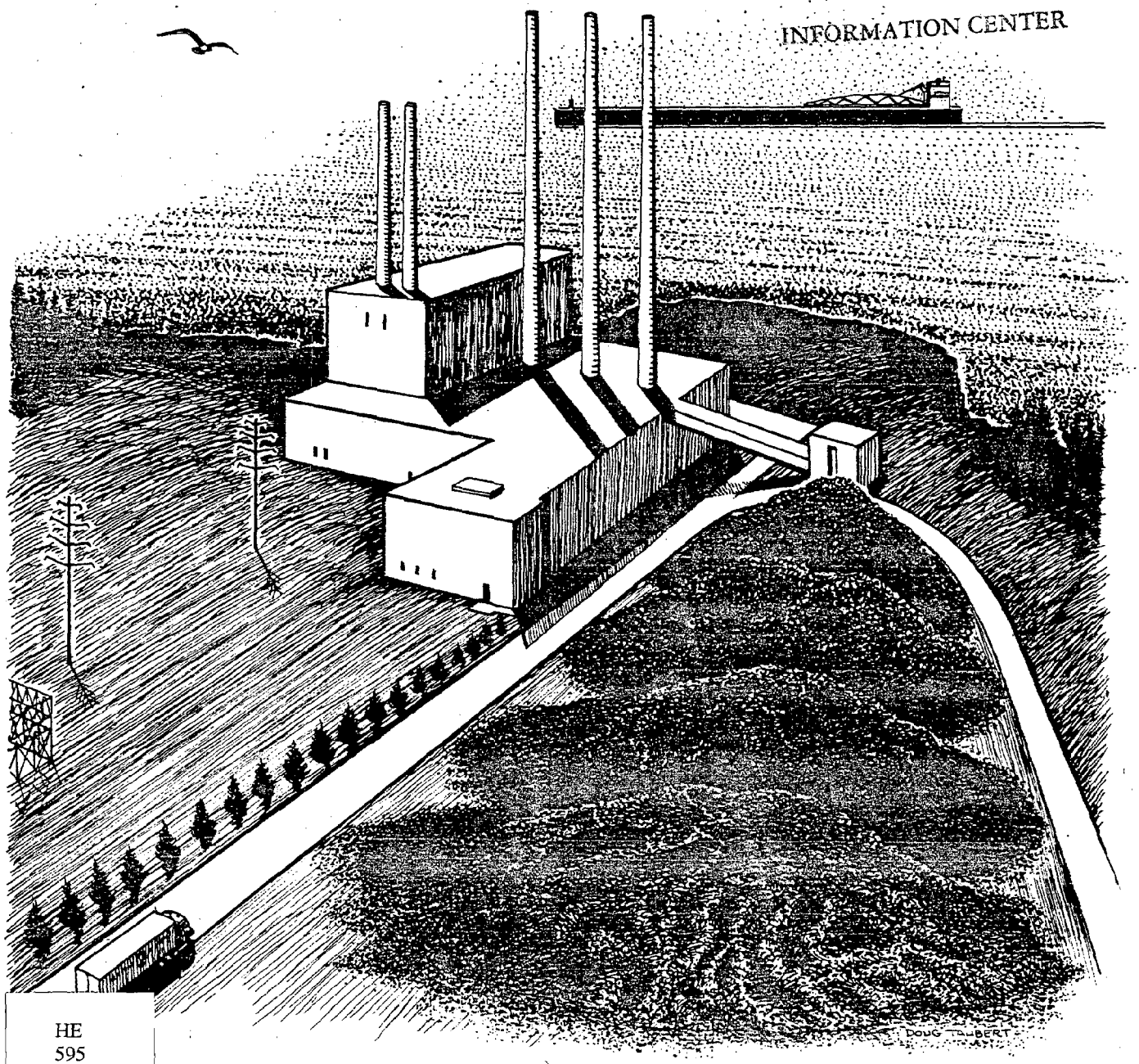
PROJECT #829.3
FINAL REPORTS

Energy Site Impacts

CITY OF KEWAUNEE

COASTAL ZONE
INFORMATION CENTER



Wisconsin. Coastal Zone Management Program

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BAY-LAKE Regional Planning Commission

serving communities within the counties of:

FLORENCE ● MARINETTE ● OCONTO ● BROWN ● DOOR ● KEWAUNEE ● MANITOWOC ● SHEBOYGAN

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ENERGY SITE IMPACTS

CITY OF KEWAUNEE

HE595.C6W37 1982

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Bay-Lake Regional Planning Commission

March 1982

Financial assistance provided by the State of Wisconsin, Coastal Management Program, Department of Administration, and the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration.

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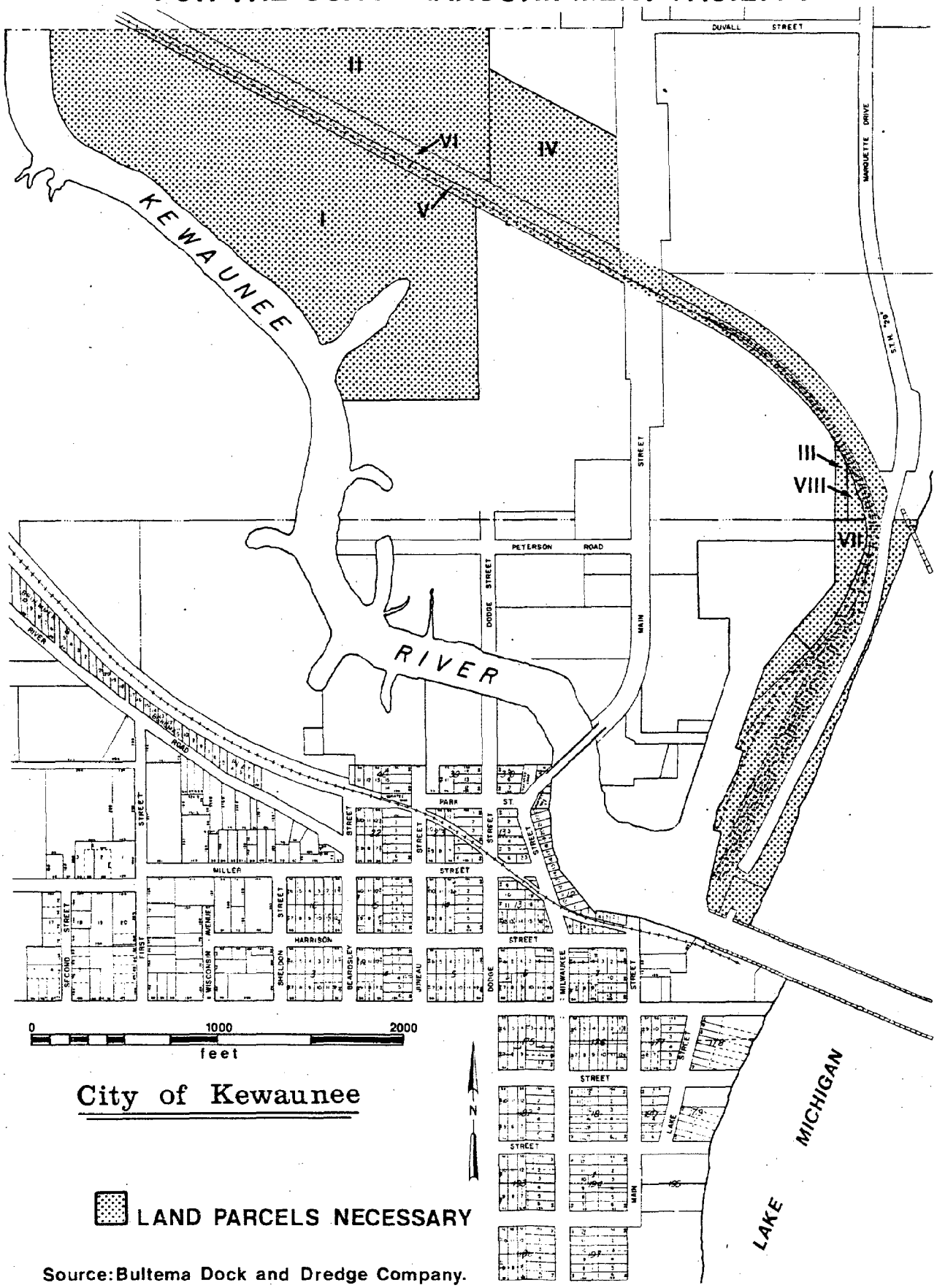
PROJECTION DESCRIPTION

In 1978, a development firm representing the Bultema Dock and Dredge Company of Muskegon, Michigan, announced that the firm would investigate the feasibility of locating a coal transshipment facility in Kewaunee. There is an increasing need for this type of facility to transport western, low sulfur coal to Great Lake and eastern consumers. While the project is still in the planning stages, there are eight separate parcels of land either being leased, having an expired lease or being under consideration for lease in Kewaunee. These parcels are delineated on Map 1.

Coal is America's most abundant non-renewable resource, and because of numerous questions and problems associated with other energy sources, coal is again potentially on its way to being a principle fuel source for this country. The use of coal, however, has also created problems. In the past, the burning of coal had the most adverse effects on air quality. Eastern coal has a characteristic of having a high sulfur content. When the eastern coal is burned the sulfur combines with oxygen, forming sulfur oxides, which have negative effects on certain trees, aquatic life, activities of honeybees and are considered to be a threat to human health. Western coal has a significantly lower sulfur content, however it only contains approximately two-thirds the Btu's per unit of weight of eastern coal. In addition, the western coal is usually easier and less expensive to mine, because strip mining methods can be utilized.

Preliminary proposals have indicated that the source of the western coal would be Colstrip, Montana, see Map 2.

