg during the same 15-year period was

<sup>3</sup>Work on new "SOIL SURVEYS" for Sauk County and Juneau County is underway. If the results are available in time, this new information will be used in the EIS.

31 inches with the greatest likelihood of rain occurring in June. Thunderstorms are common, occurring on an average of 43 days per year. They are often accompanied by strong winds, heavy rain and large hail. Snowfall has averaged 44 inches per year, although the totals vary greatly from year-to-year. The average date of the first fall freeze is September 28; the average date of the last spring freeze is May 9; the growing season averages 142 days. Prevailing winds are westerly.

#### G. Air Quality

Concurrently with the construction in the 1970's of the two Columbia coal-burning power plants just south of Portage, extensive air monitoring has been conducted at six sites surrounding Portage. Occasional recommended levels of ozone have been exceeded to the west of the power plants, however, excessively high levels of other pollutants have not been recorded. The project area is located in a rural, non-industrial area.

#### H. Watershed

The Wisconsin River Drainage Basin is Wisconsin's largest with a watershed that approaches 12,000 square miles. Originating as a spring-fed stream in southern Vilas County, the Wisconsin River flows 430 miles towards the southwest where it drains into the Mississippi River near Prairie du Chien in Crawford County. All of the lands and waters within Sauk and Juneau counties lie within the Wisconsin River watershed. Hulburt Creek drains a watershed of approximately 20 square miles-- 15 square miles in Sauk County and 5 square miles in Juneau County. While most of the creek lies within the proposed project boundaries, most of the watershed is outside the boundaries. It is estimated that 75 percent of the precipitation that falls on the Hulburt Creek watershed is absorbed and enters the groundwater system.

#### I. Groundwater

Groundwater is a major resource of the central Wisconsin River Basin, and it is generally abundant and of high quality. The groundwater temperature in the central part of the Wisconsin River basin is a relatively constant 49°F to 50°F, an optimum temperature for trout reproduction. This is nearly the same as the mean annual air temperature. Groundwater movement in upper levels is generally from the sides of the basin toward the tributary streams. The deeper regional movement of groundwater is toward the Wisconsin River itself.

Groundwater is used for both public water supplies and extensive irrigation. The potential yield from individual wells in the consolidated sandstone around the Dells area is between 300 and 1,000 gpm. Anticipated yield from the shallower unconsolidated glacial deposits (lake and outwash deposits) are quite low, in the range of zero to 50 gpm.

Hulburt Creek is located near the junction of three separate groundwater provinces and a groundwater zone. The three groundwater provinces are:

1. Paleozoic - water province in the unglaciated southwest part of Wisconsin.
2. Sandplain - water province in central part of Wisconsin.
3. Drift paleozoic - water province in the east part of Wisconsin.

The valley alluvium groundwater zone is a narrow groundwater aquifer associated with glacial outwash deposits in some of the state's major river valleys. On-site observation and groundwater maps logically indicate the main source of water for Hulburt Creek to be the sandplain groundwater province.

Hulburt Creek is primarily fed by groundwater entering the stream directly through its bed and banks. The water is relatively pure, pollution-free water. It enters the stream at a relatively constant year-round temperature of approximately 49°F. There is excellent groundwater recharge throughout the upper 50 percent of the stream with groundwater input into Hulburt Creek being highest in the vicinity of Birchwood and Lage Road. Groundwater recharge in the lower 50 percent of the stream is fair to good. The stream is potentially a cold water stream throughout its entire length.

#### J. Tributary Springs

Some small springs which contribute an insignificant portion of the base flow of Hulbert Creek break out in low spots in the valley floor adjacent to the bluffs. At the spring heads, the water is relatively pollution-free and has a relatively constant year-round temperature. These springs then wind their way across the valley floor and into the stream. As these small spring tributaries flow toward the stream, they are affected by the land and vegetation through which they flow and by the temperature extremes of summer and more particularly of winter. Thus, the waters from the springs may pick up a BOD load and will not be particularly constant in temperature by the time they reach Hulburt Creek.

K. Tributary Streams

The several small tributary streams flowing into the Hulburt Creek project area contribute only a small percentage of its base flow. The source of these tributaries is pure, pollution-free water of relatively constant temperature. The water in these tributaries reaches Hulburt Creek relatively pollution-free with the exception of the tributary that includes the outflow from the private fish hatchery. This tributary has a BOD load, ammonia, nitrites and nitrates. By the time the waters of these tributaries reach Hulburt Creek, they are not a constant temperature.

L. Water Chemistry

Water hardness in the Wisconsin River basin ranges from very soft to extremely hard. The hardness is generally due to the quantity of dolomite chips found in the sandstone. This dolomite is the source of calcium and magnesium carbonates in the water. In the north, there is little to no dolomite and the water is very soft. The water is somewhat harder in the central part of the state where there is some dolomite in the sandstone. In the southwest part of the state, the groundwater runs through a dolomite bed and is extremely hard. The level of hardness in the Wisconsin River basin ranges from less than 5 mg/l to greater than 300 mg/l. The water in the Hulburt Creek area runs through sandstone with moderate amounts of dolomite and has a hardness of 23 mg/l. There are some problems with the local groundwater in the Hulburt Creek area with high levels of iron and dissolved solids.

M. Water Resources

1. Stream Data<sup>4</sup>

Hulburt Creek (Figure 2) is approximately 4.0 miles long. It has a surface area of approximately 8.0 acres, a normal discharge of approximately 5.0 cfs and a mean annual flow of approximately 8.0 cfs. It has an average gradient of 13 ft/mi, however, the upper 1/3 has a much higher gradient than this. The stream has a pH of 6.9, a total alkalinity of 23 mg/l and a specific conductivity of 84 mmhos/cm. The 100-year flood would have an estimated peak discharge of 1,540 cfs. However, flooding is not considered to be a serious problem for this stream as it is estimated that on the average 75 percent of the precipitation falling on the watershed is absorbed.

The upper reaches of Hulburt Creek are composed of the North Branch of Hulburt Creek which originates in Juneau County and the West Branch of Hulburt Creek which originates in Sauk County. The North Branch begins to have a defined channel and permanent flow as it leaves a small tag alder marsh area about 0.5 miles west of the project boundaries. Flowing in an easterly direction, the North Branch begins to fall rapidly through a narrow, rocky and steep-walled glen as it enters the project area.

Approximately 0.75 miles from its origin, the North Branch turns and flows in a southerly direction. At this point, it is joined by a small tributary stream flowing in from the north. This tributary stream begins to pick up permanent flow as it leaves a small tag alder marsh just north of County Trunk "J". It then falls rapidly through a narrow, rocky and steep-walled glen. Approximately 0.25 miles below County Trunk "J", the tributary joins the North Branch. At this point, both streams are falling rapidly over a bedrock bottom and have flows of less than 0.1 cfs. There is little to no groundwater input in this area.

Approximately 1.0 mile from its origin, the North Branch enters Sauk County. At this point, groundwater rapidly begins entering the stream. The stream is still falling rather rapidly, however, the bottom type has now changed from bedrock to a combination of short gravel riffles followed by shallow sand-bottomed pools. Less than 0.25 miles further, the North Branch crosses under Lage Road. By now the stream has a flow of 0.75 cfs and an average width of approximately 3 feet. Groundwater input at this location is high. Less than 0.25 miles below Lage Road, the North Branch and the West Branch join. In this reach, the stream's gradient begins flattening out. Gravel riffles are still followed by sand-bottomed pools. However, the size and depth of the pools increases significantly and shallow flats are found below the pools. The stream now has an average width of 6 feet. Groundwater input continues quite high.

The West Branch of Hulbert Creek begins to pick up permanent flow about the time it enters the project area. Then flowing in an easterly direction from this origin, the West Branch drops quickly into a narrow, steep-walled glen with rock walls 20-30 feet high. Within 0.15 miles from its origin, the West Branch has a flow of approximately 0.1 cfs. It is impounded

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<sup>4</sup>The stream will be described according to the permanent characteristics. Existing alterations resulting from current levels of beaver activity will be discussed in the Management Problems section of this document.

at this point by the previously mentioned dam. Within 100 yards of passing over the dam, the West Branch falls almost vertically over a 10-15 foot high shelf of bedrock into a 0.01 acre, 8-foot deep plunge pool.

Within 0.25 miles of its origin, the West Branch is joined by a tributary coming in from the south. This tributary originates in a fairly large tag alder flats and begins to have a defined channel and permanent flow at about the point where the project boundary transects the alder flats. Approximately 0.25 miles from its origin, the tributary joins the West Branch. At this point, both streams have monotype sand bottoms and flows of only about 0.1 cfs. Groundwater input is weak.

After its junction with this tributary, the West Branch rapidly begins to pick up groundwater. Short gravel riffles followed by shallow sandy pools begin to appear. Less than 0.75 miles from its origin, the West Branch crosses under Birchwood Road. By now, the stream has a flow of 0.75 cfs and an average width of approximately 3 feet. Groundwater input is high. Within 0.25 miles, the West Branch joins the North Branch. In this reach, the gravel riffles are more distinctive, the sandy pools are larger and deeper and flats are beginning to show up. The stream now has an average width of 6 feet. Groundwater input continues quite high.

From the junction of the North and West Branches, downstream to where it crosses under the County Highway "H", Hulburt Creek meanders for approximately 20 miles through a flat, boggy valley that is 300 feet wide. In the upper portion of this valley, approximately 0.75 miles of stream, the creek has reasonably good gradient. The bottom types are composed of a series of gravel riffles and sandy pools and flats. In this reach, the stream has a flow of 3.0 cfs and an average width of 10 feet. One intermittent tributary enters the stream in this reach. Groundwater recruitment in this area is excellent.

In the mid-portion of this valley, approximately 0.75 miles of stream, the creek becomes quite flat. The bottom types are composed of scattered gravel riffles and long sandy flats. In this reach, the stream has a flow of approximately 3.25 cfs and an average width of 20 feet. One intermittent tributary enters the stream in this reach and groundwater recruitment is negligible.

In the lower portion of this valley, approximately 0.5 miles of stream, the creek picks up a little gradient again. The bottom types are composed of occasional rubble and gravel riffles interspersed with large pools and long sand bottom runs. In this reach, the stream has a flow of approximately 4.0 cfs and an average width of 15 feet. Two small tributary streams and one intermittent tributary enter the stream in this reach. The one tributary stream has a flow of less than 0.05 cfs and has no fishery value of its own. The other tributary has a flow of approximately 0.1 cfs and may have a very limited forage fish value of its own. Groundwater input in this reach is fair.

From County Highway "H" downstream to where it enters the Fort Dells canals, Hulburt Creek flows for approximately 1.75 miles through a flat, firm bottom valley that is 0.25 to 0.50 mile wide. The stream has reasonably good gradient. The bottom types are a series of rubble and gravel riffles separated by large pools and long sand flats. In this reach, the stream has a flow of 5.0 cfs and an average width of 15 feet. There is fair groundwater recruitment throughout this area.

