

TRIBUTARY OF THE BARABOO RIVER
AT REEDSBURG - SAUK COUNTY

STREAM CLASSIFICATION
CELLOX CORPORATION

JULY, 1990
ROGER SCHLESSER, SOUTHERN DISTRICT

BUREAU OF WATER RESOURCES MANAGEMENT
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Region SCK County Sauk Date 07-1990 Classification FAL (WWFF)

Water Body: Baraboo R., trib to

Discharger: Cellox Corporation

If classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that apply:

Naturally occurring pollutant concentrations prevent the attainment of use

Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met

Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place

Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use

Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses

Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence included

- Biological Data (fish/invert)
- Chemical Data (temp, D.O., etc.)
- Physical Data (flow, depth, etc.)
- Habitat Description
- Site Description/Map
- Other:

Comments:

FAL

SUMMARY

Cellox Corporation along with at least one other industry discharge cooling water via a storm sewer to a tributary of the Baraboo River. Physical and fishery information collected on the tributary indicate that it should be classified as full fish and aquatic life (C), forage fish.

GENERAL DESCRIPTION

Cellox Corporation discharges contact cooling water to a city storm sewer. The cooling water travels through approximately 2700 LF of storm sewer before being discharged. The permit application indicates a discharge of 9,400 gpd but they have recently sold off part of the plant and may only be discharging one-half of that flow. The temperature of the discharge from Cellox to the storm sewer was taken the morning of June 28, 1990. The highest temperature reading was 45.5°C.

Noncontact cooling water (according to Bill Meyer - DPW) is also discharged to this storm sewer from Grede Foundry. Two temperature measurements were taken at the storm sewer outlet on July 17, 1990. The temperature at 10:30 and at 12:00 was 27.2°C. Tom Harpt indicated that Grede Foundry runs 7 days a week; 24 hours a day and has an average discharge of 0.225 MGD. Cellox runs 4 days a week; 2 shifts, 20 hours a day. There may be other discharges to this storm sewer but they couldn't be confirmed.

STREAM HABITAT AND BIOLOGY

Cooling water discharges from the storm sewer to an open channel or tributary of the Baraboo River south of Division Street. It appears this tributary has been enlarged due to the large volume of storm water discharged during significant rain events. The tributary has a distinctive bed and banks, flows through a wetland area and eventually enters the Baraboo River.

From the discharge of the storm sewer to the Baraboo River, the tributary is approximately 1800' in length. Large rough fish were seen in the mid-section of the tributary and at its mouth. On July 17, 1990 a short section of the tributary was surveyed with a backpack shocker. Mostly tolerant species were found but they were present in large numbers (Table 1). A fair number of minnows were even present in the splash pool at the storm sewer outlet. Fish common to the Baraboo move in and out of the tributary depending upon its flow. Fish raised in the tributary can provide a food source for predator fish in the Baraboo.

Much of the tributary is bordered by wetland and several seep areas provide additional water to it. Flows in the tributary vary somewhat depending upon who is in production and how much cooling water is discharged. Bottom substrate varies considerably along its entire length. Substrate varies from sand, gravel-rubble, clay, to silt in the lower reaches. A backwater area at the mouth of the tributary is created by the Baraboo River. Its size varies depending upon the elevation of the Baraboo. It provides an ideal area for rough fish to spawn. The head end of the backwater area has an abundance of arrowhead and sedges along with several other species of grass.

STREAM CLASSIFICATION

The tributary to the Baraboo River presently maintains a good population of tolerant forage fish. But due to the habitat, fluctuating water levels, and cooling water discharges the tributary isn't expected to maintain any type of a stable warm water sport fishery. Therefore, the tributary should be classified as full fish and aquatic life (C), forage fish.

TABLE: 1 List of fish for sampling site: 650' below storm sewer outlet

DATE: 7/17/90

Twn 12N Rng 4E Sec 15 1/4 1/4 SE NE

STREAM: Tributary to Baraboo R.