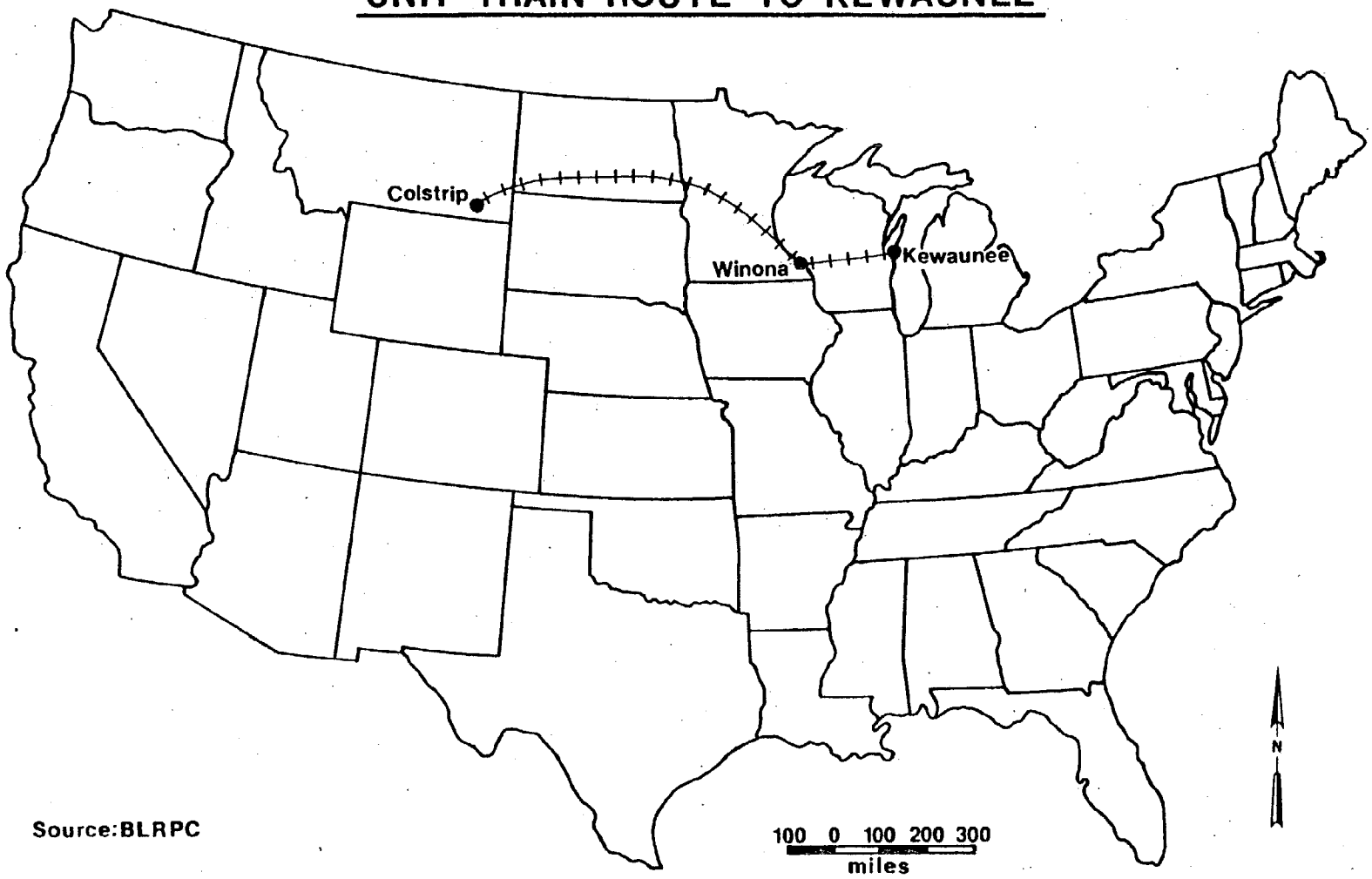
MAP 1
POTENTIAL LAND PARCELS NECESSARY FOR THE COAL TRANSSHIPMENT FACILITY



Source: Bultema Dock and Dredge Company.

MAP 2

UNIT TRAIN ROUTE TO KEWAUNEE



Source:BLRPC

LOW-VOLUME COAL TERMINAL

A low-volume facility would be basically a rail to lake barge operation. This type of operation is made available because the port is open year-round. The major advantages are that this type of facility is less land intensive (only requiring approximately 20 acres) and less handling equipment is necessary, making the facility less costly.

This type of facility would handle bottom dump or hopper cars so that the car can unload into a gravity feed chute beneath the trackage and onto a conveyor. During the winter months coal tends to freeze together during the shipment, so thawing sheds are often necessary to make coal handling easier at the facility. The conveyor may either transport the coal directly to the barge or to a 20 acre temporary storage area immediately to the north. The lake barges have 2500+ ton capacities, and require 4 to 6 feet of draft. Preliminary plans call for the barge loading area to be on the Kewaunee River upstream from the existing highway bridge. The existing hand operated bridge is scheduled for replacement after 1986 by a fixed bridge with at least a 15 foot clearance. An investigation of problems related to the bridge, filling the adjacent wetland, dredging the river, and potential conflicts with recreational boaters must be completed before proceeding with this type facility.

The storage area would only serve as a temporary place to stockpile coal until it can be transported by barge. Only 20 acres have been set aside for storing coal. The preference would be to unload the trains directly onto the barge. Coal handling in the storage area will utilize a front end loader.

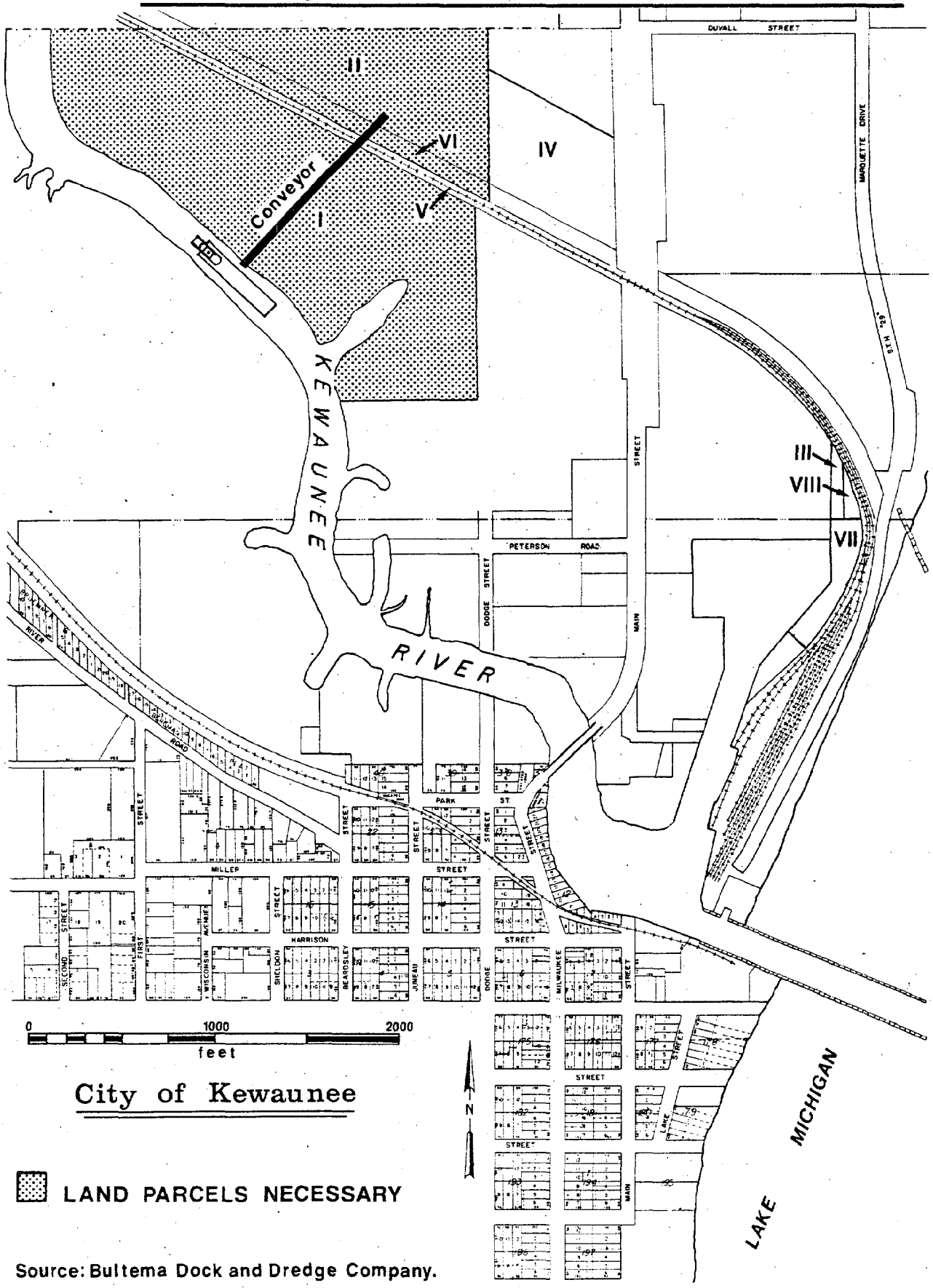
This type of operation is estimated at handling 400,000 to 500,000 tons of coal per year. Capital costs will range from 1 million to 2 million dollars which is much lower than a high volume facility, but operation costs are greater per unit. Map 3 delineates the proposed facility layout of a low volume coal transshipment facility.

HIGH-VOLUME FACILITY

A high-volume facility has the capability of handling rapid unloading unit trains, large self-unloading lake vessels (barge or boat) and has high volume storage capacity. The system would be fully automated and electronically controlled to minimize labor force. The loading area would be located in the outer harbor, between the north breakwater and the inner harbor entrance.

This facility requires a rotary unloader which actually takes the cars individually and rotates them upside down to unload. The unloading will be done inside a shed to prevent excessive dust and noise from escaping into the atmosphere. A high capacity conveyor will carry the coal to the stockpile. Another high capacity conveyor located underground will transfer coal from the stockpile, under State Highway 29, and out to the loading dock in the outer harbor. See Map 4.

MAP 3
LOW VOLUME COAL TRANSSHIPMENT FACILITY

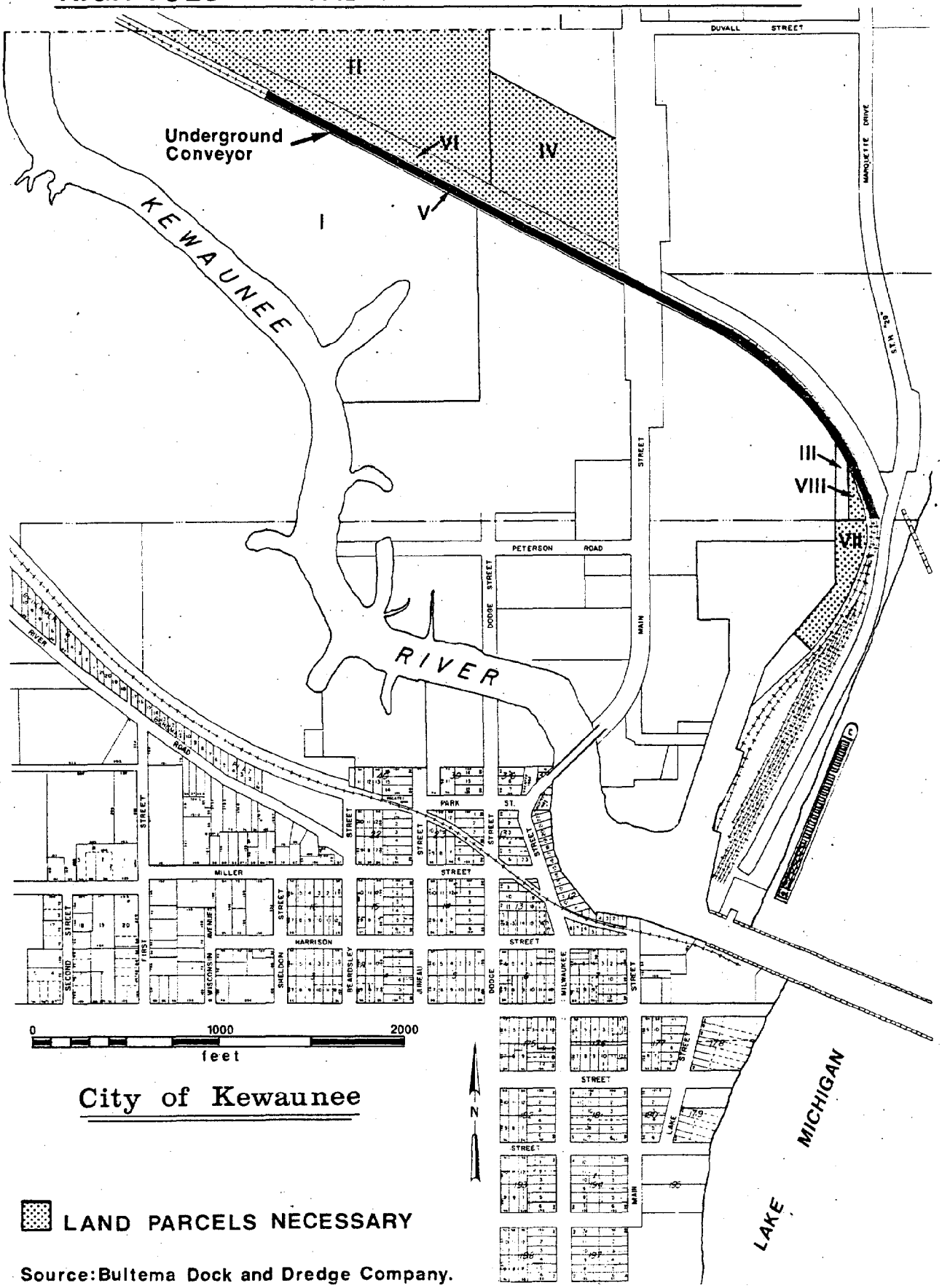


City of Kewaunee

LAND PARCELS NECESSARY

Source: Bultema Dock and Dredge Company.

