

LOWER BIG RIB RIVER WATERSHED (UW23)

WATERSHED SUMMARY

The Lower Big Rib River Watershed (Map UW23) lies entirely within Marathon County and ends at its confluence with the Wisconsin River. Incorporated areas in the watershed include the City of Wausau and the villages of Edgar and Marathon. Public lands within the watershed include Marathon, Rib Falls, and Sunny Vale County Parks, and part of Rib Mountain State Park.

The Big Rib River is the predominant surface water feature. The portion that lies within the watershed project is located from a point just below the confluence with Black Creek, in northwestern Marathon County, and flows southeasterly approximately 24.4 miles, where it drains in to Lake Wausau.

Groundwater quality in the Lower Big Rib River Watershed is generally considered poor. Individual well yields are generally low to inadequate. As a part of the water quality inventory, seventy-six private well samples were collected and analyzed for nitrates and triazines. Results of the inventory indicated 29% of the wells sampled were above the Enforcement Standard (ES) of 10 ppm; 46% of the samples were within the Preventative Action Limit (PAL) of 2-10 ppm. Nitrate concentrations ranged from 25 ppm to not detectable. Ten samples exceeded the PAL for atrazine. Water quality data from township wells within the watershed (1993 - 1997) indicated 21 percent of 2,118 wells sampled were positive for coliform bacteria and considered unsafe as a potential water supply.

The results of the triazine test indicated none of the wells sampled were above the ES of 3 ppb for triazine, and 13 percent of the wells sampled were within the PAL range of 0.3 ppb-3.0 ppb. Samples analyzed for triazines indicated concentrations ranging from non-detectable to 1.3 ppb.

Land uses and/or management practices elevating nitrate and pesticide concentrations in groundwater include:

- Poor manure and nutrient management practices
- Increased pesticide use and amounts, and poor disposal practices
- Poorly sited and/or constructed and mismanaged manure storage facilities
- Improperly abandoned wells

Groundwater is the only source of drinking water in the Lower Rib River Priority Watershed. It is stored in porous spaces and cracks within the sub-surface soil and rock layers. The unconsolidated materials and rock layers saturated with water and capable of providing adequate quantities of water are defined as an aquifer. The top of the uppermost aquifer is called a water table. Aquifers receive and store water in the ground and discharge this groundwater to lakes, streams and wetlands.

Groundwater flows from recharge areas such as hills and exposed bedrock to discharge areas such as lakes, rivers and wetlands. In the watershed, groundwater flow is local and follows topography with groundwater discharging into the Big Rib River and Lake Wausau (Kendy, 1988). The time between groundwater recharge and discharge is relatively short. Regional groundwater flow in western Marathon County is southeast toward the Wisconsin River (Bell, 1974).

Principal aquifers within the watershed are the Shallow Sand and Gravel Aquifer underlain by the Crystalline Granite Bedrock Aquifer. In most of the watershed clay outwash deposits that do not serve as an aquifer overlie the granite bedrock aquifer. The aquifer of choice is typically the shallow sand and gravel aquifer where available. This aquifer exists primarily in the far eastern portion of the watershed, and intermittently along river channels.

Well-developed systems of ephemeral (seasonal) and perennial (present all year) streams that drain the land surface characterize the Lower Big Rib River Watershed. There are nine named perennial streams in

the watershed, which have a combined length of about 85 miles. These streams support warm water fish communities and maintain at least a small continuous flow throughout the year. The Big Rib River is the predominant surface water feature. The portion of the river within the watershed begins just below the confluence with Black Creek, in northwestern Marathon County. The River flows southeasterly for 24.4 miles where it enters Lake Wausau, a 1,918-acre impoundment formed by the Big Rib, Eau Claire and Wisconsin Rivers. Other primary streams in the watershed include Einert, Pine, Omar, Scotch, Soda, Artus, Kennedy and Pet Brook Creeks. Only the Big Rib River and a 3.8-mile stretch of Scotch Creek from the mouth upstream, support a warm water sport fishery. The remaining streams support limited aquatic life, warm water forage, and limited forage fish communities.

Smaller tributaries including 54 miles of unnamed streams within the watershed are only known to support forage/minnow communities due to the flashy nature of the systems. Flashy systems exhibit conditions of high rates of run-off for short periods during rain events, but low sustained base flows; in some cases the streambeds are persistently dry. Human activity in the watershed, such as deforestation, draining of wetlands, nonmetallic mining and spring development has contributed to low baseflow conditions.