Station mileage: 0.2

County: 57

SOURCE OF DATA: WRM

GEAR: 3

EFFORT: 01

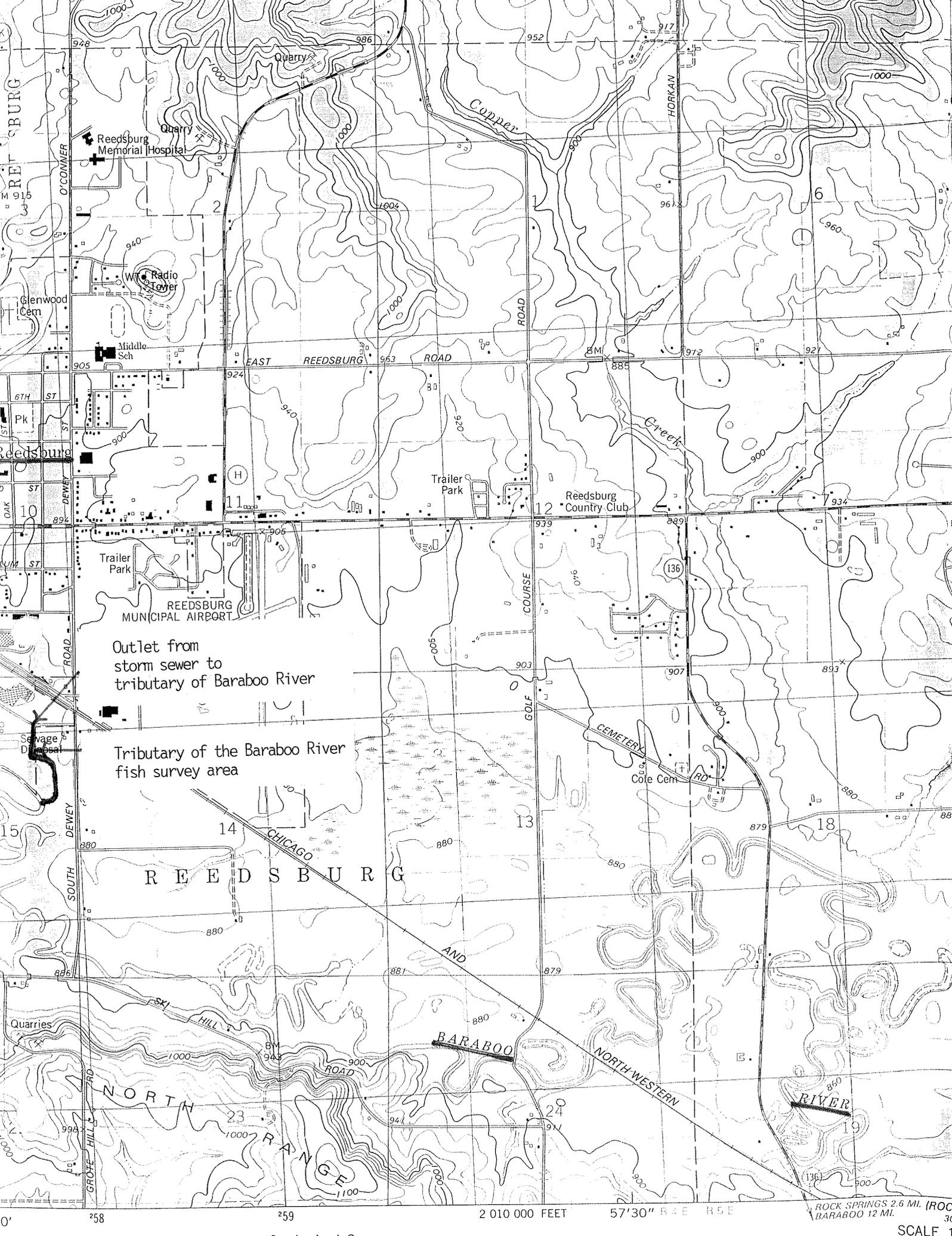
CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
K01	CENTRAL MUDMINNOW	UMBRIDAE	Umbra limi	16	Very Tolerant
M28	COMMON SHINER	CYPRINIDAE	Notropis cornutus	46	Tolerant
M45	BLUNTNOSE MINNOW	CYPRINIDAE	Pimephales notatus	21	Tolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	5	Very Tolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	7	Tolerant
O02	BULLHEAD YOY	ICTALURIDAE	(Unsp.)	9	Sport Fish
W05	GREEN SUNFISH	CENTRARCHIDAE	Lepomis cyanellus	2	Sport Fish

Stream Tributary to Baraboo River Reach Location Mid-section of Tributary Reach Score/Rating 166/Fair
 County Sauk Date 7/17/90 Evaluator R. Schlessner Classification FAL/C

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 12	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 12	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 11	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 12	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 12	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steeper. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" 18	<3" 24 <6" 24
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' 24 <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 10	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16
Column Totals:	0	25	119	24