MAP 4
HIGH VOLUME COAL TRANSSHIPMENT FACILITY



Source: Bultema Dock and Dredge Company.

The entire facility would be planned to meet all environmental considerations as well as to keep dust and noise to a minimum. All coal movement will be covered and all coal being gravity dropped will have telescoping chutes to prevent coal dust from affecting areas around it.

A terminal with this type of operation will handle 1.8 to 2.4 million tons annually. This amount will require three to four unit train deliveries each week to the Kewaunee Terminal. This type of coal handling facility has an estimated capital investment of $5,000,000 to $10,000,000, but depending on the variables, the investment could even be greater.

PHYSICAL ENVIRONMENT

LOCATION

Nearest Town	Kewaunee
USGS Map 15' Series	Kewaunee
Township	24N
Range	25E
Sections	17, 18

Overview of the Kewaunee Site

The City of Kewaunee is located in Kewaunee County, 30 miles east of Green Bay, 30 miles north of Manitowoc adjacent to the shores of Lake Michigan. Various parcels of land have been identified as potential sites for the coal storage and coal distribution route. All parcels are located on the north side of Kewaunee and adjacent to the Green Bay and Western Railroad. Map 1 shows the eight parcels under consideration.

The terrain in this area is relatively level, much of this is due to alterations made by past development practices. In addition, there are extensive amounts of poorly drained soils and marshy conditions which are unique characteristics of the area.

The Kewaunee River flows into Lake Michigan near this area, and forms a natural harbor. Both recreational and commercial boating utilize this harbor, and the harbor is one of the heaviest used commercial ports on Lake Michigan north of Milwaukee.

GENERAL DESCRIPTION

Bedrock

This particular site is underlaid by six bedrock groups. The top layer is the Silurian Dolomite, it is the thickest of all the groups at approximately 470 to 490 feet thick. This dolomite is also known as the Niagaran escarpment and has a relatively low capacity of water, it does however usually yield enough for domestic use. Beneath the Silurian is the Maquoketa Shale. The Maquoketa Shale is probably at its thickest near the site at approximately 350 feet. This shale also has a poor water yielding capacity.

The third bedrock is the Platteville-Galena Dolemite group lying about 850 feet below the surface and is about 200 feet thick. This dolomite group as is characteristic of all dolomites has poor water bearing capabilities and cannot be considered a serious source of water. The St. Peters Sandstone is the fourth bedrock layer, and is 160 to 180 feet thick. Sandstone is a good source of water, but the depth of the

St. Peters formation would prevent the tapping of water for domestic use and the formation may not yield the quantity of water that would be required by the proposed facility. The Cambrian Sandstone lies approximately 1400 feet below the surface. It is a good source of groundwater with a capacity of 500 to 1000 gallons per minute. Figure 1 shows the cross section of the bedrock geology of the site.

Glacial Deposits

In the process of four major glacial movements in Wisconsin, glacial debris was deposited on the existing bedrock. As the glaciers melted, the landscape that exists today was formed. In the region of the proposed coal facility the glacial deposition is approximately 44 feet in thickness. The upper 30 feet is marl, which is a substance consisting of a mixture of clay minerals and calcite. In this area marl is a fresh water deposit of the Pleistocene or Holocene periods (recent deposits). It is typically grey in color, indicating a lack of oxygen due to high water content. Underlying the marl is 14 feet of sand and gravel with some silt and clay.

Soils

Only four varieties of soils exist on the eight parcels being considered, these soils are illustrated in Map 5. Most of this property is made up of Borosaprist soils. Level, poorly drained, marshy areas are characteristic of this soil. This soil is commonly found around ponds, marshes, rivers and other bodies of surface waters. It is flooded most of the year, and is underlain by marl. It is usually unsuited for agriculture, septic systems and dwellings.

The Udorthent soils are prominent in one parcel north of the tracks. This is a level grade and usually found near cities. They are soils that have been altered by excavation, filling and leveling. Soil characteristics can only be identified by onsite investigation. The other two soils are Cathro Muck and Hortonville-Boyer-Zurich series. They are both small parcels.

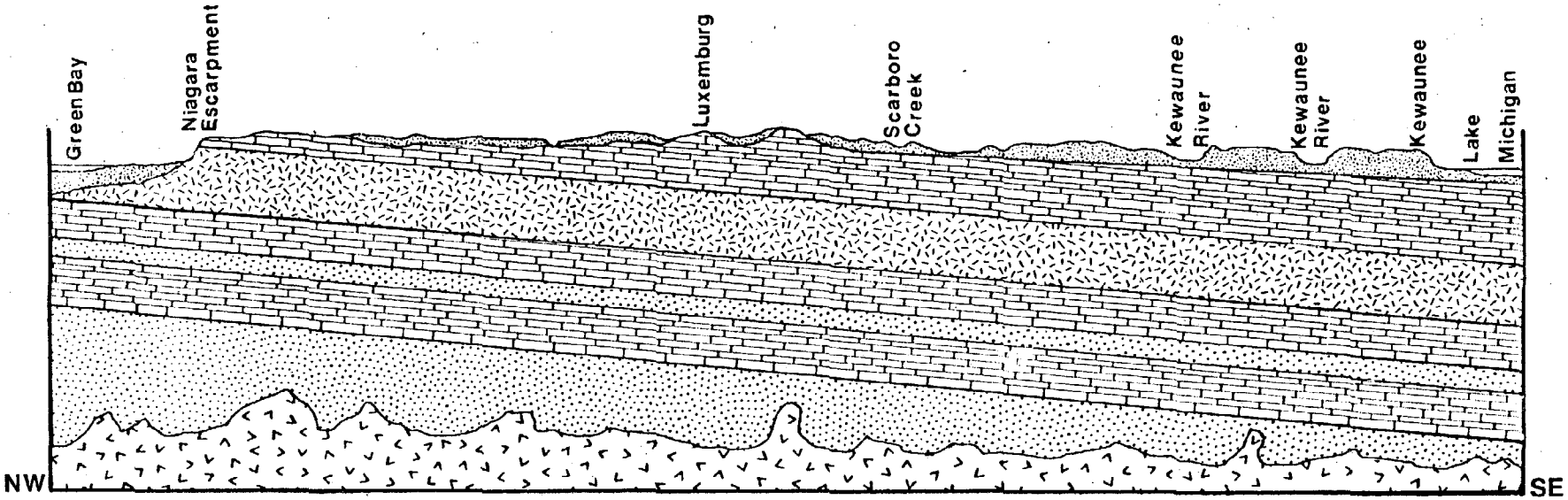
Wetlands

A wetland is an area where the water table is near, at or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and has soils indicative of wet conditions. According to the Department of Natural Resources (DNR), all of parcel I and over 90% of parcel II are made up of wetlands. Most of the southern edge of parcel III also is considered wetland. The remaining parcels have high water tables, but are not classified a wetland. Wetlands are delineated in Map 10.

Wetlands are protected by the Federal and State governments. Both the U.S. Army Corps of Engineers and the Wisconsin Department of Natural Resources (DNR) have governing powers over the activities of wetlands. The Wisconsin Administrative Code Section NR 115 lists the regulations established by the DNR. In essence, wetlands cannot be altered in a manner that will permanently damage them, unless special permits are granted. Granting a permit will only be done if it can be proven that the proposed activity is in the best interest of the public.

FIGURE 1

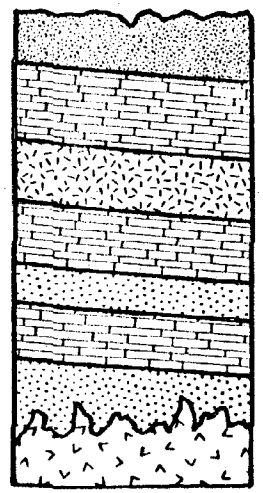
GENERALIZED CROSS SECTIONAL VIEW OF KEWAUNEE COUNTY BEDROCK



ONE INCH = 2.5 MILES

VERTICAL ELEVATIONS EXAGGERATED

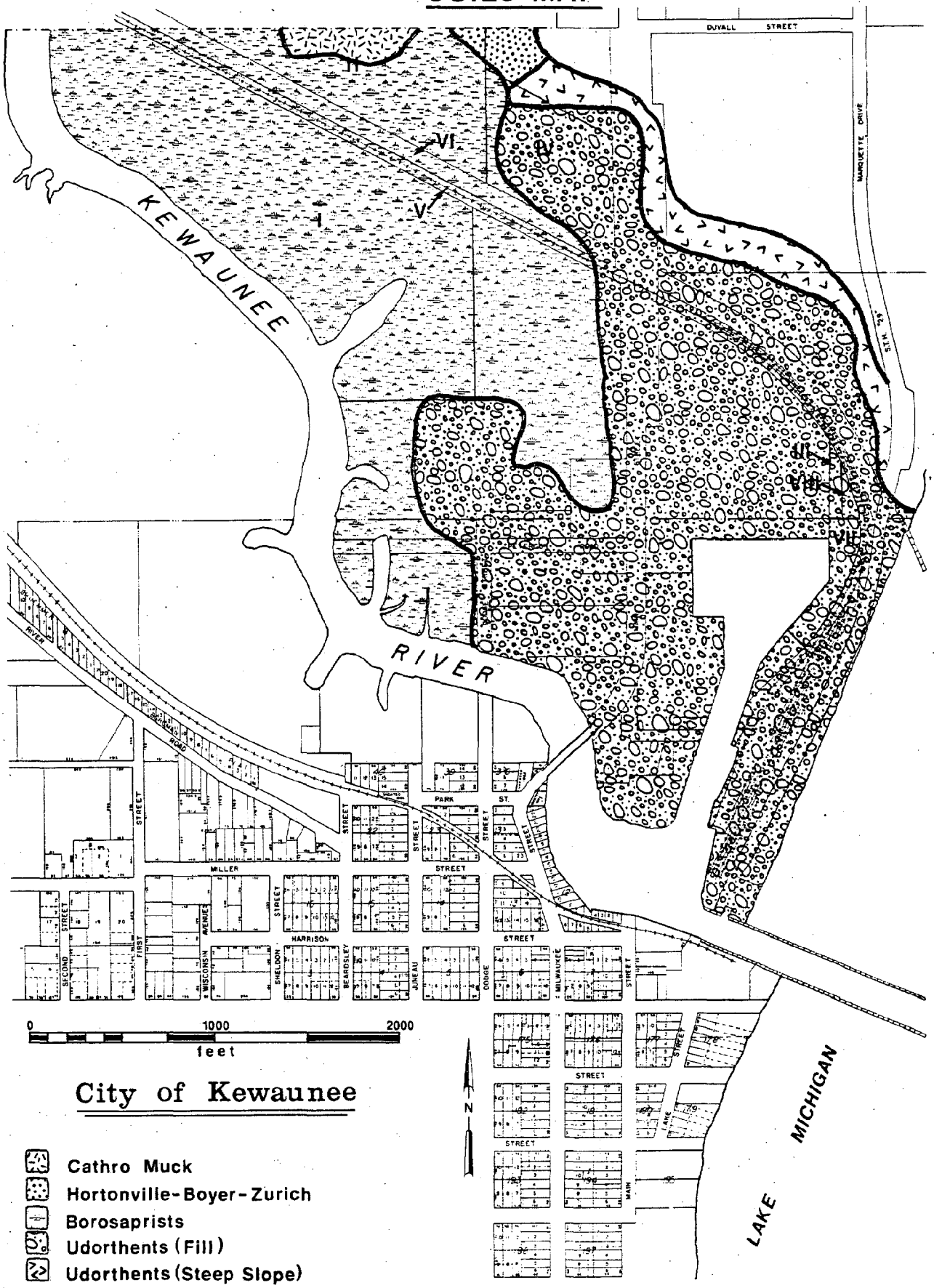
LEGEND



ROCK TYPE	GEOLOGIC TIME PERIOD	MILLIONS OF YEARS AGO
GLACIAL DRIFT	QUATERNARY (PLEISTOCENE)	0–2
SILURIAN DOLOMITE	SILURIAN	405–425
MAQUOKETA SHALE	ORDOVICIAN	425–500
PLATTEVILLE–GALENA DOLOMITE	ORDOVICIAN	425–500
ST. PETER SANDSTONE	ORDOVICIAN	425–500
PRAIRIE DU CHIEN DOLOMITE	ORDOVICIAN	425–500
CAMBRIAN SANDSTONE	CAMBRIAN	500–600
GRANITE AND OTHER CRYSTALLINE ROCK	PRECAMBRIAN	3,800

SOURCE: F.T. THWAITES AND KENNETH BERTRAND; PLEISTOCENE GEOLOGY OF THE DOOR PENINSULA, WISCONSIN.; U.S.G.S. HYDROLOGIC ATLAS HA–432.