Just above Trout Road in the lower portion of this reach, about 0.25 miles of stream were channelized by the Department of Transportation when it made State Highway "13" a four lane road. This entire channelized portion is presently one continuous sandy flat.

One tributary enters Hulburt Creek in the reach towards its lower end. It has a flow of 0.5 cfs and has some forage fish value of its own. Some of the springs that contribute to it are impounded and licensed as a private fish hatchery approximately 0.5 miles before it enters Hulburt Creek.

## 2. Aquatic Invertebrates

A survey of the aquatic invertebrates was conducted on July 10, 1978. Four locations were surveyed and are shown in Table 1. Site #1 is located on the West Branch of Hulburt Creek upstream of Birchwood Road. Site #2 is located just downstream from the junction of the West and North Branches of Hulburt Creek. Site #3 lies a short distance upstream from County Trunk "H". Site #4 lies just upstream from Fort Dells Amusement Park.

Table 1 - Invertebrates of Major Orders at Four Sites Within the Waters of the Hulburt Creek Fishery Area, 1978.

<u>Invertebrates Classification</u>	<u>Common Name</u>	<u>S #1</u>	<u>S #2</u>	<u>S #3</u>	<u>S #4</u>
<u>Class Insecta</u>					
Order Trichoptera	Caddisflies*	A	X	P	P
Order Ephemeroptera	Mayflies*	P	X	X	P
Order Odonata	Dragonflies	P	A	P	P
Order Coleoptera	Beetles	P	P	P	P
Order Diptera	Flies	C	A	A	A
Family Chironomidae	Midge Flies	C	A	A	A
Family Simuliidae	Black Flies	C	P	P	P
Order Hemiptera	Bugs	P	A	A	C
Family Corixidae	Water Boatman	X	X	A	P
<u>Class Eucrustacea</u>					
Order Amphipoda	Freshwater Shrimp*	C	C	P	C
Order Decapoda	Crayfish	P	X	P	P
Order Isopoda	Sow bugs	X	X	X	X
<u>Class Gastropoda</u>					
	Aquatic Snails	C	C	A	C

A - Abundant; C - Common; P - Present; X - Not Present at Site  
 \* Cold water indicator organisms found in trout waters.

The distribution and number of the various orders indicate that while Hulburt Creek is a potentially productive and high quality cold water resource, it is presently stressed. Of the four sites surveyed, Site #1 showed the best distribution and numbers of indicators of higher water quality. The substrate in this station was 50 percent sand and 50 percent gravel-rubble. This site lies above and is unaffected by the upper limits of beaver activities. This area is close to the upper limits of groundwater recruitment and the stream is quite small.

Site #2 showed the weakest distribution of invertebrate orders. Cold water indicator organisms were replaced by organisms associated with warm water or sluggish streams. The substrate was composed of a shifting sand bottom with heavy siltation. This site is located immediately downstream from an abandoned beaver dam. Normally, this particular area should have the highest quality water in Hulburt Creek, with the richest and most diverse benthic community in the system. This area has excellent groundwater recruitment and the stream is medium size. Areas of gravel are buried under the shifting sand and silt bottom.

Site #3 showed a fair distribution of invertebrates. However, the densities were weighted toward the warm and sluggish water indicators. The cold water indicators were scarce to absent. The substrate was composed of a sand bottom intermixed with silt. This area lies below a beaver dam that was abandoned a considerable time ago. This area should have high water quality. A rich and diverse benthic community should be located at this site. There is some groundwater recruitment and the stream has become fairly large. Areas of gravel and rubble are buried under the shifting sand and silt.

Site #4 showed a good distribution of Orders and a somewhat surprisingly high number of indicators of higher water quality. The substrate was composed of sand mixed with some gravel and rubble. This site is located a considerable distance downstream from the lowest site of beaver activity. This area should have fairly good water quality. There is some groundwater recruitment in and above this area and the stream is fairly large.

### 3. Aquatic Flora

During the survey of the aquatic invertebrates on July 10, 1978, the species and densities of aquatic vegetation were noted. The sites are the same locations as the aquatic invertebrate collections. The genera and relative abundance of the aquation forms of vegetation found are shown in Table 2.

Table 2 - Genera and Relative Abundance of Aquatic Vegetation Found at Four Sites Within the Waters of Hulburt Creek Fishery Area, 1978.

<u>Genus</u>	<u>Common Name</u>	<u>Site 1</u>	<u>Site 2</u>	<u>Site 3</u>	<u>Site 4</u>
<u>Nasturtium</u> sp.	Watercress*	P	X	X	P
<u>Ranunculus</u> sp.	Buttercup	X	X	X	C
<u>Potamogeton</u> sp.	Pondweed	X	C	A	C
<u>Vallisneria</u> sp.	Water Celery	P	A	A	C
<u>Sagittaria</u> sp.	Arrowhead	X	A	C	X

(A - Abundant; C - Common; P - Present; X - Not Present at site)  
\*Generally found in or near cold water spring areas.

Aquatic vegetation which has been noted during various earlier surveys of Hulburt Creek and which may or may not be present at this time include green algae (Spirogyra sp.), coontail (Ceratophyllum sp.), sedges (Cyperus sp.) and smartweed (Polygonum sp.).

Site #1 is above and unaffected by beaver activity. Site #4 is a considerable distance below any beaver activity. Sites #2 and #3 are located immediately below old beaver impoundments. The beaver activity has had a major effect on the aquatic vegetation.

The vegetation is heavily weighted towards indicators of warm or sluggish water conditions by both abundance and genus. Site #1 is located in an area that has a relatively dense canopy, thus the area is only sparsely vegetated. However, watercress is present at this site and is as abundant as any other plant. Site #4 has a fair population of both warm and cold water indicators. However, site #3, which should have the highest quality water in the stream, and site #2 have abundant amounts of warm or sluggish water indicators and lack cold water indicators.

### 5. Fish<sup>5</sup>

Throughout much of its length, Hulburt Creek is historically and potentially a Class I brook trout stream, having the size, water quality and reproductive areas to make an important contribution to the trout fishery of southern Wisconsin.

As an example of its productivity, on December 2-4 and 8-10, 1969, after Isaacson and Associates applied for a permit to create an impoundment lake by damming the stream, a single run shocker survey of the stream was made by DNR personnel to evaluate the fish population present at that time and it is reported in Table 3. The results of the survey are not a population estimate, which would have required a double run. However, the fish manager in charge of the survey notes that the numbers of trout taken, (when beaver and their dams were not as widespread as now), may be only a poor indication of their actual totals due to adverse weather and icing conditions encountered by the survey crew and the actual populations could well have been several times the numbers shown.

<sup>5</sup>The fishery values will be described based on past stream shocker surveys and an evaluation of the other "Water Resources" information. Existing fishery values are the result of current levels of beaver activity and are discussed in the "Management Problems" section of this document.

Table 3. Numbers of Brook Trout (Salvelinus fontinalis) and Brown Trout (Salmo trutta) captured per station in a single run shocker survey of Hulburt Creek, Sauk County, December 2-4 and 8-10, 1969.

Station Number	Brook Trout Captured:			Brown Trout Captured:			Total Trout Taken
	Number	Range in inches	Average Length (inches)	Number	Range in inches	Average Length (inches)	
1	79	3.0-12.4	6.6				79
2	461	2.0-12.0	5.7	4	4.6-15.0	7.6	465
3	695	1.8-12.0	3.9	5	2.6-4.7	3.8	700
4	575	2.1-11.0	4.4	2	3.5-3.9	3.7	577
Totals	1,810	1.8-12.4	4.6	11	2.6-15.0	5.2	1,821

\* Station #1 - Covered 5,340 feet of stream upstream from C.T.H. "H".

Station #2 - Covered 3,975 feet of stream from the upstream terminus of Station #1 to the junction of the north and west branches.

Station #3 - Covered 2,730 feet of stream on the north branch upstream from the junction of the west and north branches.

Station #4 - Covered 3,730 feet of stream on the west branch upstream from the junction of the north and west branches.

Table 3 shows that a total of 1,821 trout were taken in 15,775 feet of stream during the survey or an average of one trout for every 8.66 feet of stream. Analysis of length frequency distributions of trout taken at each station shows that at the farthest downstream Station #1, 37 of 79 trout, or 46.8 percent were of legal (6.0 inches) size. Farther upstream, at Station #2, 205 of 465 or 44.1 percent were of legal size. At the two upstream stations, 3 and 4, nearest the spawning grounds, only 78 of 700 (11.1%) and 103 of 577 (17.9%) were of legal size, as might be anticipated. The survey clearly shows that more than adequate natural reproduction of brook trout occurs and that the stations above the junction of the north and west branches are major spawning areas.

Other species taken during the survey included the slimy sculpin Cottus cognatus, an indicator species with living requirements comparable to brook trout, and warm-water species including the creek chub Semotilus atromaculatus, white sucker, Catostomus commersoni, brook stickleback Culaea inconstans, blacknose dace, Rhinichthys atratulus and the fantail darter, Etheostoma flabellare.

In addition, surveys after 1969 have found samples of several other species including:

Tiger trout - Salvelinus fontinalis X Salmo trutta - rare  
 Coho salmon - Oncorhynchus kisutch - rare  
 Redside dace - Clinostomus elongatus - common  
 Central mudminnow - Umbra limi - common  
 Common shiner - Notropis cornutus - common

At present, the stream sections surveyed in Stations 1 to 4 are in poor condition as a result of beaver activities. While an up-to-date study is not available to compare numbers of trout present today to the 1969 survey, the stream still maintains a constant flow of quality water. Only the optimum physical qualities of proper width, depth and bottom materials need to be restored following beaver removal to return the stream to maximum brook trout production.

The coho salmon found in a 1974 survey were thought to be escapees from the fish hatchery on the tributary stream, as were the few brown trout and the tiger trout. The remainder of the species are present as naturally reproducing populations.

While not included in the 1969 survey, from County Trunk "H" downstream about 1.75 miles to the Fort Dells Amusement Area, the stream has good potential for carrying adult brook trout. This portion of the stream could also support an excellent population of brown trout, but it is not recommended for that use.



N. Terrestrial Resources

1. Flora

Southern Wisconsin, including the Hulburt Creek area, lies within what historically was a vast fire-maintained oak savanna plant community. This community was dominated by scattered large burr and white oaks in expanses of prairie grasses, especially the bluestems. As a result of its diverse topographic features and geologic history, the proposed project area contains a diverse and unusual complex of plant communities. (Figure 3)

In a 1978 Forest Reconnaissance Survey, 12 terrestrial vegetation cover types were identified within the relatively small proposed project area. Forest types comprise 62 percent of the area. Grasslands and cropland comprise 25 percent of the area. Wetland types comprise 13 percent of the area. The cover typing is based on Curtis'<sup>6</sup> classification (1959) and all 12 are discussed below in the order of decreasing acreage.