Column Scores E 0 +G 25 +F 119 +P 24 = 168 = Score

<70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor



Outlet from storm sewer to tributary of Baraboo River

Tributary of the Baraboo River fish survey area

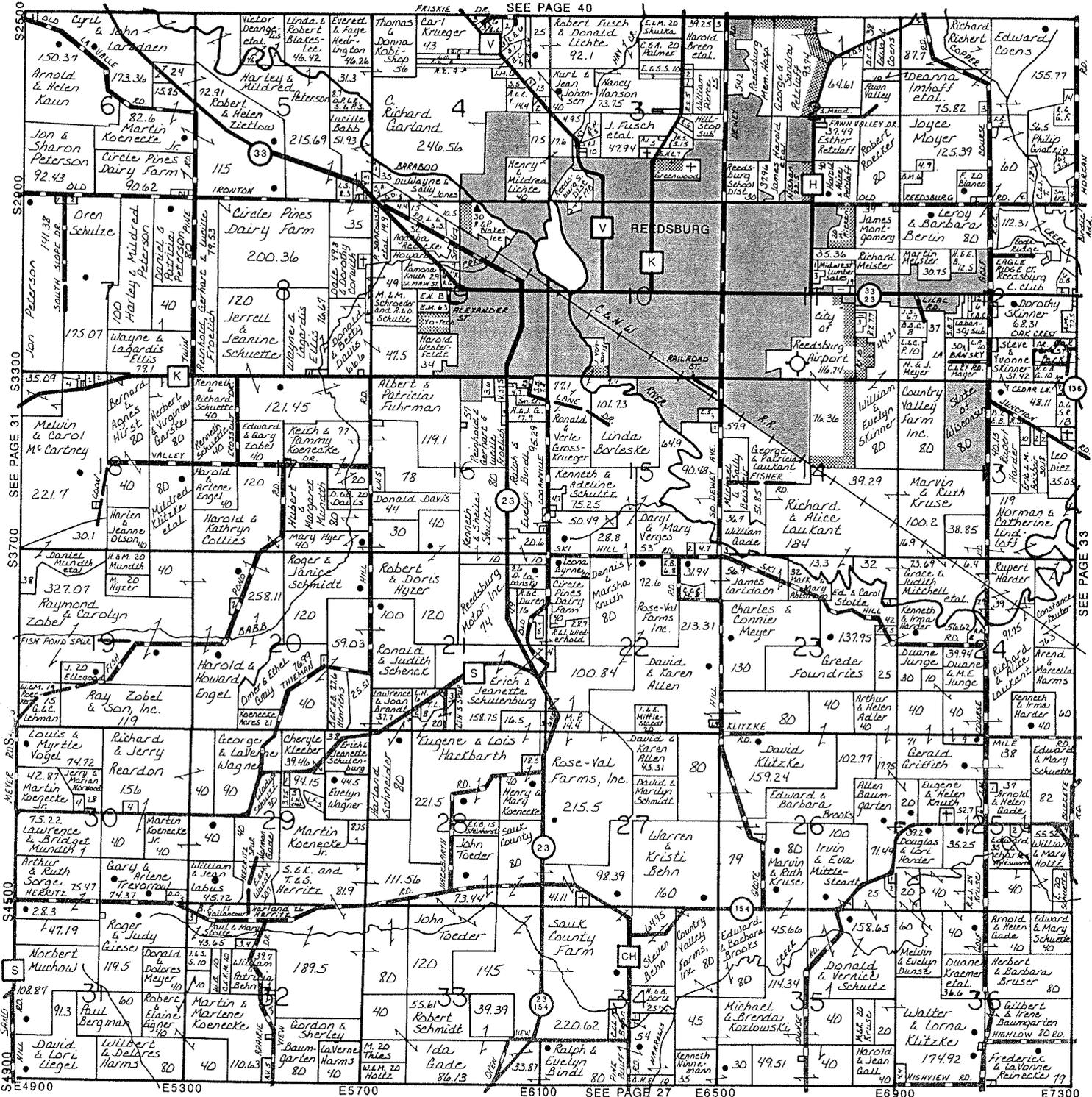
REEDSBURG

BARABOO

RIVER

ROCK SPRINGS 2.6 MI. (ROCK SPRINGS)
BARABOO 12 MI.