MAP 5
SOILS MAP



Source: Kewaunee County Soil Conservation Service.

Vegetation

Most of the vegetation located in the Kewaunee harbor area is located in the Kewaunee River Marsh. The dominating specie is the narrow leaf cattail, however, there is a variety of specie types. Other species include: blue joint grass, Red-Osier dogwood, purple loose strife, and yellow cress to only name a few.

The inner harbor is virtually depleted of any vegetation growth, but the outer harbor does support various species, such as silver weed, June grass, night shade and black medic. No rare or endangered specie of plants exists in the harbor area.

Fish

The Lake Michigan shoreline immediately adjacent to the harbor area has been identified as a Class I fish habitat in the Wisconsin Coastal Atlas, 1977. Class I indicates a spawning ground which may support a resident population. The Kewaunee River also has been classified a Class I fishery in the immediate harbor area and upstream for several miles.

The types of fish found in the outer harbor area include coho and chinook salmon, brown, rainbow, brook, lake and tiger trout. Game fish commonly found in the river include coho and chinook salmon, brown and rainbow trout.

The Kewaunee River is an important spawning ground for several species of fish. Since the DNR connected a salmon stocking pond to the river, coho salmon uses the river to spawn. Rainbow trout, brown trout and brook trout also utilize the river for spawning.

Wildlife

Most of the land west of Highway 42 is considered Class I wildlife habitat, according to a 1976 Department of Natural Resource's Fish and Wildlife Habitat Inventory. This rating indicates that the areas with this classification are most desirable for a major range of wildlife species. Only the area in which the storage tanks are located or parcel number IV lacks this wildlife classification on the west side of Highway 42. The east side is void of any wildlife habitat. The wetland area is especially good habitat for waterfowl. Listed below are a few common species of shorebirds and waterfowl found in the area. No substantial mammal population resides in this area according to the Kewaunee Harbor Study conducted by the DNR.

Mallards	Canada Geese
Bluewinged Teal	Black Bellied Plovers
Ringbilled Gulls	Common Snipe
Herring Gulls	Caspian Terns
Black Crowned Night Herons	Forster Terns
Killdeer	American Widgoon
Coot	Greenwinged Teal

SOCIAL ECONOMIC ENVIRONMENT

POPULATION

The 1980 U.S. Census records the population of Kewaunee County at 19,539 persons, which ranks Kewaunee seventh in the eight county Bay-Lake Region: This has only been a 3% growth rate since the 1970 census, which is relatively low in comparison to the regional average growth. The City of Kewaunee has a population of 2,801 and the surrounding Towns of Pierce and West Kewaunee have populations of 790 and 1,294 respectively. These three units combined make up approximately 25% of the county's total population. The City of Kewaunee actually had a 3% decrease over the 1970-1980 period. Population trends in Kewaunee County are delineated on Map 6.

EMPLOYMENT

Data from the Department of Industry, Labor and Human Relations (DILHR) estimated a workforce of 7,900 persons in Kewaunee County as of February 1981. The same data showed 640 persons unemployed for a 9.6% unemployment rate.

The major employment sector in the county is manufacturing, specifically lumber and wood product industries. Other large employment sectors are wholesale/retail trade, health and legal services, government and education. See Table 1 for employment data in the region around the proposed coal transshipment facility.

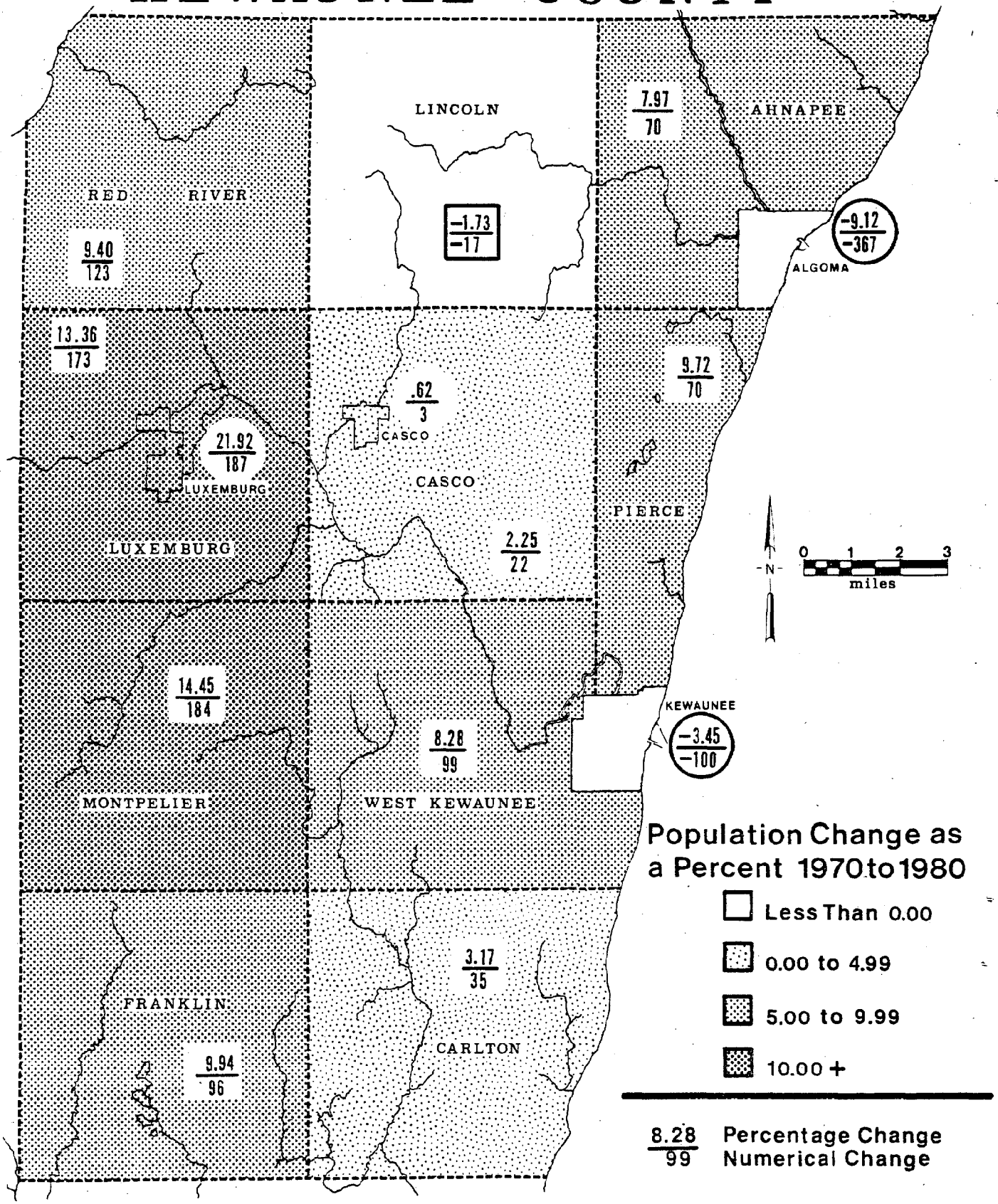
TABLE 1
EMPLOYMENT BY SECTOR*

Sector	Town of Pierce	Town of West Kewaunee	City of Kewaunee	Kewaunee County
Agriculture, Forestry, and Fishing	0	0	7	116
Construction	1	8	30	192
Manufacturing	0	7	571	1,880
Transportation, Communication, and Utilities	0	4	150	213
Wholesale/Retail	29	8	310	915
General Services	18	1	42	246
Health and Legal Services	0	0	170	385
Education	0	0	166	484
Government	2	7	251	358

* Table only includes larger employment sectors.

Source: Wisconsin Department of Industry, Labor and Human Relations; Bay-Lake Regional Planning Commission.

MAP 6
POPULATION CHANGE 1970 TO 1980
KEWAUNEE COUNTY



Source: United States Bureau of the Census; 1980 Census.

INCOME

Kewaunee County's average weekly wage (AWW) ranks sixth in the Bay-Lake Region according to WDILHR's Second Quarter 1980 Employment and Wages Report. Although Kewaunee experienced a 30% increase in wages since 1975, the county's ranking in the Bay-Lake Region fell from fifth to sixth. The sector that pays the highest wages in Kewaunee County is in the transportation, communication and electrical service jobs, and it is well above the state average for that sector. However, the sectors with the highest number of employees in the county such as manufacturing, wholesale/retail trades and services fell below state averages. Table 2 shows AWW for the county, region and state.

TABLE 2
AVERAGE WEEKLY WAGES
(2nd Quarter 1980)
County, Region and State

Sector	Kewaunee County	Bay-Lake Region	State of Wisconsin
Local Government	$257.57	*	$262.90
Construction	258.04	*	351.21
Manufacturing			
Lumber & Wood Products	208.27	*	245.54
Food & Kindred Products	222.10	*	321.47
Machinery (Exe. Electrical)	302.11	*	386.25
Transportation, Communication, and Electrical Services	378.94	*	325.88
Wholesale Trade	201.50	*	313.81
Retail Trade	131.81	*	137.62
Finance, Insurance, and Real Estate	184.04	*	240.62
Services	168.79	*	197.04
Industries Total Average	$212.78	$218.75	$260.23

* Data not compiled.

Source: Wisconsin Department of Industry, Labor and Human Relations.

COMMUNITY SERVICES

The City of Kewaunee will be impacted in many ways if a coal terminal locates in the city. However, with proper planning, any adverse impact may be kept to a minimum. The terminal will employ approximately twenty people during operation and as many as 200 people during construction. The facility is not likely to cause a significant influx of new residents, but the city should be prepared to accommodate construction labor and any new activities that may be attracted to the community by the terminal

location. Kewaunee should be concerned with providing adequate housing, sewer and water, schooling and other community services. The following is a brief inventory of some of the city's services.

Water

The city's water system consists of two wells, pumping station and water treatment facility, two water reservoirs, and a distribution system which is shown on Map 7. At the present time, there are approximately 1,072 water meters in use.

Well number one, which is located at the water utility, was drilled in 1916. The depth of the well is 187 feet. Well number two, which was drilled in 1937 to a depth of 700 feet, is located at Pioneer Park. Both wells draw water from the Silurian dolomite aquifer system. Each well has the capacity to pump 1,296,000 gallons per day resulting in a combined capacity of 2,592,000 gallons per day. In 1977, the maximum daily amount pumped was 799,000 gallons; the minimum was 197,000 gallons. Total pumpage for 1977 was 124,609,000 gallons.

Water storage facilities consist of a 200,000 gallon elevated storage tank located at the intersection of Fifth and Ellis Streets, and a 180,000 gallon underground storage tank located adjacent to the Kewaunee water utility. The water utility is located at the foot of Ellis Street on the Lake Michigan shore.