- a. Southern dry mesic forest stands comprise 33.5 percent of the project lands and are found mainly on upland areas or steep south facing slopes along the main valley. Dominant tree species are black, white and red oaks. Associated tree species include shagbark hickory, bitternut hickory, jack pine, red maple, white birch, aspen and black cherry. A shrub layer dominated by blackberries, hazelnut and prickly ash is common in this type. Sumac is found along borders and in openings.

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<sup>6</sup>Curtis, John T.

1959. The vegetation of Wisconsin - An ordination of plant communities. Univ. Wis. Press. 657 p.

- b. Croplands occupy 18.4 percent of the project area and are located mainly on gradual south-facing slopes and cleared uplands on the northeast side of the main valley. Less than 10 percent is presently being cropped.
- c. Northern dry mesic forest occurs primarily on steep sandstone bluffs along the main valley and side glens and occupies 16.2 percent of the proposed project. White pine is the dominant tree species. However, substantial quantities of red maple, red pine and red oak are found in some areas. Other associated tree species include white birch, white ash and black cherry. Ground cover species include trailing arbutus, large-leaved aster, oak fern and small enchanter's night shade.
- d. Alder thicket is a tall shrub community found in the valley floors. Much of this community has been destroyed by flooding resulting from beaver dams. This type occupies 8.1 percent of the area. Speckled alder is the dominant shrub species and wild currant, red osier dogwood, spirea, elm, willow, red maple and some remaining tamarack are associated with this cover type. The ground layer includes blue joint grass, wool grass, sedges and goldenrod.
- e. Pine plantations, which occupy 7.3 percent of the project, were planted in 1973 on most of the agricultural fields purchased as part of the "Lake Dells" project. Red pine, white pine and white spruce were planted. The red and white pine survived well; the spruce did not.
- f. Grass communities include native prairie grasses, abandoned agricultural fields and areas with herbaceous ground cover. The grass cover type occupies 6.8 percent of the area. Species at Hulburt Creek include brome, quack, bluegrass, timothy, big and little bluestems, bracken fern and sweet clover.
- g. Northern wet mesic forest type covers 2.8 percent of the project, primarily in the bottoms of some of the glens. A few tamarack remain following the 1970 logging. The dominant tree species now found in this cover type is red maple; associated species include black ash, alder, river birch, aspen, American elm and tamarack. The ground cover includes mosses and ferns.
- h. Marsh covers 2.5 percent of the project. These areas are located in the main valley.
- i. Aspen covered 1.5 percent of the proposed project. It is located in the central portion of the project on a sloping valley side of a tributary stream just above the junction with the main valley. White birch is associated with the aspen. This is a successional stage of vegetation which usually grows on disturbed areas, often following cutting or fires.
- j. Pine barrens comprise 1.4 percent of the proposed project. It occupies an upland area on the south side of the main valley. Jack pine dominates this type, with eastern red cedar and black oak also present.
- k. White birch, like the aspen type, is a successional stage. Aspen is associated with the white birch. It is found on a west facing slope near the main valley and covers 1.2 percent of the proposed project.
- l. Northern mesic forest occupies only 0.3 percent of the area. Small patches of it can be found growing on slopes along the main valley and side glens. Red maple, basswood and slippery elm are the dominant trees. White ash, sugar maple, red oak and slippery elm are associated with the dominant species.

The Hulburt Creek project area is unusual in that a number of its plant communities are normally found only in northern Wisconsin or only in the driftless area. Northern cover types found in the Hulburt Creek area include northern dry mesic forest, northern wet mesic forest, northern mesic forest and alder thicket. The northern wet mesic forest is of particular note. A few tamaracks remain in this area and the ground is generally moss covered. This area contains bogs which are uncommon in the southern part of the state. The bogs in the southern part of the state are older than the bogs in the northern part of the state. These bogs overlie beds of peat up to 10 feet thick which contain fossil pollen records that are valued historically. Since boggy habitat is preferred by certain plants such as ferns and orchids, it is possible that some of the state's endangered or threatened plant species also may be found in this area, although none have been found to date.

Some of the driftless area communities found at Hulburt Creek are considered to be uncommon. Both exposed and shaded driftless area cliffs lie within the project area. Cliff communities often contain both endemic and disjunct plant species. The shaded cliff community is particularly notable at Hulburt Creek. These communities are found on the vertical and nearly vertical north-facing cliffs and in the deep glens of the tributaries. These unique microclimates permit the growth of ferns, club mosses, lycopodiums, true mosses, and unusual species, such as Sullivantia renifolia. Other notable cliff plants found here include the polypody, fragile fern and bulblet fern. The cliff communities do not appear as separate cover types in the forest reconnaissance survey due to their small size, scattered locations and appearance on the aerial photographs used for the survey.

No survey focusing on endangered or threatened plant species has been conducted at Hulburt Creek. However, several general plant surveys have taken place on portions of the area, particularly in connection with the Isaacson and Associates Lake Dells Project. One threatened plant species, Habenaria flava, the tubercled orchid has been observed in the Project area, located in a glen off the main valley.

Old stumps indicate that much of the main creek valley was formerly a lowland tamarack forest. In 1968, the valley still contained a number of tamaracks as well as American elm, some willow and dense growths of alder and red osier dogwood. While some beaver may have been present, the stream generally was within its channel.

In 1969 and 1970, N. E. Isaacson and others cut most of the brush and trees from the valley sides below 880 MSL and from the valley floor. Many 50 to 75 year old red and white pine were cut as were many tamarack 50 to 75 feet in height. Extensive shrub regeneration followed the clearing activities. During the December, 1969 fish survey, some beaver dams were present; but in the early 1970's there was significant increase in beaver activity with a number of new dams being built. The resultant flooding produced the current situation where trees are absent throughout large portions of the valley. Fluctuating water levels caused by beaver activity have killed off a high percentage of the few tamaracks that remained after the clearing. The low areas that were logged and have not been flooded have dense growths of shrubs.

The forested uplands within the project area have been logged at various times in the past. The cuttings generally took place on only small to moderate acreages at any one time. Some of the cut over areas were allowed to revert to forested conditions and exist in various stages of succession. Other cut over areas were converted to cropland. Much of the cropland purchased by Isaacson and Associates has been planted to red and white pines and white spruce. While survival of the spruce has been poor, survival of the pines has been quite good. A few areas within the project boundaries still contain limited stands of mature trees particularly red and white pines and some oak. These areas are generally associated with the bluffs, broken lands and glens.

At the present time, the merchantable quantity of timber consists of approximately 2 million board feet of saw timber, predominantly white pine, and approximately 600 cords of pine and oak pulpwood. The merchantable timber is scattered intermittently throughout the project area with most of it located in areas where logging is difficult and accessibility limited. Much of it is located on the bluffs and upland areas which are proposed as natural areas or are considered intrinsic to the aesthetic qualities of the area. Thus, little or no harvest of merchantable timber is anticipated on the fishery area.

## 2. Wildlife

The proposed project area is utilized by substantial populations of many wildlife species. Members of some of the species spend their entire life within the project boundaries and are often limited to one of the habitat types. Members of other species utilize more than one of the habitat types within the project boundaries and in addition may utilize habitat types found outside of the project boundaries such as agricultural fields. Other migratory species utilized the area as a wintering area, summering area or as a stopover and resting place when enroute.

The unique combination of land forms, habitat types and food sources result in the sizeable populations and wide diversity of wildlife in the project area. During a four-hour bird survey of the Hulburt Creek area conducted by one person in 1973, 235 birds representing 51 species were recorded. Casual observations have recorded an additional 13 species.

Table 4. Birds present in Hulburt Creek Area, Sauk and Juneau Counties:

A. Observed during 1973 inventory:

<u>Species</u>	<u>Scientific Name</u>
Green Heron	<u>Butorides v. virescens</u>
*Mallard	<u>Anas p. platyrhynchos</u>
*Wood Duck	<u>Aix sponsa</u>
Red-shouldered Hawk	<u>Buteo lineatus</u>
*Ruffed Grouse	<u>Bonasa umbrellus</u>
Mourning Dove	<u>Zenaidura macroura</u>
Belted Kingfisher	<u>Megaceryle a. alcyon</u>
Downy Woodpecker	<u>Dendrocopus pubescens</u>
Red-Bellied Woodpecker	<u>Centurus carolinus</u>
Red-Headed Woodpecker	<u>Melanerpes e. erythrocephalus</u>
Yellow-Bellied Sapsucker	<u>Sphyrapicus v. varius</u>
Yellow Shafted Flicker	<u>Colaptes auratus</u>
Eastern Phoebe	<u>Sayornis phoebe</u>
Eastern Wood Pewee	<u>Cantopus virens</u>
Crested Flycatcher	<u>Myiarchus crinitus</u>
Eastern Kingbird	<u>Tyrannus tyrannus</u>
Traill's Flycatcher	<u>Empidonax t. traillii</u>
Barn Swallow	<u>Hirundo rustica erythrogaster</u>
Cliff Swallow	<u>Petrochelidon pyrrhonota albifrons</u>
Rough-Winged Swallow	<u>Stelgidopteryx ruficollis serripennis</u>
Blue Jay	<u>Cyanocitta cristata</u>
Common Crow	<u>Corvus brachyrhynchos</u>
Black-Capped Chickadee	<u>Parus atricapillus</u>
White-Breasted Nuthatch	<u>Sitta carolinensis</u>
House Wren	<u>Troglodytes aedon</u>
Catbird	<u>Dumetella carolinensis</u>
Robin	<u>Turdus migratorius</u>
Cedar Waxwing	<u>Bombycilla cedrorum</u>
Warbling Vireo	<u>Vireo g. gilvus</u>
Blue-winged Warbler	<u>Vermivora pinus</u>
Canada Warbler	<u>Wilsonia canadensis</u>
Chestnut-sided Warbler	<u>Dendroica pensylvania</u>
Golden-Winged Warbler	<u>Vermivora chrysoptera</u>
Ovenbird	<u>Seiurus aurocapillus</u>
Yellow-Throat	<u>Geothlypis trichas</u>
Yellow Warbler	<u>Dendroica petechia</u>
Eastern Meadowlark	<u>Sturnella magna</u>
Cowbird	<u>Molothrus a. ater</u>
Bronzed Grackle	<u>Quiscalus versicolor</u>
Red-Wing	<u>Agelaius phoeniceus</u>
Baltimore Oriole	<u>Icterus galbula</u>
Cardinal	<u>Richmondia cardinalis</u>
Rose-Breasted Grosbeak	<u>Pheucticus ludovicianus</u>
Common Goldfinch	<u>Spinus tristis tristis</u>
Indigo Bunting	<u>Passerina cyanea</u>
Towhee	<u>Pipilo erythrophthalmus</u>
Chipping Sparrow	<u>Spizella p. passerina</u>
Field Sparrow	<u>Spizella p. pusilla</u>
Song Sparrow	<u>Melospiza melodia</u>
Vesper Sparrow	<u>Poocetes g. gramineus</u>

B. Observed other than the 1973 inventory:

Great Blue Heron	<u>Ardea herodias</u>
*Bluewing Teal	<u>Anas discors</u>
Bald Eagle	<u>Haliaeetus leucocephalus</u>
Red-Tailed Hawk	<u>Buteo jamaicensis</u>
Bobwhite	<u>Colinus virginianus</u>
Sandhill Crane	<u>Grus canadensis</u>
*Woodcock	<u>Philohela minor</u>
Spotted Sandpiper	<u>Actitis macularia</u>
Ruby-Throated Humming Bird	<u>Archilochus colubris</u>
Pileated Woodpecker	<u>Hylatomus pileatus</u>
Red-Eyed Vireo	<u>Vireo olivaceus</u>
Black and White Warbler	<u>Mniotilta varia</u>
Scarlet Tanager	<u>Piranga olivacea</u>

\*Common Game Birds

Beaver dams and the extensive impoundments associated with them have significantly altered the habitat of the valley floor. The large open water areas have increased waterfowl use of the area. The increased shallows and shoreline have increased shore bird use. The flooded areas and high water tables have eliminated the majority of the woody vegetation in the bottom lands. This has resulted in decreased use of the area by birds associated with alder thickets, etc., such as woodcock, grouse and hummingbirds.