SCALE



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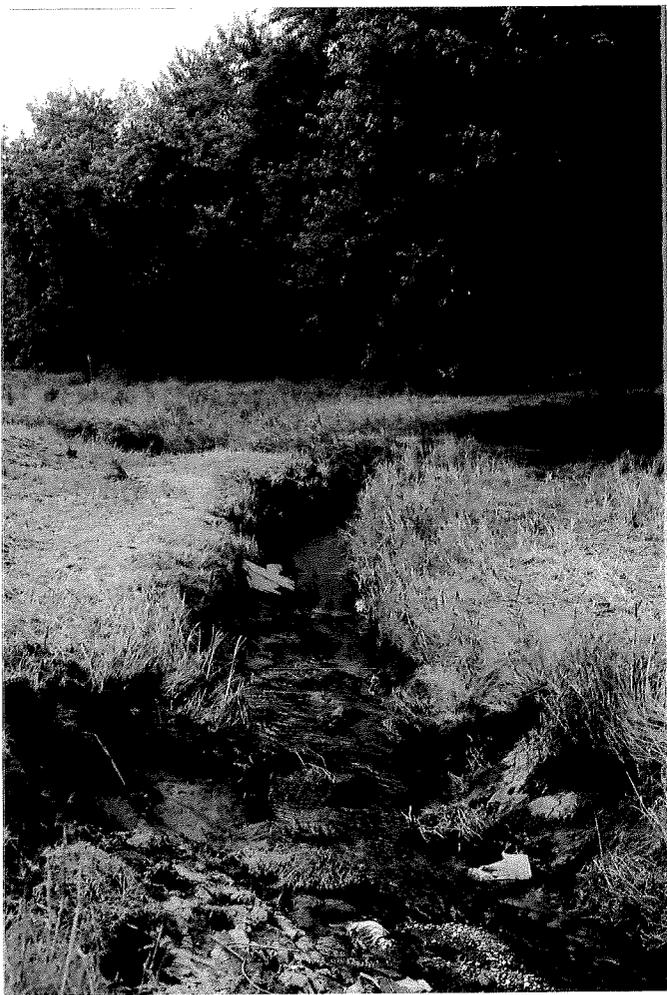
Cellox Corporation
Cooling water discharge
site - from storm sewer.



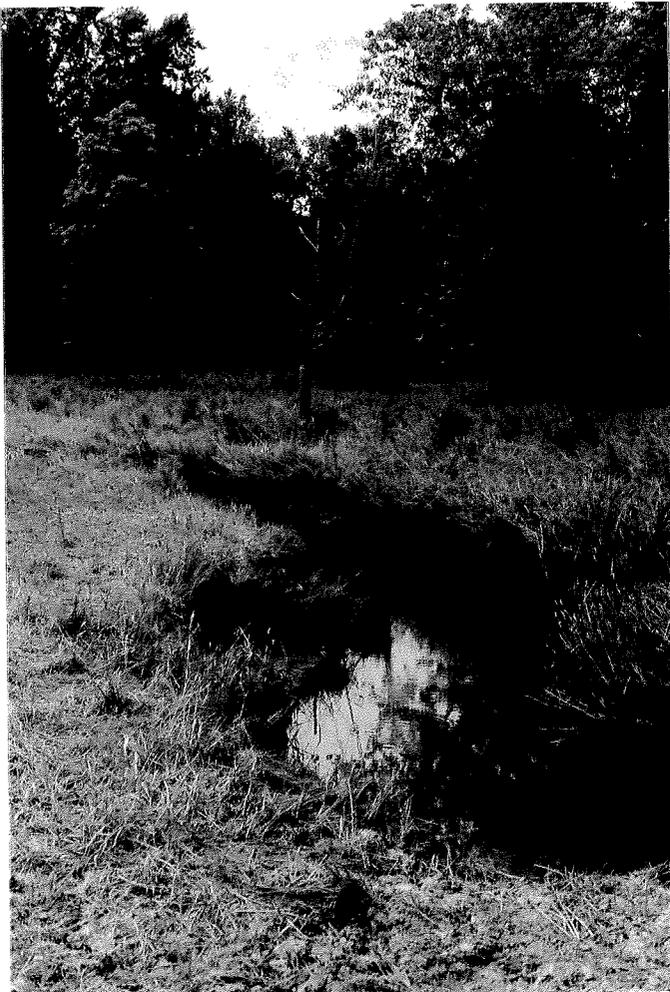
Tributary to Baraboo
River, 500' below
outfall.



Tributary to Baraboo
River, fish survey area.



Tributary to Baraboo
River.



Tributary to Baraboo
River.



Tributary to Baraboo River. Fish survey area. 650' below outfall.



Tributary to Baraboo River.



Juncture of tributary
and backwater area of
Baraboo River.



Tributary to and
backwater of Baraboo
River.



Tributary to and
backwater of Baraboo
River.



Tributary to and
backwater of Baraboo
River.



Mouth of tributary to
Baraboo River.



Baraboo River at
entrance of tributary.



Baraboo River downstream
of the entrance of the
tributary.