The Big Rib River and other streams are not reaching their highest potential use due to low baseflow conditions and the resulting low levels of dissolved oxygen, and pollution from nonpoint sources. Eroding croplands, streambanks and improperly managed livestock operations are the major sources of nonpoint pollution in the watershed. The primary causes of streambank erosion are due to a combination of livestock grazing of streambanks, historic in-stream sand and gravel mining and high flows during spring run-off events. It is common to observe scarring on trees five feet above base flow water levels in some of the streams. Severe streambank erosion leads to deposition in pools, the filling of spawning substrate within riffle areas, and the elimination of streambank cover.

The 137-square-mile watershed, part of the Central Wisconsin River Basin, was designated as a "priority watershed" in 1995. This designation allows eligible grants within the watershed to receive cost share assistance to reduce nonpoint source pollution sources through the installation and/or implementation of Best Management Practices to improve or enhance water quality. In 1998, a nonpoint source control plan was put approved for the Lower Big Rib River Watershed. The anticipated completion date is December, 2009 (Esser, 2000).

The main branch of the Lower Big Rib River contributes roughly 70 percent of all streambank erosion in the watershed. A gully erosion inventory of 17 sites estimated 148 tons of sediment enters the Lower Big Rib River and its tributaries annually.

NPS pollution cannot be easily traced to a single point of origin such as a point source effluent discharge from an industrial or municipal wastewater treatment facility. NPS pollution occurs when rainwater or melting snow flows across land picking up soil particles, organic wastes, fertilizer or other pollutants and carries them to surface water, groundwater, or both. These soil particles and organic wastes contain phosphorus and nitrogen, the same compounds found in commercial fertilizers. Soil particles reaching tributaries and the river channel as sediment lead to a general decrease in water quality.

The 1990 Upper Wisconsin Central Sub-Basin Water Quality Management Plan identified the Lower Big Rib River Watershed as seriously affected by NPS pollution from livestock waste runoff. Problem areas are confined to tributaries of the Big Rib River. The towns of Cassel, Rib Falls, and Stettin lie within the Lower Big Rib River Watershed. Soil erosion rates range from 3.1 - 3.8 tons/acre/year (Kaatz). These soil loss rates are high compared to other areas of Marathon County. Low dissolved oxygen from run-off has affected the Wisconsin River dissolved oxygen levels all the way down to the DuBay Dam.

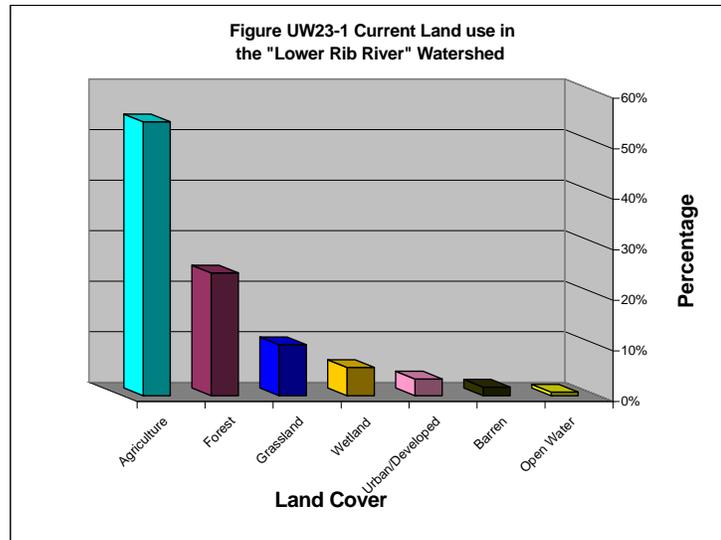
Water quality problems include diurnal shifts in dissolved oxygen, nutrient loading, high fecal coliform bacteria counts and biotic index scores showing poor to very poor water quality in certain streams.

Numerous sand and gravel washing operations can be found on or near streams in the watershed. Zmuda (1987) indicates there were 75 excavation sites disturbing nearly 900 acres of the upper and lower Big Rib River Watersheds. This acreage is increasing. The long-term cumulative impacts to this riverine system caused by sand and gravel excavations are thought to be minimal.