Present beaver numbers at Hulburt Creek are quite high. This is a relatively recent development and has two unrelated causes. The cutting of the trees and old existing brush in the bottoms during 1970 resulted in an explosion of new brush. This tremendous food supply attracted and held beaver. In recent years, the comparative value of beaver pelts has steadily declined. This has been followed by a decrease in trapping efforts and a decrease in animals taken. Fifteen dams or remnants of dams are now located on Hulburt Creek upstream from County Highway "H".

While muskrat populations have probably increased because of the increased acres of water, their populations are not abundant and the numbers of rat houses in the beaver impoundments are quite low. Fluctuating water levels and a poor food supply may be the cause of this. Use of the area by mink is fairly high.

The diverse habitats and vegetational communities and the wide range of successional stages has led to heavy use of the area by a variety of mammals including upland game animals. However, on a property-wide basis, the numbers of any particular species is generally not great because of the variety of habitats. Table 5 is a list of the larger mammals found on the Hulburt Creek Fishery Area and their estimated relative abundance.

Table 5. Mammals present and their relative abundance, Hulburt Creek Fishery Area, Sauk and Juneau Counties.

<u>Name</u>	<u>Scientific Name</u>	<u>Abundance</u>
*White-Tailed Deer	<u>Odocoileus virginianus</u>	Abundant
*Cottontail	<u>Sylvilagus floridanus</u>	Common
*Fox Squirrel	<u>Sciurus niger</u>	Common
*Gray Squirrel	<u>Sciurus carolinensis</u>	Common
Red Squirrel	<u>Tamiasciurus hudsonicus</u>	Present
Ground Squirrel	<u>Citellus spp.</u>	Common
Chipmunk	<u>Tamias striatus</u>	Present
Woodchuck	<u>Marmota monax</u>	Common
Beaver	<u>Castor canadensis</u>	Abundant
Muskrat	<u>Ondatra zibethica</u>	Common
*Raccoon	<u>Procyon lotor</u>	Common
Opossum	<u>Didelphis virginianus</u>	Common
*Red Fox	<u>Vulpes fulva</u>	Common
*Gray Fox	<u>Urocyon cinereoargenteus</u>	Common
Coyote	<u>Canis latrans</u>	Rare
Badger	<u>Taxidea taxus</u>	Present
Mink	<u>Mustela vison</u>	Common
Skunk	<u>Mephitis mephitis</u>	Common
Weasel	<u>Mustela noveboracensis</u>	Common

\*Major Game Species

No detailed survey of threatened or endangered animals has been conducted in the Hulburt Creek Area. Several bald eagles (endangered) winter on the Wisconsin River in the vicinity of the Dells and Dells dam. On occasion, eagles have been observed during the winter months in the Hulburt Creek Valley. Red-shouldered hawks (watch) have been sighted within the proposed project boundaries in both 1973 and 1978.

#### 0. Historical and Archaeological Features

The Hulburt Creek Area has not been investigated by an archaeologist, however, numerous archaeological sites including mound groups, villages, campsites, garden beds and workshop sites have been found in nearby and surrounding areas. Sites of these types may be located within the project boundaries. Indian artifacts including pottery and tool fragments have been found in the valley.

Of particular interest is the area designated on the "uniform land classification" map as Unit #1B. The tributary stream that transects this area with its rock outcrop and large shelter areas lies close to sources of both food and water. Excavations at other Sauk County rock ledges have provided a record of Indians dating back to about 5,000 B.C. The oldest authenticated site for man in the upper Midwest is a rock shelter at Natural Bridge State Park located in Sauk County 25 miles southwest of Hulburt Creek. It is believed that people were living in this area 10,000 to 12,000 years ago when the Wisconsin Glacier retreated from the area.

As late as the early 1950's, an Indian encampment was located on the banks of Hulburt Creek in the vicinity of where Trout Road and Highway 13 intersect. When Highway 13 was relocated and changed to a four-lane road, the encampment was destroyed. This area lies within the proposed easement area.

Structures within the project boundaries include roads, bridges, one old shed, one old set of building foundations, one older home with outbuildings, and one old dam. None of these seem to be of any particular historical significance.

#### IV. Ownership

##### A. Fee Title Area

There are presently four separate ownerships within the proposed project area--the First Bank-Midland and three private parties. With the exception of the public roads and the navigable stream, there are no DNR or other public properties within the project area. The project boundaries have been drawn up to include only the minimum acreage possible while still achieving the primary project goal. It is proposed that 550 acres of fee title lands be acquired by the DNR to create the Hulburt Creek Fishery Area.

##### 1. Bank Acreage

The First Bank-Midland controls 1,063 acres of land within and in the vicinity of the project. The Bank is the major landholder within the project boundaries owning 325 acres or 59.1 percent of the proposed project area.

##### 2. Non-Bank Acreage

Three private parties own the remaining 225 acres or 40.9 percent of the project area.

- a. Landowner "A" controls 394 acres in and around the project of which 112.5 acres or 20.4 percent are in the project area.
- b. Landowner "B" controls 380 acres in and around the project and 100 acres or 18.2 percent are in the project area.
- c. Landowner "C" controls approximately 204 acres in and around the project, of which 13 acres or 2.3 percent are in the project area.

All of the lands held by the Bank are presently lying fallow and are for sale. The "Project" lands of the other three landholders are portions of their farming operations. While the majority of the project lands are "wild", about 50 acres of it are presently planted to row crops. Little to no grazing presently takes place on the project lands.

##### B. Easement Area

The easement area includes 1.75 miles of stream and runs through lands that are controlled by a number of owners including First Bank-Midland, Fort Dells, Inc., Department of Transportation, and Landowner "C". The land owned by Fort Dells, Inc., does not include the recreational area known as Fort Dells and is not presently developed. The lands involved in the easement are mostly wet bottom lands but also include fallow lands, pasture lands and some crop lands. These easements should not alter or interfere with present or projected uses of these lands.

#### V. Recreational Use

##### A. Current Use

Hulburt Creek, including the entire Isaacson project area, has been used for a variety of outdoor recreational activities. Because of a lack of public access and equity, the primary users are local landowners and area residents. Trout fishing pressure is probably down from past levels because of the destruction of the trout habitat and fishery by the activities of beaver. Trapping pressure varies with the fluctuations of the fur market. Trapping pressure is currently high for fox, raccoon, muskrat and mink and low for beaver.

The discharge of firearms in the Hulburt Creek area is technically illegal because of the annexation of the area to the City of Wisconsin Dells in 1970. This action, however, seems to have had little or no effect on either hunting or firearm discharge. Deer and raccoon hunting are particularly heavy. Upland game hunting and woodcock hunting pressure is moderate. Waterfowl populations and hunting pressure are relatively high at the present time because of the existing flowages resulting from beaver activity.

Other recreational uses such as hiking, cross country skiing, nature study, horseback riding, and off-the-road vehicular use are presently very light or nonexistent. Snowmobile use on the trail across the southeast corner of the proposed project is quite heavy but specific levels of usage are not available.

B. Projected Use

The acquisition and development of the Hulburt Creek Fishery Area by the DNR will lead to significant increases in fishing pressure and in deer, upland game and woodcock hunting. Raccoon hunting is currently extremely heavy and will remain at that level. The number of persons trapping fox, raccoon, mink and muskrat will increase. However, except for trout fishing the man hours expended will not change significantly. The number of waterfowl hunters will increase but the overall man hours of waterfowl hunting will decrease with the decline in habitat that will result from the removal of the beaver, their dams and subsequent impoundments. Beaver trapping by the public will probably not exist. (Table 6)

Hiking, nature study and cross country skiing will increase to significant levels. Off-the-road vehicular travel for recreational purposes will not be allowed on the property. An exception will be that use of the existing snowmobile trail in the southeast corner of the property will not be restricted. Horseback riding will not be allowed.

Table 6. Estimated present and future recreational use of proposed Hulburt Creek Fishery Area:

	Number of Man Hours in 1978	Number of Future Man Hours per year
Fishing	2,500	10,000*
Deer hunting	500	1,000
Raccoon hunting	400	400
Upland game hunting (including woodcock)	300	500
Waterfowl hunting	400	200
Other recreational uses	25	4,000

	Number of Trappers in 1978	Number of Future Trappers per year
Mink and muskrat	6	10
Raccoon and fox	6	10
Beaver	4	0

\*Assumes conservative regulation.

VI. Uniform Classification System of Land Uses

A. Fish and Wildlife Development Areas

The majority of the proposed project is to be classified as a "fish and wildlife development area". This classification includes Units #1A, #2 and #3A. As previously stated, the primary goal and first objective of the Hulburt Creek Fishery Area proposal is "to protect and manage a naturally reproducing trout fishery in order to provide to the public a scenic and 'wild' type of trout fishing experience." The classification and subsequent management of the lands within the proposed boundaries are not to conflict with this goal. Compatible development to increase and promote other recreational pursuits such as hunting, hiking, trapping and nature study will be undertaken. Efforts have been made to protect and/or foster a variety of natural areas and situations.