Sewer

Kewaunee's Municipal Wastewater Treatment Facility is located on Dodge Street adjacent to the Kewaunee River (See Map 8). The facility provides primary and secondary wastewater treatment. (Primary treatment involves the mechanical removal of floating or precipitated solids. Secondary treatment involves the bacterial consumption of organic waste and, in the case of Kewaunee, disinfection of the effluent with chlorine.) The Kewaunee River is the receiving water for the effluent from the wastewater treatment facility. Sludge generated by the facility is distributed on the city's industrial park site north of Kewaunee Engineering.

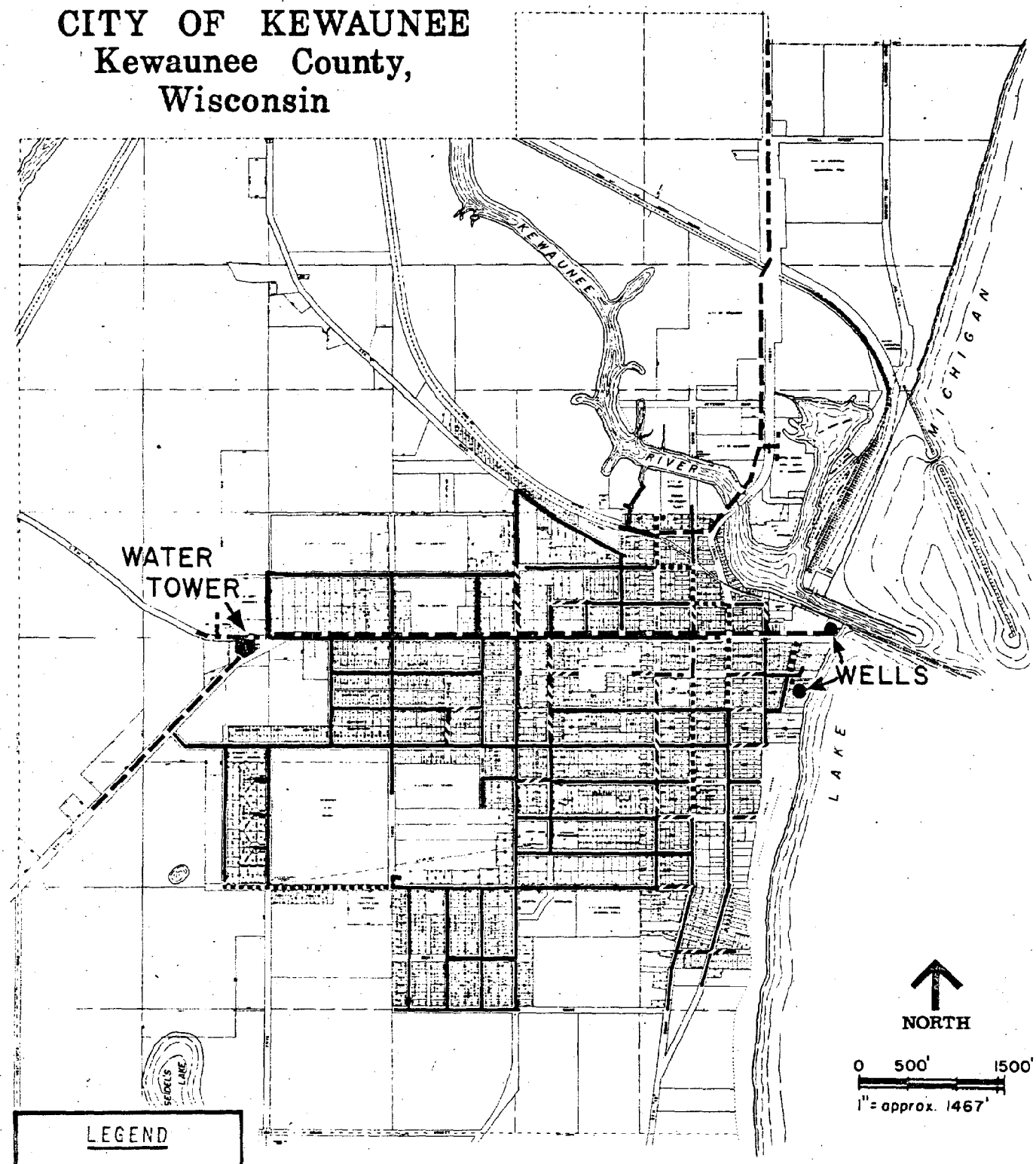
The facility was built in 1957, provided with secondary treatment in 1969, and expanded to its present capacity in 1977. The facility maximum capacity is 992,000 GPD and is designed to treat an average flow of 580,000 GPD based on a future population of 3,600 in the year 1995. The present flow is 320,000 GPD and serves an estimated population of 2,922.

The sewered portion of the city is shown on Map 8. The sanitary sewers are comprised of a combination of 6-inch, 8-inch, 10-inch, 12-inch, 15-inch, 18-inch, 20-inch, and 30-inch diameter piping, four lift stations and one sewage ejector station.

In its planning program, the city should provide sewer service to those residents not served by sewers along River Road. It should also seek to improve and maintain the collection system which has suffered from excessive water infiltration and inflow.

MAP 7
PUBLIC WATER SYSTEM

CITY OF KEWAUNEE
Kewaunee County,
Wisconsin



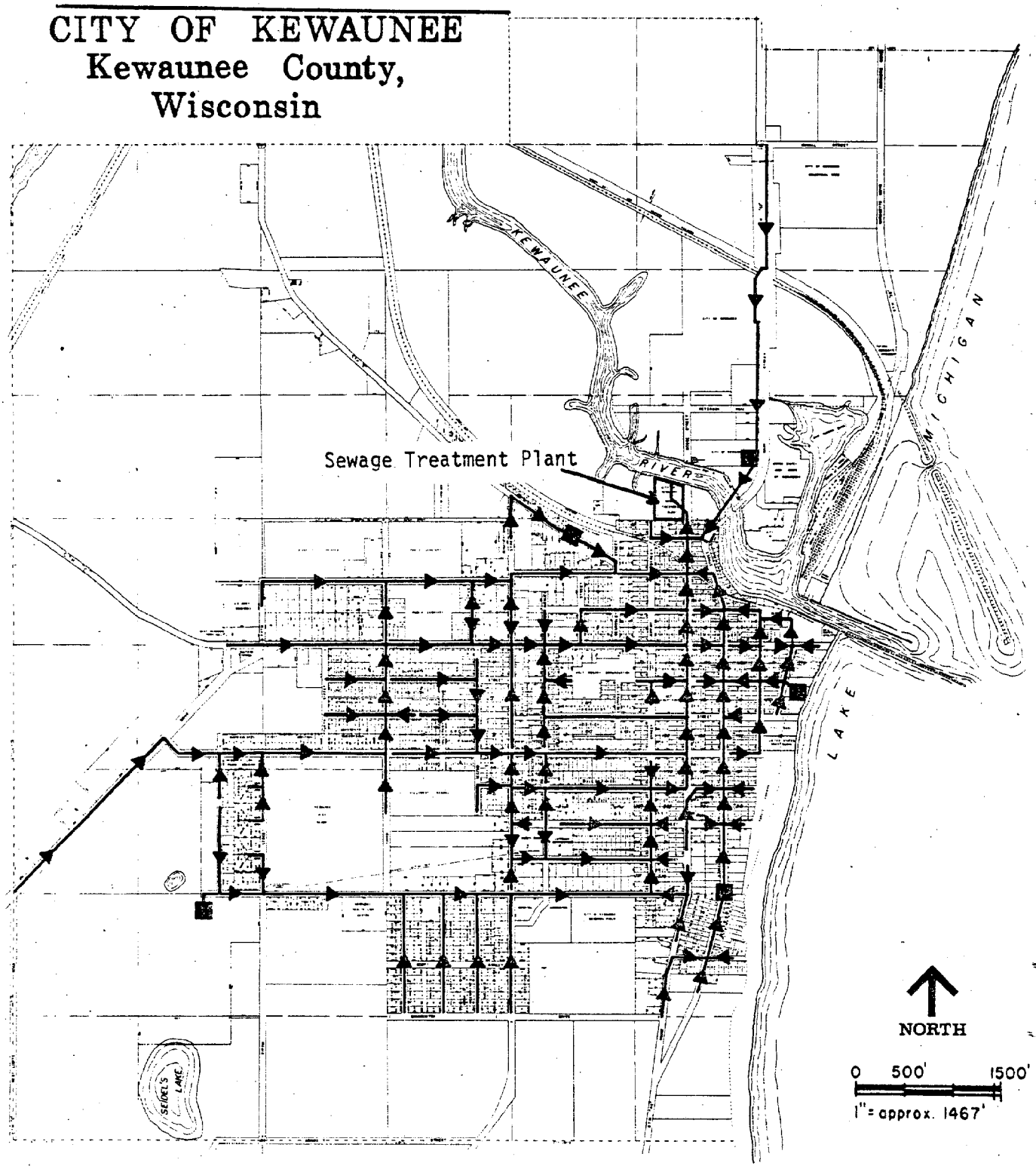
LEGEND

Pipe Diameter:

- 12"
- 10"
- 8"
- 6"
- 4"

Source: Kewaunee Public Works Department and BLRPC.

MAP 8
SANITARY SEWER SYSTEM
CITY OF KEWAUNEE
Kewaunee County, Wisconsin



LEGEND

■ Lift Station

→ Flow Direction

Source: Kewaunee Public Works Department and BLRPC.

The present storm water sewer system is inadequate and should be upgraded. The area served by the system is generally the same as the built-up portion of the city. Present areas of inadequate storm water drainage include the intersection of Baumeister Drive and Third Street, a section of Fifth Street between Lincoln Street and Adams Street, Sixth Street from Center Street to Lincoln Street, and STH 29 from Center Street to Ellis Street. Inadequate water drainage in these areas presents a safety hazard to the existing and future residential and commercial development located on the city's western edge. The use of Stump Lake as the receiving waters for storm water run-off from the western portion of the city might help eliminate the present flooding hazard.

Schools

The Kewaunee School District was formed in 1965 and presently consists of three public schools, Kewaunee High School (grades 9-12), Marquette Middle School (grades 4-8) and Hillcrest Grade School (grade K-3). The total enrollment in the school district for the 1980-81 school year was 1,248 students.

Enrollment has been on a constant decline since the early years of the district's existance. Since the 1969-70 enrollment of 1,570 students, a yearly decrease has led to an all time district low of 1,248 students in the 1980-81 school year. The Wisconsin Department of Public Instruction has inventoried school-aged children by school district. This information shows that Kewaunee school enrollment will continue to decline over the next decade as well. Table 3 shows Kewaunee school enrollments by school year.

Another aspect of the public school systems is the student-teacher ratio. The 1980-81 school year had approximately 14.7 students to each full time teacher; this low ratio usually provides for a better quality education.

TABLE 3
KEWAUNEE PUBLIC SCHOOL ENROLLMENT BY SCHOOL

1969-1970 to Present	High School (945)*	Marquette (425)*	Hillcrest (400)*	Total (1770)*
1980-1981	532	393	323	1248
1979-1980	547	417	327	1291
1978-1979	575	418	335	1328
1977-1978	577	418	365	1360
1976-1977	592	437	405	1434
1975-1976	584	443	411	1438
1974-1975	597	451	409	1457
1973-1974	614	467	445	1491
1972-1973	601	477	446	1524
1971-1972	595	462	468	1525
1970-1971	594	503	467	1564
1969-1970	587	517	466	1570

* Capacity
Source: Kewaunee School District, Bay-Lake Regional Planning Commission.