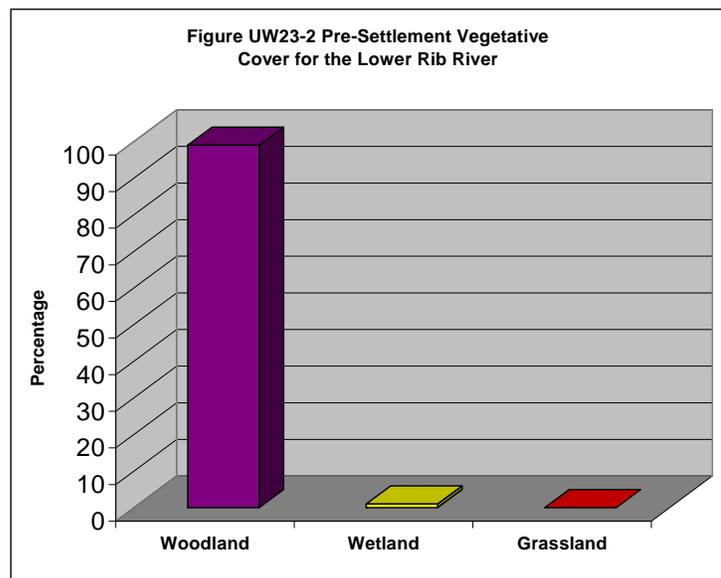
Edgar and Marathon City have municipal wastewater collection and treatment systems discharging effluent to surface waters in the watershed. Although these treatment plants are capable of producing effluents low in biochemical oxygen demand (BOD) and total suspended solids, they are sources of nutrients discharging to surface waters. The facilities are not designed and operated for nutrient removal. Cheese factories are also a potential source of nutrients if washwater is discharged to surface waters.

POPULATION DEMOGRAPHICS

The Lower Big Rib River Watershed population was estimated at 19,001 persons in 2000 (Faust 2000). Most of the watershed residents live within the incorporated areas of Wausau, Marathon and Edgar. Only 5% of this watershed is being developed and it has the fifth largest population in our basin. With the exception of the towns of Cassel and Rietbrock, regional trends indicate municipal populations will continue to grow (North Central Wisconsin Regional Planning Commission, 2000, Wisconsin Department of Administration, 2000).



According to land survey records from the mid-1800s, original vegetation consisted primarily of woodlands (Figure UW23-2). Current land use consists of agriculture(54%), forested(24%), grasslands(10%), and 6% wetlands (Figure UW23-1). Marathon County ranks second statewide in milk production behind neighboring Clark County, and first in barley and ginseng production. Dairy farming is an important business within the watershed. The average size dairy farm in this area is about 171 acres. The county ranks second in production of alfalfa, oats, and corn silage (Wisconsin Agriculture Statistics, 1997, Enterprise Information, 1998)



WATERSHED STREAMS

A summary of watershed streams is listed in Table UW23-1. Figure UW23-3 indicates total number of stream miles in the Lower Big Rib River Watershed.

Lower Big Rib River

The Lower Big Rib River is classified as a warm water sport fishery. The river is currently stocked with muskies from Marathon City downstream to Lake Wausau. Other gamefish species commonly found in the river include walleye, northern pike and smallmouth bass. A mercury advisory for the consumption of walleye exists between Rib Falls and Lake Wausau. Limiting factors of habitat include nutrient enrichment, sedimentation, lack of fish cover and poor flow regimes. Sources of these problems have been identified as cropland erosion, streambank erosion, urban runoff, and point source discharges. Upstream of the town of Rib Falls, the Big Rib River appears to be undergoing long-term bank erosion resulting from natural processes. Bar development is apparently the result of major rain episodes rather than historic deposition. It's thought that the falls at Rib Falls have served as a natural barrier to the effects of past in-stream mining by preventing head cutting. Historic in-stream nonmetallic mining operations have had a negative impact on the river downstream of Rib Falls.

Artus Creek

Artus Creek is a seven-mile tributary of the Big Rib River and is classified as a warm water forage fishery. Dominant fish species include blacknose dace, creek chub, burbot, longnose dace and common shiner. Limiting factors of habitat in Artus Creek include low baseflow conditions, streambank pasturing, bank erosion, bacterial exceedences, sedimentation and nutrient enrichment. Total phosphorous samples collected on four occasions ranged from 0.04 to 0.282 mg/l indicating nutrient enrichment of the stream. Fecal coliform bacteria samples collected during non-event related weather patterns reveal levels increased from 70 to 320,000 colonies per 100 ml, 400 colonies per 100 ml is the state standard (Klosiewski, 1997). A HBI rating indicates slight organic loading to the stream.

Einert Creek

Einert Creek is a five-mile long, medium hard water stream having neutral pH, light brown water. The stream is a tributary to the Big Rib River and supports a warm water forage fishery. Minnows appear to be the dominant fish within the creek, but runs of larger fish such as white suckers were observed during spring high flows. Game fish may also travel upstream during spring searching for spawning areas, but baseflow conditions are inadequate in much of the stream during summer months to support a sport fishery.