B. Natural Areas

Units #1B, #1C and #3B designate portions of land that are to be classified as "natural areas". Under Board of Natural Resources Policy, natural areas are defined as: "areas where good examples of native flora and fauna or geologic formations suitable for general nature study, education and esthetic appreciation exist....". Development and management on natural areas is limited to the extent required to assure preservation and to facilitate safe use. A total of approximately 111 acres are included in these three areas. (Figure 4)

Unit #1B is comprised of approximately 41 acres as follows:

- NW of NW, Sec. 8 - 5 acres
- NE of NE, Sec. 7 - 12 acres
- SE of SE, Sec. 6 - 3.75 acres
- S of SW, Sec. 5 - 20 acres (approximately)

The 20 acres designated as natural area in Sec. 5 are defined as that part of the SW of SW, Sec. 5 lying south and west of Hulburt Creek and not closer than two rods to the edge of the stream. Unit #1B is designated as a natural area because of a small tributary stream that transects it and the associated complex of rock bluffs and outcroppings, native red and white pines, speckled alder, tamarack and a number of unusual plants. Small "rock shelters" are associated with the outcroppings along this tributary and this unit may be considered at a later date for designation as a "scientific area" and/or a "historic and archaeological area".

Unit #1C consists of 20 acres described as the E $\frac{1}{2}$  of NE of SW, Sec. 6. This area consists of a relatively pure white oak stand that was logged many years ago. The terrain is rough and the logging of this area was not complete. The stand is, therefore, comprised of a mix of young, mature and old trees.

Unit #3B consists of approximately 50 acres described as the NE $\frac{1}{2}$  of NW of SE and the SW of NE lying south of Oak Hill Road, all in Sec. 1. This unit includes the headwaters of the West Branch of Hulburt Creek. The portion of the West Branch of Hulburt Creek in this designated natural area has little potential trout value in itself. The unit contains unique bedrock exposures, native red and white pines, mature oaks, the tag alder flats and a sloping waterfall flowing over bedrock. The old dam is also located here.

## VII. Resource Management Problems

### A. Acquisition of Bank Property

Several significant resource management problems face the Hulburt Creek Fishery Area. The first and most important problem is that the DNR does not own it. Sixty percent of the proposed project owned by the bank is on the market and is being widely advertised with the expensive brochure at back of this document, by road signs and by advertisements in eastern newspapers. If this parcel is sold and developed, the primary project goal is gone. The opportunity to acquire and protect for the public a "scenic and wild type of fishing experience" will have vanished. The opportunity to provide for the other public uses discussed will be lost as well. The areas of natural, scientific and/or historic values may be degraded or destroyed. Even the stream itself may be seriously damaged by being subjected to erosion, siltation, runoff and pollution resulting from development.

### B. Acquisition Non-Bank Property

A second problem associated with acquisition is that three landowners other than the Bank own property within the project boundaries. The lands owned by these three landowners are absolutely essential to the integrity of the project. Since these lands are used for active farming operations, they are not presently for sale. While inholdings such as these do not damage the long range achievement of the primary project goal and objectives, if any of these lands were to be sold and developed, the project as proposed would be critically damaged.

### C. Beaver Related Problems

In recent years beaver have virtually destroyed the stream as a cold water resource. Almost the entire upper 2/3 of the stream including both the North and West Branches are impounded or are suffering the effects of past impoundment. The water is now abnormally cold in the winter and warm in the summer. At County Trunk "H", the stream once remained open until the temperature reached -30°F. Now it freezes over at 0°F. The stream channel has been destroyed. Holes are silted in. The reproductive areas are buried under sand and silt. The migration of trout has been halted. What trout are left have a considerable amount of gill disease. The stream flora and benthic community resembles that of a slow sluggish stream or a lake. Populations of suckers, chubs and other forage fishes now inhabit the stream. In addition, the beaver activity has eliminated the majority of the tag alder in the bottoms and almost all of the remaining tamarack. Intensive removal of the beaver, their dams and restoration of the area is recommended and should be given highest priority if the fishery area is acquired.

### D. Overuse Problems

Because of the location, the heavy influx of tourists to the area, the small size and high quality of this project, heavy use can be expected. Considering the purpose of the project, it will be necessary to be vigilant against allowing or fostering patterns of overuse.

## VIII. Long Range Resources, Recreation Needs and Justification

The average 24-hour traffic count at the Interstate Highway 90-94 interchange with State Highway 13 was 16,000 in 1975. In 1977, a weekend peak of 49,000 vehicles in 24 hours was reached and on one holiday 2,700 vehicles passed this point in one hour travelling in one direction only. In 1978, during a holiday peak, 34,000 vehicles passed this point in a 24-hour period in one direction. Wisconsin Dells and Lake Delton receive between 2.25 and 2.5 million visitors annually. Between 45 and 70 percent of the visitors are from the Chicago area which is only three hours away on Interstate 90-94. In 1976, it is estimated that the value of the Dells-Delton tourism business was 4.22 billion dollars. The state collected 112 million dollars in sales taxes from Dells-Delton tourism that year. A further 40 percent increase in visitors to this area is expected over the next 20 years.

Farming is declining in this area and recreation and tourism are increasing. Obviously, a resource like Hulburt Creek will not last long without protection. Undeveloped land and trout resources are dwindling on a state-wide basis. This is the chance to save some of both and it does not seem that under use of this property would be one of its problems.

## IX. Analysis of Alternatives

### A. No Action

Under this proposal, the Bank holding the properties would undoubtedly sell the area to the private sector. The size of the parcels that this property would be broken into and the long range land use pattern that would develop is purely speculative. However, it is reasonable to assume that the following changes in the existing land use pattern would occur: A significant amount of upland clearing would take place. A considerable amount of erosion would result. Septic systems would be installed that would lead to eutrophication of the waters in the area. Improvements such as dwellings and roads, not consistent with the area's wildness, would encroach upon it.

Other factors would further reduce trout reproduction and trout populations. Beaver populations would not be controlled. Siltation resulting from the anticipated changes in land use would further deteriorate aquatic habitat. Changed land uses would also reduce the groundwater input into the stream while increasing the peak runoff.

Fishing opportunities for the general public would be reduced by private ownership of the stream banks. It is anticipated that trout fishing success would be lessened with the reduced trout fishery. The aesthetics of fishing on this stream would be seriously altered as development would eventually eliminate much of the wilderness atmosphere.

Hunting opportunities for the general public would be limited to almost nonexistent. In fact, as the area is developed, hunting might be eliminated completely. The same fate probably would befall trapping in the area. The opportunity for hiking, cross country skiing and nature study by the general public would not be utilized. Natural areas would be subjected to alteration and possible destruction. There would be no development of the trout stream, wildlife areas, or prairie.

### B. Reduce Project

#### 1. Fishing Easement

This type of action would provide for public access along the banks of the stream for the purpose of fishing. The fishery, fishing success and fishing pressure would remain low because the adverse effects associated with development of the uplands and lack of management of the stream. All of the other adverse aspects associated with "no action" are applicable in this case.

#### 2. Fish Management Easement

In addition to providing for public access along the banks of the stream for the purpose of fishing, this action would also provide for habitat development work including beaver control in and along the banks of the stream. This would result in an increase in the trout-carrying capacity of the stream, an increase in fishing success and an increase in fishing pressure. However, trout reproduction and the trout-carrying capacity of the stream will remain below its potential since this action would have no effect on the land use changes that would result in an adverse effect on the groundwater, runoff, erosion, and siltation. All of the other adverse aspects associated with "no action" are applicable.

#### 3. Acquisition of Entire Floodplain

This action would provide for public fishing and for fish habitat development work. Additionally, this action would provide protection for areas of unique natural values that exist in the floodplain. Trapping, waterfowl hunting and limited deer hunting would also be protected for the future. This action would not affect the problems associated with the development of the uplands. All of the other adverse aspects associated with "no action" are applicable.

#### 4. Acquisition of the Area to the Top of the Bluff

This action would be similar to action 3, except that in addition, it would provide for the protection of the bluffs and the associated red and white pines on them from development and destruction. Still there would be no protection of the scenic and "wild" nature of the valley. There would be only limited areas of natural values protected. The erosion, siltation and other pollution problems could still develop. All other adverse aspects associated with "no action" are applicable.

C. Expanded Fee Title Project

1. Expand Fee Title to Include Proposed Easement Area

The majority of the aspects associated with this particular proposal are negative. Too much of this land is agricultural in nature. There are no "wildlands" and associated amenities to be protected. This would not provide for added protection of the trout reproduction areas. It would not lead to an increased trout-carrying capacity for the stream. Further, it would not significantly increase hunting opportunities, nor would it protect additional natural or scientific areas. Finally, it would be very high-priced land to purchase.

2. Major Expansion of Fee Title Area

A major expansion as outlined below would include all lands within the boundaries of County Trunk "H", Birchwood Road and Lage Road (Figure 5). There would be some beneficial effects from this type of action including an increase in the upland hunting opportunity, along with an increase in the opportunity for hiking, cross country skiing and the development of trails for these purposes. It would further protect not only the wild appearance associated with the valley use but it would also lead to protection associated with hunting, hiking and cross country skiing uses. The natural areas would be less affected by development and perimeter uses. We would have good definable boundaries and fencing the DNR area would not be necessary. This could result in significant savings from the development and maintenance standpoint. There are not a great number of owners that would be involved in this particular project. However, this type of project would be extremely expensive and there is a reasonably good chance that we would run into problems with the Sauk County Board of Supervisors regarding the removal of land from the tax roll.

Also, associated with this expanded fee title project would be the fee title acquisition of the E $\frac{1}{2}$  of the NE $\frac{1}{4}$  SE $\frac{1}{4}$  of Sec. 36, the E $\frac{1}{2}$  of the SE $\frac{1}{4}$  SE $\frac{1}{4}$ , Sec. 36, the E $\frac{1}{2}$  of the NE $\frac{1}{4}$  NE $\frac{1}{4}$ , Sec. 1, the NW $\frac{1}{4}$  SW $\frac{1}{4}$ , Sec. 31, the SW $\frac{1}{4}$  SW $\frac{1}{4}$ , Sec. 31 and the NW $\frac{1}{4}$  NW $\frac{1}{4}$ , Sec. 6. All of this land lies north of Lage Road and belongs to the Bank. Advantages of purchasing these parcels in connection with the above mentioned larger tract is that it would better lend itself to good definable boundaries. It would increase the upland hunting opportunity along with an increase in the opportunity for hiking and cross country skiing and the development of trails for these purposes. Also, it would reduce the possibility of erosion associated with the development and maintenance of these trails. It would help insulate the upland uses, including hunting, hiking and cross country skiing from perimeter development. No areas of fishery, natural or scientific values are included in this particular section. Some agricultural land is included. The land involved would probably be quite expensive and we could possibly run into some objections from the Juneau County Board of Supervisors from the tax standpoint.