Housing

Housing availability and the structural conditions are important factors for a community planning for growth. Like any community service, housing must meet the needs of the community's residents as well as providing for newcomers.

Since 1960 Kewaunee's housing stock grew from 962 units to 1122 which is a 16.6% increase. This increase does not indicate population growth however. The same time period only had a 1% population growth. Although there are no major increases in the population, there is a need for an increase in the number of housing units. There are now more households than ever, but families are smaller.

A field survey was conducted for Kewaunee to observe the general condition of the housing stock. In all the condition was thought to be sound with only 5% of the housing having major defects. Most homes in Kewaunee are privately owned. The latest data on housing comes from the 1970 U.S. Census, this report showed that at the time of the census, only 5% of the housing units were vacant. Table 4 shows housing occupancy status in Kewaunee.

TABLE 4
CITY OF KEWAUNEE
HOUSING OCCUPANCY STATUS

	1960	Percent	1970	Percent	1980
Owner	700	73	759	74	*
Renter	183	19	219	21	*
Vacant for Sale	11	1	9	1	*
Vacant for Rent	27	3	18	2	*
Vacant Other	41	4	18	2	*
TOTAL	962	100	1023	100	1163

* 1980 data has not been compiled.

Source: Bay-Lake Regional Planning Commission; U.S. Census.

Recreation

The City of Kewaunee currently has a good variety of recreation facilities, both public and privately owned. The city owns nine parks, totaling nearly 20.4 acres. Facilities range from boat landings, ball fields, and picnicking areas to childrens playgrounds. Public school recreation facilities total 40.7 acres. Three schools make up this sector of recreation facilities. Types of activities include children's playgrounds and athletic playfields. Other recreation areas in and around Kewaunee are privately owned. Table 5 shows existing recreational acres and facilities.

TABLE 5
CITY RECREATION DATA

	Acres	Facilities
City Parks	20.41	picnicking, camping, boat launch, boat mooring, fishing, playground equipment, *athletic playfields, skating rink
Public Schools	40.75	playground equipment, athletic playfield
Total Public	61.16	
Church Schools	3.26	day care center, playground equipment, athletic playfield
Commercial	72.75	camping, swimming, marina, boat launch, fish and wildlife area, hunting, fishing
Total Acres	137.17	

* Athletic playfields include football, baseball, basketball, tennis and track.

Source: Bay-Lake Regional Planning Commission.

The existing park areas currently exceed established criteria, however, several improvements are suggested. The City of Kewaunee's Comprehensive Plan made the following recommendations.

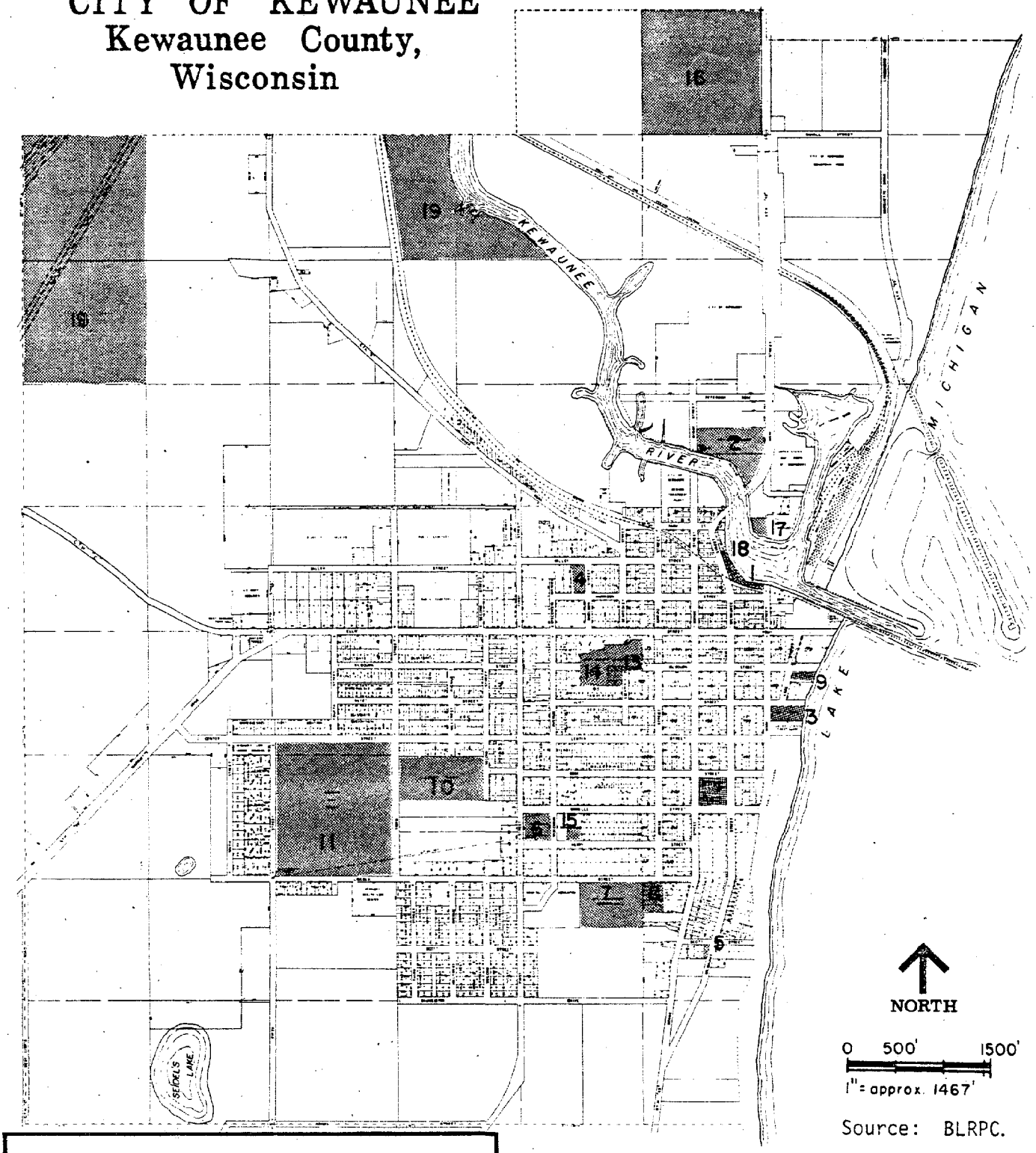
- Maintenance and improvement to existing park facilities.
- Acquisition and development of additional city-wide park areas.
- Protection of the Kewaunee River floodplains.
- Additional park developments along the Kewaunee River and Lake Michigan.

Map 9 and the accompanying legend (Table 6) show recreation areas in and around Kewaunee.

The Coastal Energy Impact Program provided grant money to the City of Kewaunee for the development and rehabilitation of waterfront areas in the harbor specifically for recreation purposes. The program has been set up in a multi-phase work program, and is now into phase I.

MAP 9
PARKS AND OUTDOOR RECREATION AREAS 1979

CITY OF KEWAUNEE
Kewaunee County,
Wisconsin



Source: BLRPC.

LEGEND

Park and Outdoor Recreation Area

TABLE 6
PARK AND OUTDOOR RECREATION AREAS
CITY OF KEWAUNEE

1. Harbor Park
2. City boat launch facility
3. City park, Main and Vliet St.
4. City park, Miller and Sheldon St.
5. City park, Scott and Milwaukee St.
6. Haney Park
7. Kewaunee Memorial Field
8. Kieweg Park
9. Pioneer Park

Public School Recreation Facilities

10. Hillcrest Elementary School
11. Kewaunee High School
12. Marquette Middle School

Church Recreation Facilities

13. Day Care Center
14. Holy Rosary Church
15. Immanuel Lutheran Church

Private Recreation Facilities

16. KOA Campgrounds
17. Kewaunee Equipment Company Marina
18. Boat launch

State Lands

19. Kewaunee Marsh State Wildlife Area and Fish Management Area

LAND USE

To date, eight different parcels of land have been identified as necessary pieces for the operation of a coal transshipment facility, see Map 10 for land use in these parcels. Parcels number V, VI, VII and VIII are all owned by the Green Bay and Western Railroad. Numbers I, II and III are owned by Kewaunee Engineering Corporation, and parcel IV is owned by Nap-Sol Refining Company.

Parcels I and II are wetlands and have vegetation species such as cattail, sedges and grasses, and some broad-leaved deciduous trees such as willows, black ash and elm. Parcel VI, the railroad right-of-way, has these same wetland characteristics in the area adjacent to the wetlands, but changes characteristics as it passes through other parcels. Parcels III, VII and VIII are open spaces. The parcel owned by the Nap-Sol Refining Company has four fuel storage tanks, a building, marine intake line, pumps and other equipment. No family dwellings are located on any of the parcels.

TRANSPORTATION NETWORK

Roads

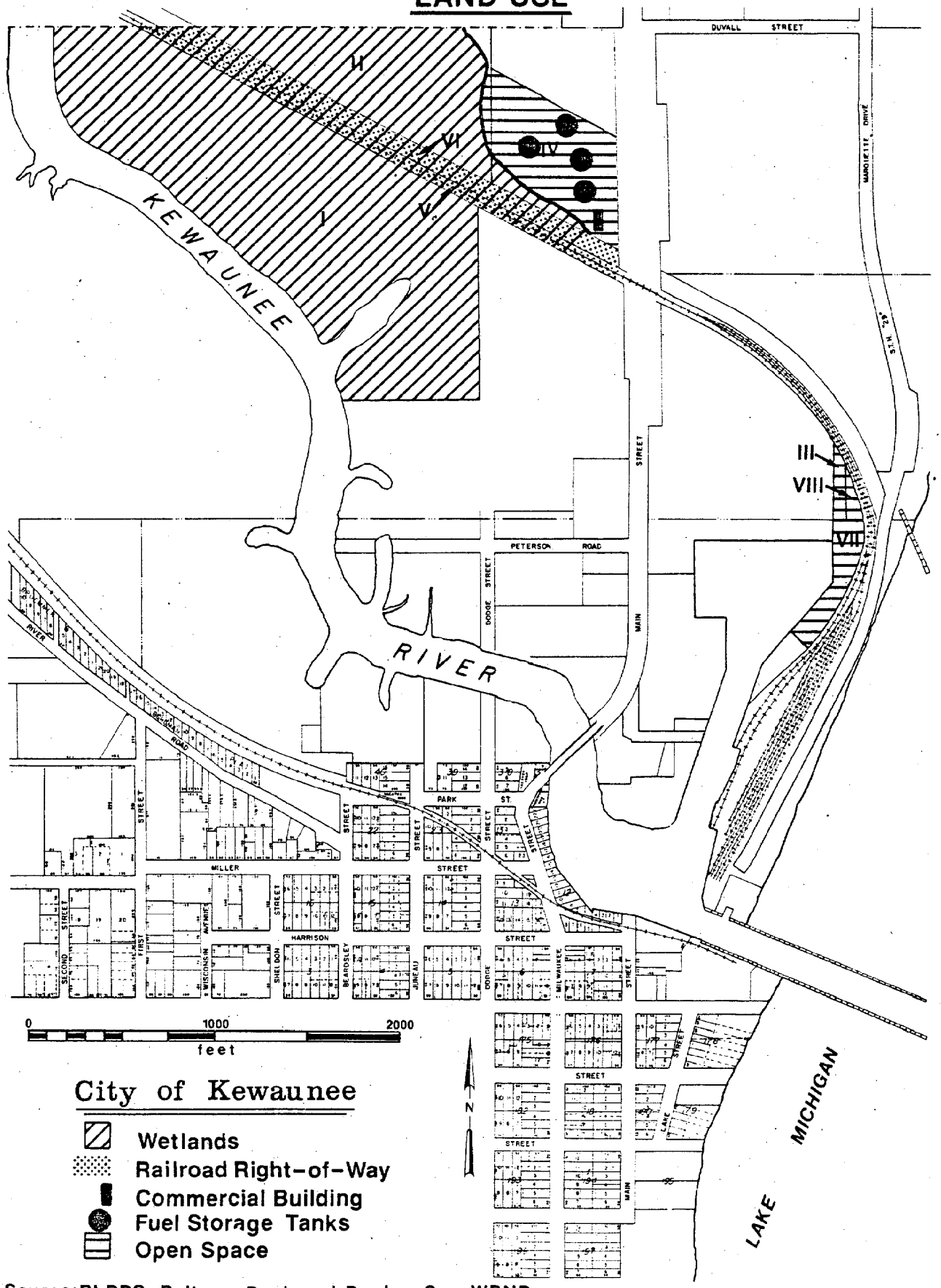
State Highway 42 bissects the proposed parcels of land as it runs in a north/south direction. Highway 42 connects Sheboygan to the south and the northern tip of Door County. The highway has been classified a principle arterial which means the road has characteristics of heavy density and lengthy travel. State Highway 29 runs from Green Bay and west to Kewaunee. This highway is a minor arterial; minor arterials are rural networks linking cities and large communities within the region.