In-Stream habitat is limited by sedimentation and shallow channel depth. Biotic indexes indicate minimal organic loading to the stream. Excess levels of total phosphorous were recorded.

Surface water resource problems include bank erosion due to the flashy nature of the stream and livestock bank trampling, low baseflow conditions, sedimentation and nutrient enrichment.

Kennedy Creek

Kennedy Creek is a seven-mile long tributary to the Big Rib River and is classified as a warm water forage fishery. Factors affecting Kennedy Creek include, flashy stream flows, low baseflow conditions, sedimentation of riffles, deposition of pools and nutrient enrichment. The substrate of the lower reaches of the stream consists mainly of shifting sand. It is assumed that much of the sedimentation is of natural origin from the streambed itself. Total phosphorous levels recorded on three separate occasions in 1991 and 1992 range from 0.09 to 0.12 mg/l, indicating nutrient enrichment of the stream. Biotic indexes indicate slight organic loading to the stream (Klosiewski, 1997).

Figure UW23-3. Total number of stream miles in the Lower Rib River Watershed.

Exceptional Resource Waters = 0.0
(ERW or Cold I)

Outstanding Resource Waters = 0.0
(ORW or Cold II)

Cold III = 0.0

Warm Water Sport Fishery = 29.2
(WWSF)

Warm Water Forge Fishery = 33.0
(WWFF)

Limited Forage Fishery = 6.2
(LFF)

Limited Aquatic Life = 0.0
(LAL)

Unknown Classification = 63.0
Total of Stream Miles = 131.4
Number of Streams / Ditches= 41

Omar Creek

Omar Creek is a three-mile tributary to Scotch Creek that supports a warm water forage fishery. Nutrient enrichment, organic pollution, sedimentation, and stormwater runoff from the Village of Edgar and flashy flow conditions are affecting Omar Creek. The lower portion of the stream contains thick deposits of sand and silt. Heavy growths of macrophytes and filamentous algae are also found in this area. Biotic index results indicate significant organic loading to the stream.

Pet Brook Creek

Pet Brook is a three-mile long tributary to Scotch Creek that supports a warm water forage fishery. The streambanks are severely grazed in areas, filamentous algae are common, and phosphorous was recorded in excess amounts. Flashy flow conditions, sedimentation and loose sand substrate are also a problem affecting aquatic habitat.

Pine Creek

Pine Creek is a three-mile long, medium hard water, slightly acidic tributary of the Big Rib River that supports a warm water forage fishery. Stream substrate includes areas of fractured rock to silty clay. Limiting factors of in-stream habitat include flashy streamflow, nutrient enrichment, sedimentation, streambank pasturing and barnyard runoff. Biotic indexes indicate little organic loading to the stream.

Scotch Creek

Scotch Creek is eighteen miles long and is the largest tributary to the Big Rib River. The first 3.8 miles upstream from its mouth support a warm water sport fishery with small mouth bass and northern pike present. The creek supports a warm water forage fishery from 3.8-10 miles upstream. Biotic index results indicate some organic loading to the stream. Very high levels of total phosphorous were recorded on three occasions averaging 0.2 mg/L.

The Village of Edgar discharges to Scotch Creek where the stream is list in Administrative Code as a limited forage fishery.

Water resource problems include flashy stream conditions, severe flooding, sedimentation, low dissolved oxygen conditions, bacterial problems, organic pollution, and excess nutrient loading from agricultural practices.

Soda Creek

Soda Creek is a five-mile tributary of Scotch Creek that supports a warm water forage fishery. High levels of total phosphorous were recorded on two occasions, averaging 0.19 mg/l. Biotic index results indicate fairly significant organic loading to the stream

Low baseflow conditions, sedimentation, organic loading and excessive nutrient enrichment are impacting Soda Creek.

Unnamed Creek 5-14

Unnamed Creek 5-14 is a feeder stream to the Big Rib River. Due to its small size and shallow depths this stream was not investigated during the appraisal process. Results from fish sampling conducted during the summer of 1998 indicate the stream supports a warm water forage fishery including reddsidedace. Redside dace are listed as a special concern species in Wisconsin.

Unnamed Creek 10-2

Unnamed Creek 10-2 is a 1.6-mile long tributary to Scotch Creek. Fish surveys completed during the summer of 1998 indicate the stream supports a warm water forage fishery.