The following parcels are also to be considered as part of the overall look at an expanded fee title project as has been discussed above: The SE $\frac{1}{4}$  NE $\frac{1}{4}$ , Sec. 1, the NW $\frac{1}{4}$  SE $\frac{1}{4}$ , Sec. 1, the SW $\frac{1}{4}$  SE $\frac{1}{4}$ , Sec. 1, the SE $\frac{1}{4}$  SW $\frac{1}{4}$ , Sec. 1 and the S $\frac{1}{2}$  of the NE $\frac{1}{4}$  SW $\frac{1}{4}$ , Sec. 1. These parcels lie west of Birchwood Road and belong to the Bank. The acquisition of these particular parcels would lead to good definable boundaries. It would increase the upland hunting opportunity along with an increase in the opportunity for hiking and cross country skiing and the development of trails for these purposes. The trails would be easier to develop and maintain and there would be less chance of erosion as a result of trail siting. It would help insulate the upland uses including hunting, hiking and cross country skiing from perimeter development. No agricultural land would be involved. Further, it would protect the entire headwater area of the tributary to the West Branch and a significant amount of tag alder flats associated with it. Again, there could possibly be an objection from the tax standpoint. However, in this instance, the land involved probably is not as high in value as lands previously discussed.

Combined the major expansion outlined above and shown in Figure 4 would approximately double the acreage and price of the fishery area.

3. Inclusion of Small Tracts of Uplands for Wildlife Purposes

Consideration was given to extending project boundaries to include additional small tracts of land in order to buffer planned upland wildlife development and to have boundaries that include full forties rather than parts of forties. Considered was the addition of 15 acres in Sec. 6 and Sec. 7 and 20 acres in Sec. 1 and Sec. 6.

The project goal and primary objectives do not include the addition of lands for the purpose of buffering upland wildlife development. The addition of acres in order to have boundaries that include full forties rather than parts of forties is not adequate justification for boundary extension.

4. Inclusion of an Additional White Oak Stand as a Natural Area

Consideration was given to extending the project boundaries to include an additional 20 acres in Sec. 6. This 20 acres contains a cut-over, monotype stand of white oak with an average DBH of 12 inches. It lies next to the white oak stand that is designated as "natural area #3B". The white oak in the natural area occupies land that is quite rough, thus the stand has not been completely cut-over and has trees of all ages. The inclusion of this additional 20 acres of white oak is not in keeping with the project goal and primary objectives. (Figure 11)

5. A recommended alternative - Inclusion of approximately 80 acres

Since approval of the initial 550 acre concept by the Board of Natural Resources, the need for, and availability of, approximately 81 additional acres has become apparent. It is recommended that approval to expand the fishery area by fee title acquisition of the following lands be granted:

- a. A contiguous 60 acre parcel in the SE $\frac{1}{2}$ , NW $\frac{1}{4}$ , SE $\frac{1}{4}$  of Section 1 and the SW $\frac{1}{4}$ , SE $\frac{1}{4}$  of Section 1. Needed because it would present access problems for the owner.
- b. An 18 acre parcel in the NW $\frac{1}{4}$ , SW $\frac{1}{4}$  of Section 5, part of which is required to protect scenic values. Approximately 10 acres of the parcel are agricultural lands and are valuable for trading for streamside areas.
- c. The west 3 acres of the NE $\frac{1}{4}$ , SW $\frac{1}{4}$  of Section 5 lying west of old Highway 12. This parcel is needed for public access.

6. Purchase of All of the Bank's Lands

In retrospect, consideration for the purchase of all of the lands owned by the Bank in the vicinity of the project (1,063 A.) should have been a part of the original project proposal.

As noted previously, 59.1 percent of the lands within the fee title project boundaries are owned by the Bank with the remaining 40.9 percent of the lands being controlled by three separate landowners. Landowner "A" controls 20.4 percent of the project area or 50 percent of the non-Bank holding. Landowner "B" controls 18.2 percent of the project area or 45 percent of the non-Bank holding. Landowner "C" controls 2.3 percent of the project area or 5 percent of the non-Bank holdings.

All three of the non-bank landowners have farming operations. Significant amounts of agricultural lands belonging to landowners "A" and "B" are included within the project boundaries. Landowner "A" has been interested for quite some time in trading nonagricultural lands within the proposed project boundaries to the bank for agricultural land that the bank owns. This interest predates the Department of Natural Resources' proposed project. During recent contacts, Landowner "B" indicated to representatives of the Department of Natural Resources an interest in trading land within the project boundaries for agricultural lands presently owned by the bank.

Agricultural land in the vicinity of Hulburt Creek is fairly scarce, and available agricultural land is probably almost nonexistent. Developers, investors, recreationalists and hobby farmers probably drive the sale price of lands that include some agricultural land out of the price range of normal agricultural interests. A fairly substantial amount of the bank land outside the project boundaries is agricultural land.

The agricultural lands owned by the bank outside the project boundaries are composed of a number of small irregular fields that lie on and along the ridge tops and are interspersed with ravines, timbered areas and rough land. There would be no reasonable or economically feasible way to separate out, and purchase from the bank these agricultural fields scattered amidst the recreational lands.

Review of the preliminary appraisal indicates that the Department is already paying high prices for our partial taking of the bank's land. Even though a great deal of the land that we propose to purchase is undevelopable, we have proposed to take the valley rim and must pay a premium for it!

Purchase of all of the bank's holdings would have a number of distinct advantages with the primary advantage being that excess lands could be traded to the other three landowners for the land they control within the project boundaries. The ability of these landowners to acquire agricultural land to replace that which they lose through sale to the Hulburt Creek Fishery Area will probably determine whether or not we obtain the project lands of these

three landowners. Another advantage includes adjustment of the project boundaries where necessary to improve the overall recreational potential of the property. This might include minor adjustments that would afford protection of wildlife and natural interests, prevent specific areas of development that would harm overall value of property, make the boundaries more regular, definable and identifiable, significantly reduce the overall project costs, and finally, provide for ease in obtaining a "300 foot 'set-back' easement."

This alternative is not intended to radically alter final project boundaries or the project "Goal and Objectives". Lands surplus to the fishery area would be sold.

7. Include a "Set-Back" Easement

Under this proposal the DNR would purchase an easement that would prevent development of the adjacent lands within 300 feet of the project boundaries. This action would insure the full use of all DNR lands for hunting. It would isolate most of the upland use from the intrusion of development and it would help to insure the protection of the valley from the effects of development.

D. Other Management Considerations

1. Reduce Level of Beaver Control

Beaver control has been proposed with the intent to eliminate beaver from the Hulburt Creek Area. One alternate consideration would be simply a reduction of the beaver populations as opposed to eliminating the beaver populations. The result of this would be the continued destruction of the limited fisheries resource, the continued destruction of the tamarack and tag alder areas and an extremely expensive program of trying to manage beaver numbers and mitigate damages resulting from beaver activity. Constant management, including the removal of beaver dams and repeated restoration of the trout stream would be necessary.

2. Manage Area for Timber Production

The area could be managed for timber production. However, this type of management effort would not be consistent with the attempt to promote a natural, wild and scenic type of area. Therefore, this particular management effort has not been pursued.

3. Provide Snowmobile and Off-the-Road Vehicle Trails

Trails or areas of use for snowmobiles and other off-the-road vehicles could be provided. These are not consistent with other uses nor with the aspects of wildness and naturalness that are proposed to be maintained in this area.

4. Increase Number and/or Size of Natural Areas

The number and size of the natural areas could be increased. The designation of natural areas has been considered at great length. The overall project emphasis including the designated natural areas provide adequate protection for the natural, scientific and historical values of this property. Further expansion could have an unnecessary adverse effect on the trout populations and on hunting and fishing.

5. Convert Natural Areas to Scientific Areas

The natural areas could be converted to scientific areas. The natural areas' designation adequately protects presently known natural values. Scientific area designation would be unnecessarily restrictive.

6. Develop Bridle Paths

The development of bridle paths on this property was considered but was rejected since it was felt that this use was not consistent with the primary use of this small property.

7. Develop Cross Country Ski Trails

The development of cross country ski trails was considered. This idea was rejected as it was felt that extremely heavy use of this trail would be likely to develop because of the proximity of Wisconsin Dell, and other tourist developments nearby. This heavy impact would not be compatible with the primary project uses.

E. Different Ownership

1. Federal or Local Ownership

There does not seem to be any upwelling of support for a federal or local project. There would be no particular advantage to federal or local ownership over state ownership.

2. Private Ownership

The effects of private ownership were previously discussed under the comments on "no action".

X. Recommended Management Program

A. Fish Management

Units #1A, #2 and #3A are designated as fish and wildlife development areas. The control of beaver and their activities will be exercised in these units (beaver and their activities will be controlled throughout the entire watershed). Beaver dams and remnants of dams will be removed from the stream. Bank repair and channel restoration will be undertaken after the initial beaver control efforts. The debris from the dams will be used to aid in stream restoration work. Temporary or permanent wing deflectors and closing dam constructed of anchored debris, brush and/or trees will be used when and if necessary to accelerate the recovery of the stream from the effects of the beaver impoundments. Closing dams will be used to eliminate braided, double and side channels. Double wing deflectors may be temporarily needed to dig out buried gravel beds. Single wing deflectors will be used to cut down on stream width and remainder the channel.

Existing overly dense populations of forage species resulting from beaver activities will be reduced. These fish may be removed mechanically or chemically. If they are removed chemically, the treatment would take place in the fall with roughly the lower 2/3 of the stream being treated. Prior to treatment, trout in the area to be treated would be removed by electrofishing. Brook trout would be moved upstream above the treatment area and brown trout would be transplanted into Dell Creek.

Brush along the banks of Hulburt Creek will be manipulated to facilitate the achievement of the primary project goal. Brush control will be undertaken along the stream with the exception of the West Branch of Hulburt within the designated natural area. Brush control or instream devices along the designated natural area in the SW of SW, Sec. 5, will not occur unless or until it is necessary to protect the water quality through and below this area and the trout fishery both above and below this area. Brush along the upper reaches of the North Branch of Hulburt Creek in Sec. 31 will not be managed because of the lack of fishery values.

Dense growths of alder, dogwood and highbush cranberry will be encouraged and maintained on the banks of the stream in those areas adjacent to the public roads. This action will be undertaken in such a way that damage to the trout-carrying capacity and reproductive potential of the reaches involved will be minimal. This action is intended to help insulate the "wild" qualities of the stream from the obtrusiveness of the roads as quickly as possible.

Brush along the rest of the stream will be manipulated in such a way as to contribute to a scenic and "wild" type of trout fishing experience without significantly interfering with the trout-carrying capacity and reproductive potential of the stream. The efforts will include a combination of the brushing of both banks to create small meadow type situations; brushing both banks but leaving selected bushes and clumps of bushes; stretches where only one bank is brushed; and very limited stretches where neither bank will be brushed but the brush may be removed from the water. Efforts will be made to consider the needs of wildlife when considering the brush to be left. In some instances, the cleared areas and brushy areas will be rotated.