Three county trunk highways enter or run near the city limits of Kewaunee. County trunks can be classified either a major or minor collector. Major collectors connect larger towns with rural traffic generators, and minor collectors gather traffic from local roads and provides access to developed areas. County Trunk C enters the city from the southwest corner and leaves heading in a northwestern direction. County Trunk E originates in Kewaunee and leaves in a northwestern direction, and County Trunk F runs outside the north and western perimeters. All road systems are delineated on Map 11.

Railroads

The City of Kewaunee is served by one railroad system, the Green Bay & Western (GB&W). This line is currently carrying between one million to five million annual gross tons. It is a direct line between Kewaunee and Winona, Minnesota, while passing through such cities as Wisconsin Rapids and Green Bay. The city is also served by a ferry system, one operated by the Michigan Interstate Railway Company (MIRC) and the other by the Chesapeake & Ohio Railroad (C&O). The MIRC ferry, named the Viking, transports rail cars and automobiles from Kewaunee to Frankfort, Michigan. The C&O ferry, named the Spartan, serves the same purpose but between the cities of Kewaunee and Ludington. Both companies utilize the GB&W's facilities in Kewaunee. The routes for local railroad systems are delineated on Map 11.

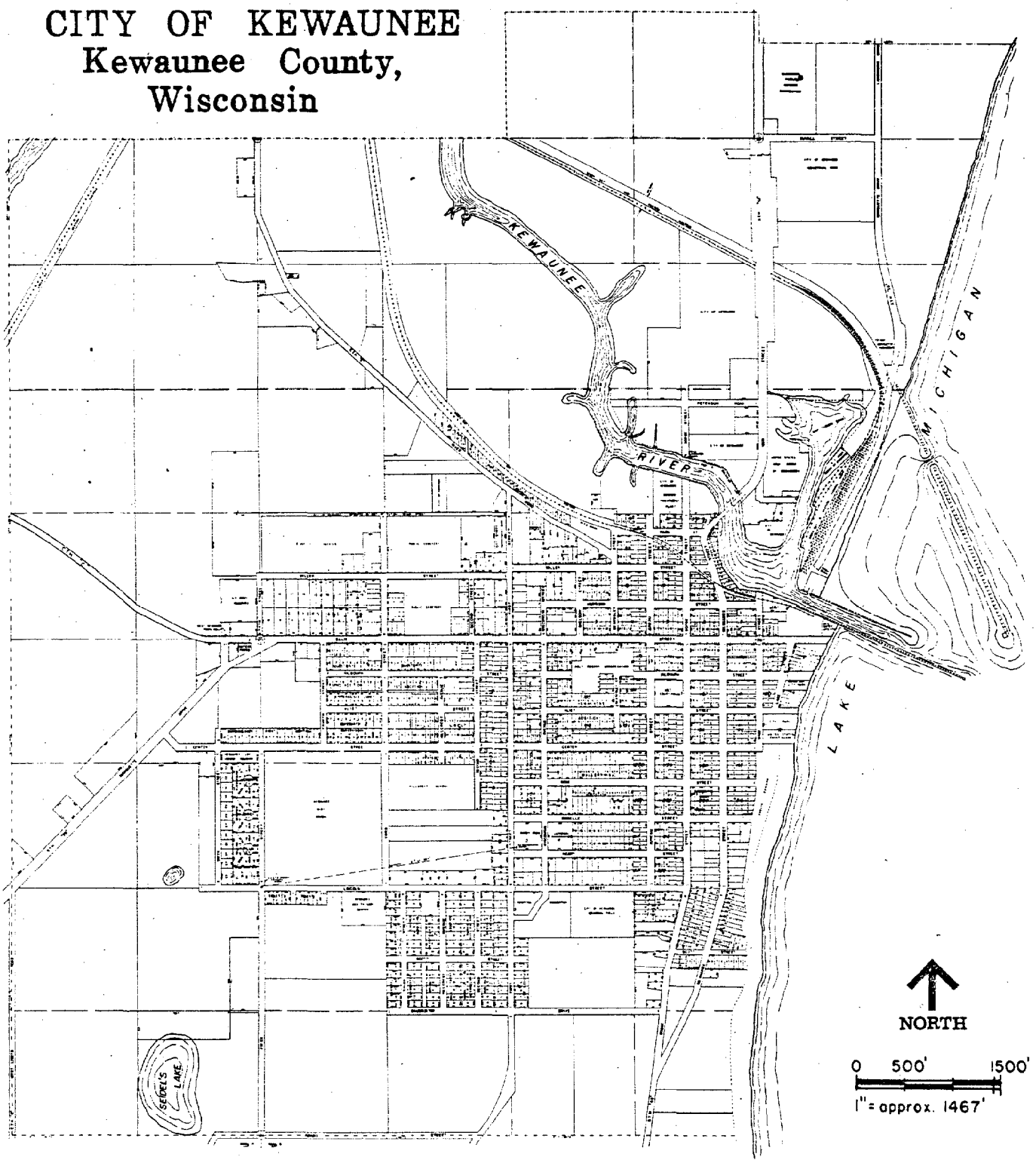
MAP 10
LAND USE



Source:BLRPC, Bultema Dock and Dredge Co., WDNR.

MAP 11

CITY OF KEWAUNEE
Kewaunee County, Wisconsin



The ferry service operation is, however, in jeopardy. Because this service continually operates at a financial loss, the GB&W has proposed to discontinue the service. If this should happen, the line between Green Bay and Kewaunee would probably be eventually abandoned. A coal transshipment facility would make this line worth the maintenance costs, and would therefore keep the line functioning.

CONSTRUCTION PHASE IMPACTS

The construction phase of the coal terminal could last as long as a year. Peak employment will incorporate approximately 100 persons, most from the construction trades. A large portion of the workforce may come from the Kewaunee County area, but a few construction trades may have to be called in from outside the area.

Physical impacts during this period will add stress on water and air quality, as well as creating noise impacts. Aesthetic impacts are certain to be involved with the construction activities, especially since the facility would be located so close to the business district and the heavily used harbor area.

WORK FORCE

During the construction period of the plant, approximately 200 employees will be necessary. The primary employment will consist of various construction trades. As stated in a previous section, the county has 192 construction laborers. It is probable that a percentage of the work force will come from outside the county such as the Green Bay, Manitowoc and Sturgeon Bay areas.

The types of construction tradesmen needed depends on what kind of facility is chosen, a low volume or high volume facility. Heavy equipment operators, welders, carpenters and other tradesmen will be necessary to construct all required components of the terminal.

LABOR RELATED IMPACTS

Local Services

The City of Kewaunee's location will enable project employees from larger communities in surrounding counties to easily commute to the construction sites on a daily basis. If this is the case, very little additional stress would be put upon the city's community services.

Traffic

Traffic movement will increase through the city due to the commuting of the work force and movement of construction equipment and materials. What impacts the employee travel would have upon the city depends on how much ridesharing takes place, and from what direction the employee movements approach the work site.

Segments of the facility may be on either side of Highway 42. It is reasonable to predict a halt in highway traffic in the area of the site periodically during the construction year.

ECONOMIC ENVIRONMENT

Employment

Additional employment created during the plant construction is dependent on additional demands put on various sectors by the construction work force. If relocating is minor as expected, no major change in the community employment status would be expected. If additional jobs become available during plant construction it will probably be in the retail businesses, such as restaurants, taverns and service stations along the commuting corridors.

PHYSICAL ENVIRONMENT

Surface Water

Increased turbidity in and around the Kewaunee harbor area is inevitable if the facility were to be constructed. There will be two major sources for this deterioration of surface water quality, dredging and erosional runoff. Dredging will be necessary in the outer harbor where the ships or barges are expected to dock for loading. Dredges can either dig or suck sediments during this process, but both will suspend large quantities of silt, sand and other debris. Erosion runoff into the Kewaunee River will be a problem from the construction of the loading and stockpiling facility. This entire area will be graded and stripped of all vegetation; this situation is prone to erosion unless preventive measures are taken. Turbidity in the river will eventually flow into the harbor, increasing turbidity in the harbor.

If a high-volume coal handling facility is decided on, major harbor changes will be necessary to accommodate the large lake vessels that will be used. The docking area for these vessels would be on the north side of the outer harbor. Constructing a facility that will handle 770 to 1000 foot lake vessels will mean significant impacts on the local waters. Dredging will be most severe, however the construction of the facilities will also have its impacts.

Noise

Noise impacts for this period are expected to be significant with such equipment as piledrivers, compressors and earth moving equipment both large and small. The Environmental Impact Statement for the Superior, Wisconsin, coal terminal suggested that peak noise levels tend to be near 100 decibels (dba) at 50 feet. Exposure to 100 dba for eight hours can cause serious hearing damage. The effects become less serious with distance.

Fish

The U.S. Army Corp of Engineers in 1978 reported in the Environmental Impact Statement (EIS) for the Weston Power Plant Project in Marathon County, that construction impacts upon the fish would be minor during active construction because fish would simply avoid the area. However, the Weston site is on the Wisconsin River, rather than a large body of water. The Kewaunee construction site will also require dredging which was not an issue at the Weston site. Dredging must be done periodically to keep the shipping lanes open. The impacts created by dredging may have adverse affects on spawning activities in the area. Impacts created by dredging will be discussed in more detail in another section. If this site is selected to house the facility an Environmental Impact Statement (EIS) would probably be required which would define the local impacts.

Wetlands and Wildlife

Because the largest portion of the area being considered is a Class I wildlife habitat and a major wetland, it will primarily be waterfowl and shorebirds that will be impacted most. These species do, however, have the capability of relocating. The mammals residing in these areas are not as mobile. The impacts that the construction of this facility would have on these animals may be similar to other facility construction sites. For instance, the EIS for the Weston Power Plant in Marathon County stated that emigration of medium to large sized mammals to other areas would cause increased densities and stresses in other areas. Nearly complete destruction of mammals now inhabiting the site such as rabbits, ground squirrels, and mice is expected. The mammal population is minor at thie site, however. Birds are more mobile, however the loss of habitat may be important to some species. For example, large numbers of herring gulls nest in the area, and construction will cause displacement of these birds.

Impacts on surrounding habitat due to the noise and the dust may be as severe as the inmigration of displaced mammals. A comprehensive study of the surrounding area's environment and characteristics must be completed before impacts can be positively identified. The EIS would incorporate all of the necessary information about the areas habitat.

OPERATION PHASE IMPACTS

The operation phase of the coal transshipment facility will be a year-round operation for Kewaunee. This will include receiving several unit trains each week and approximately one 42,000-ton self-unloading bulk carrier or many 2000 to 4000-ton lake barges. The operation will require twenty full-time employees.