The stream banks are severely grazed in areas causing bank erosion, sedimentation and excessive nutrient enrichment. An impoundment of the stream at East Partridge Lane is also affecting water quality.

Unnamed Creek 16-12

Unnamed Creek 16-12 is a small feeder stream of the Big Rib River. Fish sampling conducted during the summer of 1998 indicate the stream supports a warm water forage fishery. Predominant species comprised blacknose dace, creek chub, johnny darter and redbreast dace. Filamentous algae are common in reaches due to nutrient enrichment. In many areas, the stream bottom is covered with a soft shifting sand substrate. Problems affecting water quality in these streams include streambank erosion, flashy water conditions and nutrient enrichment.

Unnamed Creek 8-15

Unnamed Creek 8-15 is a small feeder stream populated by species of forage fish. Filamentous algae are common in some reaches due to nutrient enrichment. In many areas, the stream bottom is covered with a soft shifting sand substrate. Problems affecting water quality in these streams include streambank erosion, flashy water conditions and nutrient enrichment.

Unnamed Creek 3-7

Unnamed Creek 3-7 is a small feeder stream to the Big Rib River and is classified as a warm water forage fishery. Due to its small size and shallow depths this stream was not investigated for the appraisal process. Aquatic habitat surveys conducted on Unnamed Creek 3-7 in 1986 rated the stream "fair" to "poor".

Unnamed Creek 16-6

Unnamed Creek 16-6 is a small feeder stream to the Big Rib River. Results of fishery surveys completed in 1998 indicate the streams supports a cold water fishery including brook trout. Unnamed 16-6 was the only stream surveyed in the watershed that supported brook trout, three fish were captured during the fish survey. Dominant species captured were creek chub, white sucker, blacknose dace, johnny darter, and common shiner. Filamentous algae are common in reaches due to nutrient enrichment. In many areas, the stream bottom is covered with a soft shifting sand substrate. Problems affecting water quality in these streams include streambank erosion, flashy water conditions and nutrient enrichment.

Unnamed Creek 11-12

Unnamed Creek 11-12 is a 2.1-mile long tributary to Kennedy Creek. Fishery surveys completed in 1998 found brook stickleback, central mudminnow and creek chub. No other biological investigations of the stream have been conducted.

Unnamed Creek 31-12

Unnamed Creek 31-12 is a 3.5-mile tributary to Pet Brook Creek. Fishery surveys completed in 1998 indicate the stream supports a warm water forage fishery. No other biological investigations of the stream have been conducted.

WATERSHED LAKES

Lake Wausau, approximately 1,918 acres in surface area receives 133 square miles (100%) of the Lower Big Rib River's watershed drainage, and is the third largest body of water in Marathon County. It offers a diverse recreational resource, including boating and year-round fishing. The lake has a history of water quality problems including, eutrophication, algal blooms, excess levels of sediment, nutrients and organic matter. A portion of Lake Wausau is located within the watershed. There are no other lakes larger than 20 acres located within the watershed.

The area where the Lower Big Rib River enters Lake Wausau provides a unique area for migratory birds and other wildlife, loons, trumpeter swans and other migratory birds on their way to northern nesting grounds. It is also home to many great blue herons that have developed a rookery on a small island in this area.

The most popular activities on the Big Rib River and Lake Wausau are fishing, boating, and hunting. The tributary streams offer fishing and hunting activities, but to a lesser extent. This area also provides a unique fishery with shallow bays and sloughs providing game fish spawning habitat, with the ability to produce large musky.

WISCONSIN POLLUTION DISCHARGE ELIMINATION SYSTEM (WPDES)

Table UW23-2 summarizes the WPDES found in Lower Big Rib River Watershed.

Cassel Garden Farmers Co-op Cheese Company

The permittee operates a cheese factory that averages 33,000 pounds of cheddar cheese made from 330,000 pounds of raw milk per day. Approximately 3,800 gallons of wash water is generated and discharged to a 2-cell ridge and furrow system with a combined hydraulic capacity of 5,000 gallons per day. A small volume of boiler blow-down is discharged to the ridge and furrow system. A portion of processed wastewater from cheese production will be diverted from the ridge and furrow system for land spreading. The whey produced is shipped to another dairy, Mid-Whey Powder Company in Edgar. Sludge is also land spread.

Cloverbelt Cheese Factory

The Cloverbelt Cheese Factory is located approximately 5 miles southeast of the village of Athens at the intersection of Cardinal Road and Ewald Lane. The factory makes Colby, Monterey Jack and Mozzarella cheese from raw milk. Approximately 120,000 pounds of milk are taken in each day to produce an average of 12,000 pounds of cheese per day.