Brushing will generally be limited to two rods from the edge of the stream. The initial brushing will be accomplished by mechanical means. The cut brush will be used to help restore the stream or for brush piles for wildlife. Those areas that are to remain cleared will be maintained through periodic manual means and the use of approved chemicals.

Following brushing, instream vegetation and overhanging bank grasses and sedges should flourish furnishing adequate summer cover for trout. However, the development of winter cover such as undercut banks and deep pools may be much slower developing. Some limited and unobtrusive instream habitat devices such as half logs may have to be used initially to provide over-winter cover.

Fish management activities within the easement area will be more intense than within the fee title area. Beaver and their activities and the excessive forage fish population will be treated the same as within the fee title area. Brush control and the use of artificially created instream trout cover will be much more intense. The goal for the easement area is to maximize trout production. The aesthetics and naturalness of the situation are not as important as in the fee title area.

At some point in the not too distant future, in order to prevent overexploitation and still provide recreation for a greater number of fishermen, it will be necessary to place restrictive regulations on streams such as this one. This stream is easily and quickly accessible to a large number of fishermen. It will be open to the public, and will provide a scenic and desirable brook trout fishing experience. Brook trout, however, are more readily caught than brown trout. This stream will be heavily fished and if it is to maintain a desirable fishery, it may require an extremely restricted bag limit in the future.

#### B. Wildlife Management

In Unit #1A, shown in Figure 4, an excellent alder complex existed in the past in the main valley and adjoining tributaries. In portions of this area, the alder was mixed with red and silky dogwoods. This type of complex should be encouraged subject to stream brushing previously discussed. Selected cuttings of the alder and dogwood and herbicide treatment of encroaching hardwood species is desirable in order to foster and maintain this complex. Ninebark, elderberry, hazel bush and blackberry are also found in the valley. These are important wildlife species, add diversity to the area and should be given some preferential treatment during brushing operations.

Field #1A1 should be planted to prairie grasses and forbs. A hedgerow of conifers and shrubs should be planted along the project boundary to shield the area from future development.

Field #1A2 should be maintained mostly open. Scattered red pines will be left in selected areas of the field. Goldenrod, bromegrass and shrub species dominate the field at the present time. An excellent edge is developing on the north and south borders of the field. It is recommended that the edges of this field be permitted to develop into a brushy complex. Once established, this edge will have to be maintained through periodic cutting or mowing. The open aspect of the field should be maintained through fire or mowing once a sufficient edge has developed.

Field #1A3 is currently planted to red pine. The removal of most of the red pine except for the two rows on the west edge of the field is recommended. The two rows along with the development of a hedge would serve as a barrier between state and private property and also serve as a travel lane for wildlife. Wildlife shrubs should be planted along the east edge of this hedgerow. Good edge is developing in the northeast corner, but the open aspect of this field should be maintained.

Field #1A4 is presently planted to red pine. Excellent edge is developing on the west and north edges of this field. The red pine in this field should be removed except the two rows directly adjacent to the south property boundary. These two rows along with the development of a hedge would serve as a barrier to development and as a travel lane for wildlife. Interior portions of the field should be maintained in an open aspect.

Fields #1A5 and #1A6 are presently cultivated. A permanent hedge should be established along the north property boundary to serve as a wildlife hedgerow and also as a screen to pending future development on the private property to the north. It is recommended that these fields be established into a prairie area. Planting of desirable prairie grasses and forbs will ensure the perpetuation of various prairie species and provide an area for public education.

Field #1A7 should be permitted to proceed successional to an area with a shrub edge and an interior area of grasses mixed with occasional shrubs. It may be desirable to plant certain wildlife shrub species to enhance this development. The area will serve as a woodcock singing and nesting area. Other wildlife species from rabbits to songbirds will also benefit from the high degree of diversity.

Field #1A8 is currently cropped and some erosion is taking place. It is recommended that the field be left fallow and an edge permitted to develop. The field should be maintained in a semi-open condition to ensure diversity of plant species and cover types in this area.

The remainder of Unit #1A is mostly forested uplands. These areas should be managed to maintain various successional stages from brushy edge to mature oak. Periodic timber cuts to create openings and selective thinning of overstory species would be highly desirable.

Unit #2 is mostly forested uplands with a small amount of brushy bottomlands. It should be managed for a diversity of cover types similar to Unit #1A.

Field #3A1 should have a mixed shrub and grass community established to serve as a woodcock singing and nesting area. The area is also suitable for most forest game and nongame species. Excellent brood cover for woodcock and ruffed grouse exists along the West Branch of Hulburt Creek in this area.

The remainder of Unit #3A is mostly upland hardwoods with some scattered white pine. Some of the canopy should be opened to promote the growth of brush.

The Hulburt Creek Fishery Area encompasses a unique watershed. Development of those areas not designated as natural areas will be limited to that which is compatible with the development and maintenance of a scenic and wild type of fishing experience. Many of the guidelines included in the scenic areas classification will be used to temper and help guide wildlife development. Particular care will be given to the protection of the natural occurring pines on rock outcrop cliffs, where no cutting of pines will occur.

C. Natural Areas

Units #1B, #1C and #3B are designated natural areas. Development of these areas will be limited to the trails as discussed below. Management will be limited to the control of beaver and their activities.

D. Parking Lots

Three parking lots will be constructed within the fee title area. All three lots will have a gravel base and surface. Lot #1 would be located in Juneau County adjacent to County Trunk "J". This lot would be located on a tree covered knoll. It would measure 75 feet x 50 feet and accommodate five cars. Lot #2 would be located at the junction of Birchwood and Lage Roads. This lot would be located on a grass covered sandy flat. It would measure 100 feet x 75 feet and accommodate 10 to 15 cars. Lot #3 would be located adjacent to County Trunk "H". This lot would be located on a grass covered sand flat. It would measure 100 feet x 75 feet and would accommodate 10 to 15 cars. A fourth parking lot will be developed on the easement area in the vicinity of Trout Road. It will accommodate 5 cars. (Figure 2)

E. Trails

Four trails may be developed to provide limited access to portions of the project. These trails would be general purpose trails for hiking and nature study. Some interpretive signs may be posted. These trails were selected to provide access to unique project features while utilizing upland portions of the project. No trails paralleling the creek are proposed.

Trail No. 1 would originate at parking lot #2 and utilize an old logging road which forks and provides access to the portions of the project west of Birchwood Road. Special features located along this route would include mature native white pine stands, native upland hardwood stands, tall grass prairie, waterfalls, lowland tag alder thicket and the upper end of the West Branch of Hulburt Creek.

Trail No. 2 would connect parking lots #2 and #1. Located along this proposed trail are a deep rocky glen, white pine, tag alder and the North Branch of Hulburt Creek.

Trail No. 3 would be a circular route originating at lot #2 and encompassing the center portion of the project. The trail would traverse the uplands on the southwest side of the valley, cross the valley, and follow the uplands on the north side of the project back to the parking lot. Features along this route include white oak forest, rock outcroppings with red pine, jack pine stand, trout stream meadow area, tag alder trout stream complex and tall grass prairie. The trail would cross Hulburt Creek by means of a log bridge. The proposed bridge is designed to be as unobtrusive as possible, utilizing white oak stringers and three-inch unpeeled pole decking. Both ends of the bridge would be buried to prevent washing out. One end of the bridge will be cabled to a deadman in order to prevent loss of the bridge if it were ever to be washed out. The bridge would lie only about three inches above normal water levels.

Trail No. 4 would actually be a southerly spinoff of Trail No. 3. This trail would pass through the tag alder-tamarack area, areas of large rock outcroppings and areas of rock overhangs.

The existing county and town roads and bridges would be left as is. The building foundation near the junction of Lage Road and Birchwood Road would be buried. The existing old shed by Oak Hill Road would be removed as would the old dam on the upper portion of the west branch. The house and outbuilding near Old 12 will also be removed.

Horses and motorized vehicles will be restricted from the property with the exception of the existing snowmobile trail. Snowmobiles will be allowed to use the existing trail. Overnight camping will not be allowed on the property. Picnic facilities will not be made available.

F. Project Time Frame

Acquisition of the bank's lands within the proposed project area should take place immediately. Acquisition of the other three parcels within the fee title area and the parcels in the easement area should take place at the earliest opportunity. Removal of the beaver and their dams should receive highest priority. Brushing and other stream development activities should be completed within 5 years. Development work on the upland should be completed and in full rotation within 10 years. Prairie development should be completed within 5 years. Work on the trails should be completed within 10 years and work on the parking lots should be done in 2 years. The buildings, foundations and the dam should be removed immediately upon acquisition.

One final point is that immediately upon optioning the Bank land, we should have the Bank join the rest of the landowners in petitioning the City of Wisconsin Dells for detachment.

G. Project Costs

Acquisition of the 550 acre fee title area may cost \$400,000. The easement area may run \$40,000. Development of the stream may cost \$20,000. Development of the uplands may cost \$10,000 including prairie development. Trail development may amount to \$5,000. Parking lot development will cost \$3,000. Annual maintenance cost including salaries might reach \$1,000. Combined, the proposals advanced in this master plan may reach or exceed \$480,000.

H. Project Alteration

Recommended for approval above the original proposal, are 3 parcels totalling 80 acres discussed in IX C.5., page 22. Each of the 3 parcels are available at this time, and each serves a critical need, either for access, or for protection of scenic values.