Economically, the facility may have a substantial impact upon a community the size of Kewaunee. The state occupational tax and local property taxes will provide new revenues for the community, while the facility employment will create jobs and spendable income.

The physical impacts cannot be completely prevented. Air and water quality will be impaired to some degree. The aesthetic value of having coal stockpiled near the harbor area may not be appealing to residents or visitors, but with proper care, the facility may minimize its impact upon the environment to some extent.

TRANSPORTATION

Railroad

The origin of the coal that has been proposed for Kewaunee is from Colstrip, Montana. Colstrip and the route of the shipments can be seen on Map 2. The Burlington Northern Railroad serves the area where the coal originates and is an experienced handler of unit trains. The route would take the shipment through North Dakota, the Twin Cities, to Winona, Minnesota. In Winona, the shipment will transfer to the Green Bay and Western Railroad, and the trip across Wisconsin will be direct to Kewaunee. It is expected that two unit train deliveries to the city would be made each week. Each community that the unit train passes through will be impacted to some extent.

A unit train is by far the least costly form of transporting western coal to the east available at this time. A typical unit train will be 120 cars long, with each car having a capacity of about 100 tons. Shipping time from the mines to Kewaunee is estimated to be five to six days. It might be added that since the Burlington Northern has served the western coal producing states almost exclusively, that this railroad has one of the most modern unit train systems in the country. This is important for the coordination of the railroad and loading/unloading facilities at the new coal terminals.

The present rail system entering the city and within the city is in relatively good condition. The car ferries are served by this section of line now which indicates a frequent use. Some upgrading of the rail network may be required, but it is not expected to be major.

Water Carriers

Several possibilities exist for the shipment of coal out of Kewaunee. For a low volume facility lake barges would probably be utilized, and a high volume facility could utilize either standard self-propelled lake vessels or large self-unloading lake barges.

Self-propelled lake vessels are the most common carriers of coal on the Great Lakes. Most of the current coal carriers however, were built to carry another commodity, therefore creating a large variety of sizes and capacities of the current coal fleet. Ships are now being constructed for the transporting of coal, and these ships are larger, and are designed for efficient handling. Many older ships were in the range of 600 feet in length with approximately a 30,000 ton capacity. Newer coal ships range from 770 feet to 1000 feet and have capacities of 44,000 tons and 67,000 tons respectively.

The self-unloading barge is still in its infant stages on the Great Lakes. The barge is primarily designed to be used in shallow draft harbors, where the self-propelled vessels could not enter. This type of barge is approximately 575 feet long with a capacity of 22,000 tons, and is propelled by a 9000 HP tugboat.

A low volume facility in Kewaunee would need no more than a lake barge which is much smaller than the self-unloading barge previously discussed. This barge has a draft of only 4 to 6 feet, and might be loaded upstream from the existing Kewaunee Bridge. The carrying capacity is 2,000 to 4,000 tons, and is also propelled by a tugboat.

ECONOMIC ENVIRONMENT

Facility Taxes

The revenue gain that will be derived from a coal facility is significant. Again, how significant is dependent upon the size and volume of the facility. The state occupational tax is a tariff against the movement of coal through municipal boundaries. A 5¢/ton tax must be paid by the coal facility on all bituminous and subbituminous coal, coke and briquettes. A 7¢/ton tax is placed on all anthracite coal, coke, and briquettes. Coal coming from Colstrip is a low sulfur, subbituminous coal, and would be taxed 5¢/ton. The occupational tax is broken down as follows: 10% goes to the state, 20% to the county, and 70% to the city.

A property tax levy on a coal terminal may be more significant than the occupational tax. The Superior Midwest Energy Terminal (SMET) in Superior, Wisconsin, pays approximately $800,000 in property tax annually on their 200 acre facility. It is obvious that a terminal such as this has the potential to generate new revenues for the community in which it locates.

Property Value

Properties in the immediate area of the facility and especially residential property may experience a change in values. This will be due to the impacts that the operation of the facility causes, such as additional traffic movement to the site and unit train movements. Industrial property values may increase as a result of this type of project.

PHYSICAL ENVIRONMENT

Water Quality

In the area of a coal storage area, surface water and groundwater will be affected, and several sources are responsible. The most constant source of water degradation is runoff and leachate. Dust accumulation in the areas around a coal storage area also cannot be completely prevented even though the most technically up-to-date, environmentally sound equipment will be used. Dust will fall into surface waters, and unless efforts are made to collect the run-off, rain will wash much of the ground accumulations into the water. Leaching occurs when rain water seeps through the stockpile, taking chemicals and particulates into the ground and eventually the groundwater.

A more direct, but temporary impact upon surface water, occurs during maintenance dredging. Dredging is necessary to add depth to berthing areas along the docks. This must be done periodically because sediments tend to fill in these channels. Dredging destroys organisms in the sediments, as well as adding suspended sediments to surrounding waters. The increased turbidity could cause a temporary out-migration of some aquatic species. Pollutants are sometimes chemically bonded to bottom sediments, and dredging may reintroduce the pollutant to the aquatic system.

Air Quality

The largest impact to the air quality from a coal terminal will be fugitive dust from the movement of coal. Precautions to minimize this problem are now taken in the planning of a modern facility. The Superior Midwest Energy Terminal's EIS predicted one ton per day of fugitive dust.

Pure coal dust should not have adverse affects upon human health according to the Environmental Impact Report that was completed for the SMET project. The only compound found in coal that is questioned as a health hazard is silicon dioxide. With extensive dust control technologies, dust should not have a hazardous impact upon humans.

Dust may have ill-affects upon some mammalian species due to ingestion of dust coated plants, or impacts may occur within aquatic ecosystems due to coal dust smothering benthic organisms.

Noise

The unloading procedure will have three separate noise sources. First is the dumping mechanism, then the impact of the unloading of coal, and then the ventilation system. An accumulated sound from this process will be at a level of approximately 60 dba at 40 feet which is similar to the sound level in a crowded restaurant.

The shuttle conveyor in the stockpile area and the conveyor to the shiploader produces a noise level of 75 dba. Other noises include drive mechanisms, power sources and bulldozer activity. Overall accumulated noise levels may have impacts upon recreation boaters in the area, passersby, and possibly the towns people. Much of the noise impacts can be prevented by constructing an effective buffer area with earth berms and vegetation around the facility.

Aesthetic

The most striking elements to the entire operation may be the stockpiles, and the large coal handling vessels. This may not be a large problem with a low volume or a direct loading facility. In Kewaunee, the site is located in the Kewaunee River Basin, while much of the city development is located on a hill, overlooking the lake, harbor and basin area. Coal stockpiles can be bermed and landscaped to help lessen visual impacts, but this would not be as effective in Kewaunee because most of the town will overlook the facility.

The conveyor system from the stockpile to the loading dock also may be a visual hindrance, although it may be painted to help it blend with its background. The SMET conveyor system stands 120 feet above ground, but, because of the smaller size of Kewaunee's proposed facility, this type of structure may not be necessary.

Other aesthetic impacts will be unit train movements, material handling, and moving equipment; and some will feel that a 700 to 1000 foot vessel in the harbor area would be an unwelcomed sight.

SUMMARY

The City of Kewaunee is located among beautiful rolling hills on the shoreline of Lake Michigan. A natural harbor is created at the mouth of the Kewaunee River where it enters Lake Michigan, within the city limits. The city is accessible to other major geographic areas by road, rail, and water. The Green Bay & Western Railroad and the Chesapeake Bay and Ohio Railroad serve the ferry system between Michigan and Wisconsin. Because of Kewaunee's accessibility by land and water to other areas, and the fact that it is a year-round port, Kewaunee has been selected as a potential site for a coal transshipment facility. The facility would receive western coal and ship it to eastern consumers.

The proposed sites for stockpiling the coal are located primarily in the wetlands, which are often flooded by the Kewaunee River. The federal and state government are protecting wetland areas because of the sensitivity of the wildlife and vegetation habitats that are natural to these areas. An extensive amount of landfilling would be required to ready these parcels for this facility. Other parcels should be explored before deciding to disrupt the wetlands.

Fish and wildlife in the area both had Class I habitat ratings in the river basin and harbor area. Fish may not be permanently impacted by any facility activities. During times of heavy activity in their water habitat, fish have a tendancy to temporarily move until the area settles back to normal. Birds and waterfowl are also mobile, and can move from the construction site to another habitat. Unlike fish habitat, bird habitat does not bounce back to normalcy.

The City of Kewaunee has a population of about 2,800 persons, which is a decline from the 1970 census. Kewaunee County increased, however, and now has a population of 19,539 persons. Incomes are relatively low compared to the regional and state average weekly wages, but over the past decade, the county had a better than average increase. Unemployment ranks among the highest in the region with 9.6% of the labor force out of work.

City services vary in adequacy. The city water supply easily fulfills the demands of the residents with its two wells. The wastewater treatment facility, however, does not serve all the community, and the storm water sewer system is inadequate in many areas of the city. Schools have available space due to the constant decrease in enrollment in the past ten years. Housing and recreation in the city are adequate, and do not require any major adjustments.

Transportation capabilities in Kewaunee make this city promising for a coal terminal. The Green Bay & Western Railroad (GB&W) maintains the network between Green Bay and Kewaunee. The GB&W also links up with the Burlington Northern Railroad in Winona, Minnesota. Burlington Northern transports coal from the mines in Montana to the east and only one rail transfer is necessary to get the unit trains into Kewaunee. Kewaunee's waterway capabilities are also a strong point. The harbor already serves large lake vessels, and has year-round use.

Construction of the facility will take approximately one year and will require about 100 employees. Many of the required work force may come from the county, but some will have to come from outside the area. The Cities of Sturgeon Bay, Manitowoc and Green Bay are easily within commuting range to the site.

Physical impacts to the area will be at its maximum during this phase. Earthmovers grading and stripping vegetation from the site, and wetland filling, all will change the wildlife and environmental quality of the area. Stripped soils will cause erosion problems during rain, causing turbidity in surrounding surface waters. Dredging the harbor and dock areas will destroy organisms residing in the sediments, and suspend pollutants that have settled into layers of sediments. Turbidity will be at its peak at this time. Dredging must be done periodically to maintain the required channel depths.

The operation phase can easily be planned for because it is long term. Unit trains will be a common occurrence, but if routes and schedules are properly planned and laid out, impacts could be minimized. Two to four unit trains per week are anticipated, depending on the volume of the facility. Whether lake barges or large lake vessels are used also depends on the volume of the facility.

A facility such as this means increased revenues to the area. Additional jobs in the community, increased spendable income and new development as a result of this facility can be expected. Most of the facility related revenue will come from taxes. The occupational tax comes from a tax on the unit of commodity passing through the municipal boundaries. In this case, it is 5¢ per ton of coal. Property taxes will also generate local revenues.

Water and air quality are not as much affected by the operation of the facility as one might expect. The most modern up-to-date equipment will be used and the environment is usually well protected against fugitive dust, pollutant runoff and other environmental hazards. An estimated one ton of fugitive dust per day is lost from the entire terminal facility at SMET.

Aesthetically, the facility will be an impact to residents and visitors alike. The terminal will be located near the population and visual impacts cannot be avoided. If facility planning is done carefully, with the retention of the harbors natural beauty in mind, the terminal may fit into the Kewaunee harbor with a minimum impact upon the aesthetics of the area.

City officials and residents should become as cognizant about all aspects of this project as possible. Once the facility is under construction, the city has a long-term neighbor that it must live with. Officials should be aware of future projections of coal use, movements of coal from west to east, and potential exports. Facts such as other facilities being planned in the country that could compete with the Kewaunee site and information about the capacity of the mines should be monitored. The effects of a major transshipment facility upon this community would be too dramatic for the residents to simply accept the installation. Extensive research and proper planning by community leaders could assure a balance between facility site needs and the overall community needs.

BAY-LAKE REGIONAL PLANNING COMMISSION

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