FIGURE 2.  
PROJECT BOUNDARIES  
AND EASEMENT AREA

PROPOSED EASEMENT AREA  
PROPOSED PROJECT BOUNDARY

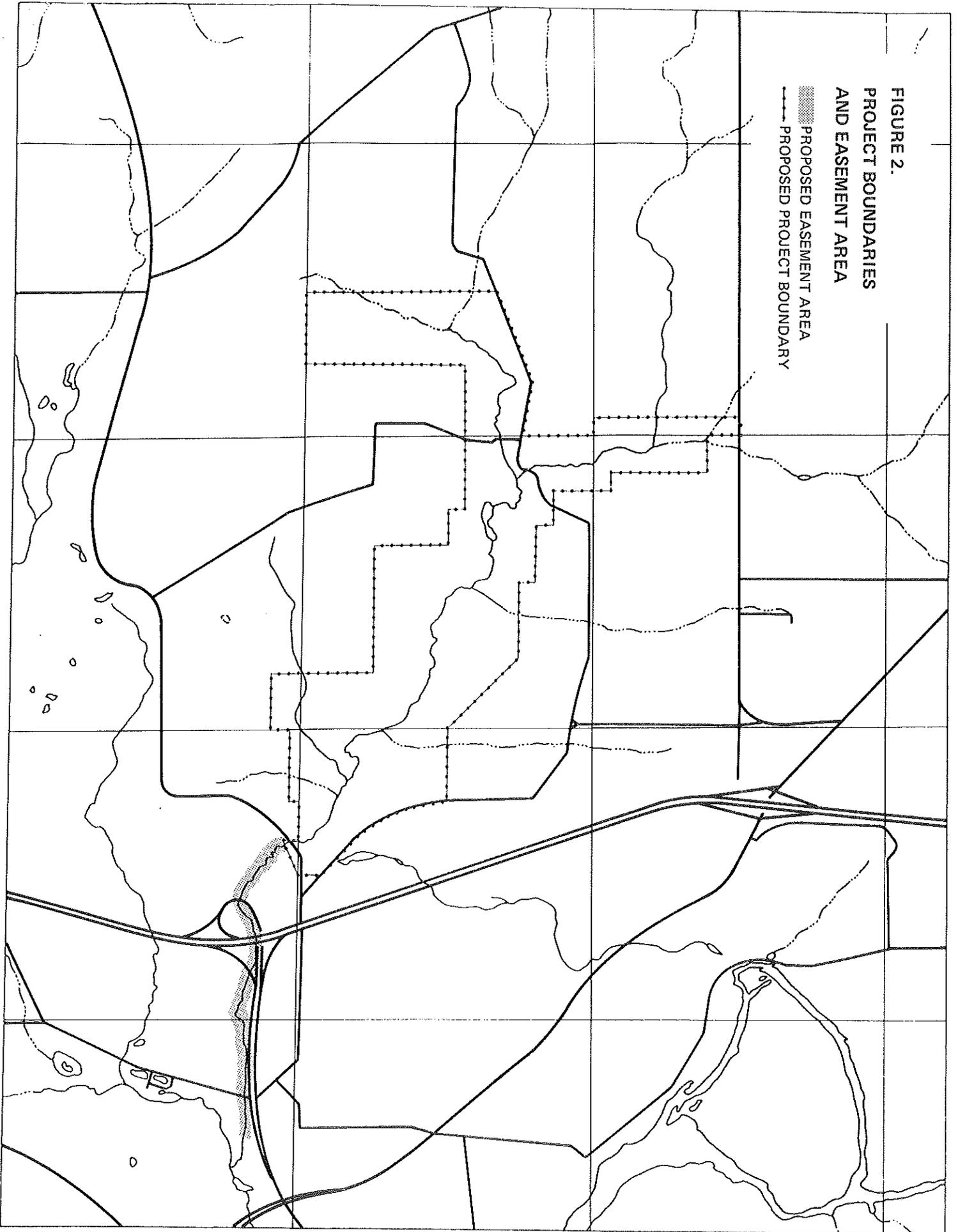


FIGURE 3.

HULBURT CREEK  
COVER MAP

- Southern Dry Mesic Forest
- Crops
- Northern Dry Mesic Forest
- Alder
- Pine Plantation
- Grass
- Northern Wet Mesic Forest
- Marsh
- Aspen
- Pine Barrens (Jack Pine)
- White Birch
- Northern Mesic Forest

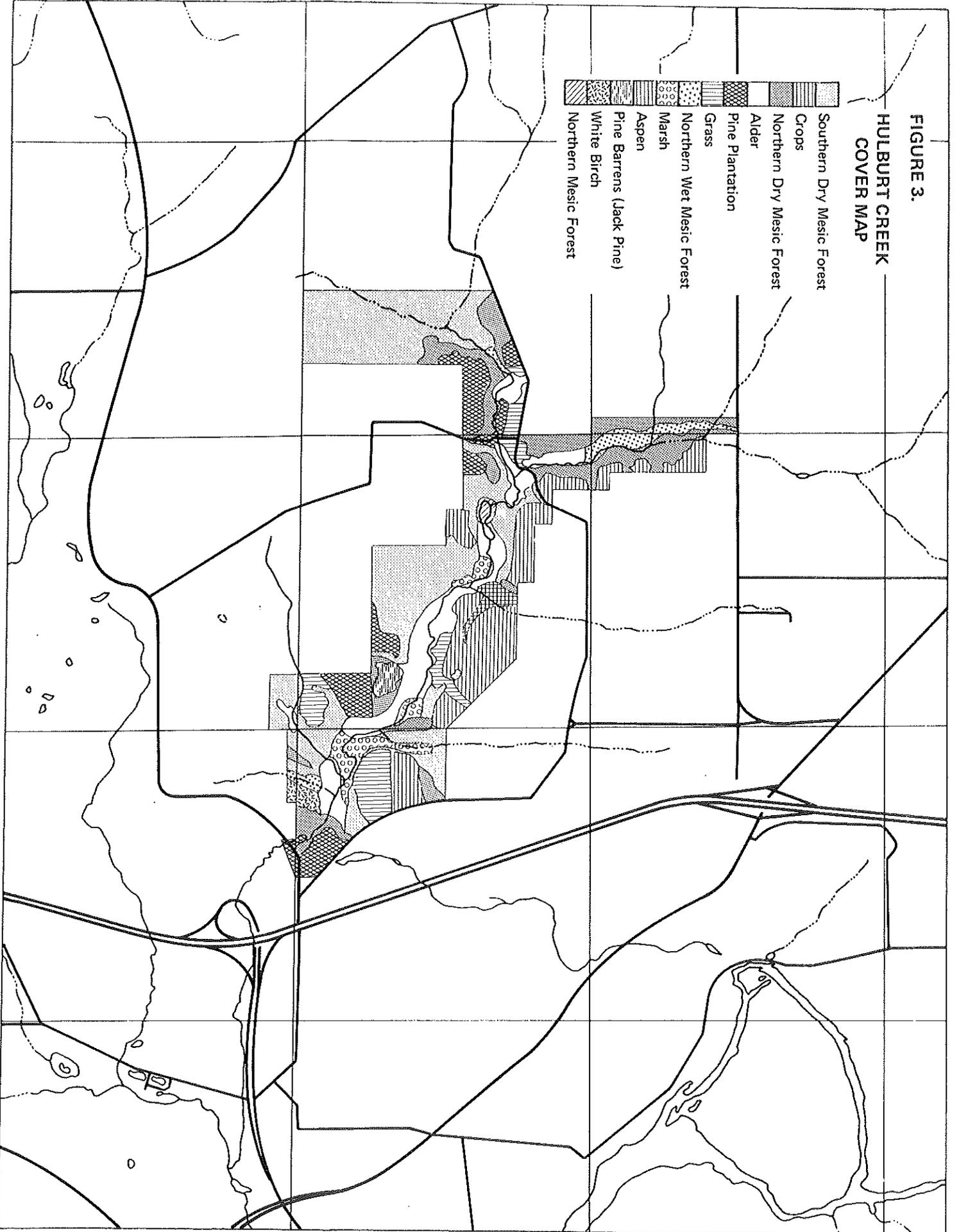


FIGURE 4.  
HULBURT CREEK  
SOILS MAP

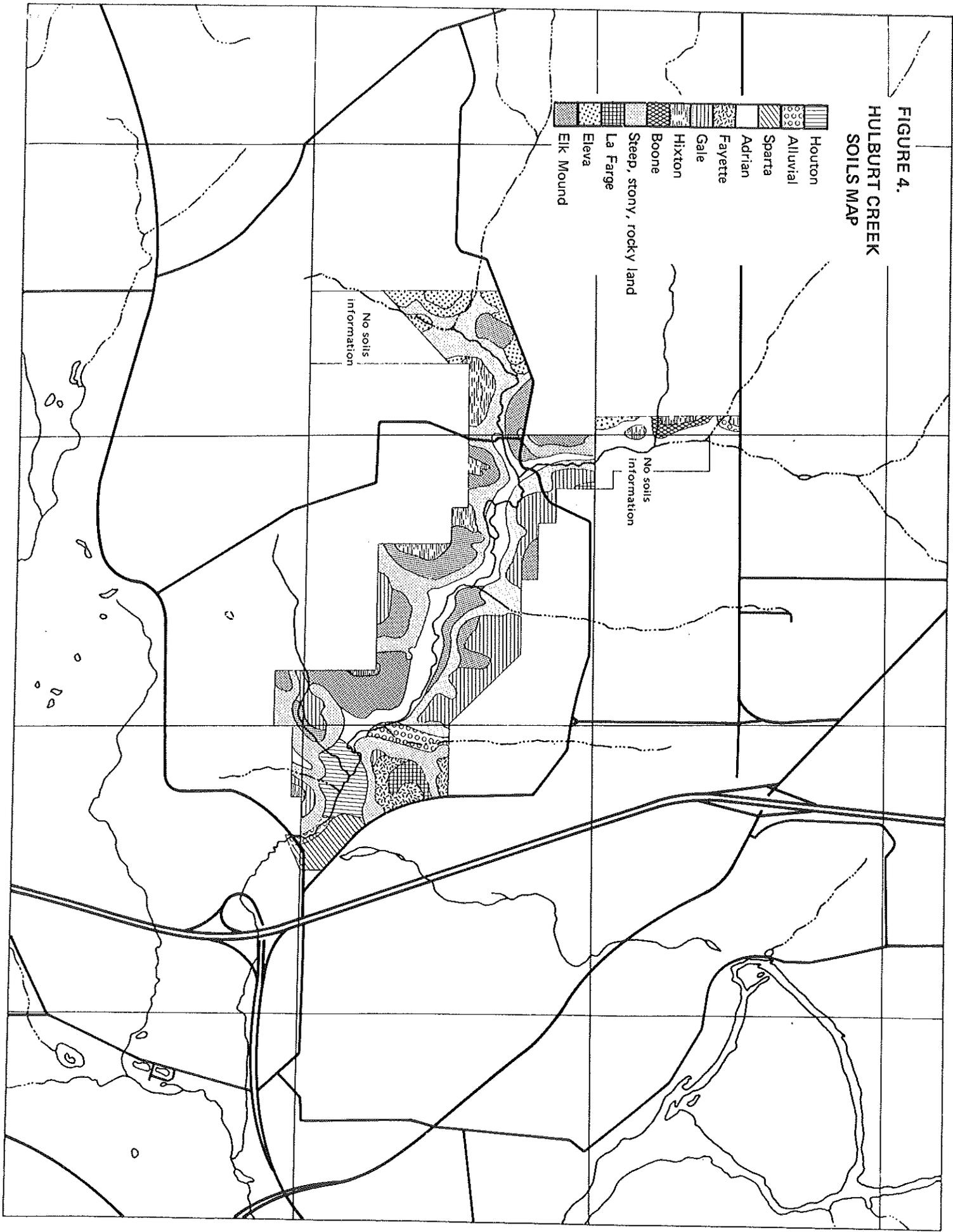


FIGURE 5.  
RECOMMENDED ALTERNATIVE,  
AND OTHER ALTERNATIVES

- PROPOSED PROJECT BOUNDARY
- ALTERNATIVE IX C. 2.
- ALTERNATIVE IX C. 3.
- ALTERNATIVE IX C. 4.