Wash water amounts to about 3,900 gallons per day. It is currently land spread on 3 parcels of land near the plant, totaling 220 acres. About 100 gallons of whey is spread on the same parcels on Saturdays. The remainder of the whey, about 108,000 pounds per day, is taken to Mid-Whey Powder Company in Edgar.

Marathon Cheese Corp., a cheese packing plant, in Marathon owns Cloverbelt Cheese Factory.

Village of Edgar

Edgar lies in West-central Marathon County, just south of the intersection of State Highway 29 and County Highway H. The WWTP discharges to Scotch Creek. The Village of Edgar municipal wastewater treatment plant has a design life at the current population growth until the year 2003. The engineering plan for the facility was approved on September 1982. The Village of Edgar wastewater treatment facility was built in 1983. An average of 1,056 pounds of solids comes in for treatment on any given day. The average daily flow of wastewater to the wastewater treatment plant is 155,520 gallons a day. The maximum capacity the wastewater treatment plant is able to hold is 500,000 gallons a day.

Village of Marathon City

Marathon City lies in West-central Marathon County, just south of the intersection of State Highway 29 and State Highway 107. The WWTP discharges to the Rib River. The Village of Marathon City municipal wastewater treatment plant had major improvements done to it in 1999 and no projection has been made on how long the current facility will be up and running. An average of 506 pounds of solids enters the plant on any given day. 1,230,000 gallons of influent enters the plant daily and it has a design capacity of 300,000 gallons a day.

Mid-Whey Powder

This facility dries whey using vapor recompression condensers. Approximately 400,000 pounds per day of whey is processed on a five-day per week production schedule. Condensate of whey, low strength cleanup wastewater, boiler water and vacuum seal water is land applied through spray irrigation. High strength cleanup wastewater is discharged to a holding tank and then land applied to various approved fields. The permittee no longer discharges to Scotch Creek; all wastewaters will be land applied.

GROUNDWATER

The Lower Big Rib River Watershed contains wells from two municipal water systems, which have wells, located within the watershed boundary (Table UW23-3). The Village of Marathon City and Edgar utilize groundwater sources within the watershed for their drinking water supplies.

Marathon City has three wells which withdraw water from the sand and gravel aquifer located adjacent to the Rib River. Two of the wells are actually located within the flood plain of the Rib and become isolated from dry land access during high water periods. A third well was abandoned due to bacteriological contamination. An extensive search for sources outside of the floodplain proved fruitless and therefore a third well was drilled just off the Highway 107 bridge that would provide dry land access during flood stage. All three wells contain elevated concentrations of manganese and iron that resulted in many water quality complaints related to brown and black staining of laundry and porcelain fixtures as well as taste and odor complaints. The village is currently constructing a water treatment plant to remove the manganese and iron from the well water prior to serving it to the public.

In addition to naturally occurring manganese and iron, the wells have also tested high in naturally occurring radon, which is removed through aeration facilities. Very small concentrations of volatile organic contaminants are also occasionally detected in the wells demonstrating the highly vulnerable situation these wells are located in. The aquifer these wells are in is located between two bedrock ridges that funnel runoff from the village into the Rib River valley. The Village has been strongly encouraged by the Department to adopt a Wellhead Protection Program to help protect these wells from further contamination, but this type of proactive program is not a requirement and the Village chooses to react to contamination of their water supply with treatment technology. Chlorine is added to insure bacterial growth in the distribution system is minimized and fluoride is added to optimize the prevention of dental cavities. The pH is also increased with sodium hydroxide to stabilize the water and prevent corrosion of the plumbing systems.

Edgar has 5 wells, which withdraw water from the crystalline bedrock aquifer located adjacent to Scotch Creek and Pet Brook. The well numbers are Wells 7-11. Wells 1 - 6 were generally shallow sand and gravel wells that were high in iron and have since been abandoned. Chlorine is added to insure bacterial growth in the distribution system is minimized and fluoride is added to optimize the prevention of dental cavities. Wells 10 and 11; located northeast of the village are the main production wells at this time because they are the only wells that have been provided with corrosion control through pH adjustment. The village is waiting to determine what the new radon regulations will be before constructing any final treatment for Wells 7-9. Regardless of the new radon limit, Edgar will need to provide aeration for radon removal. Since their two wellfields are located on opposite ends of the village, they are looking at constructing two separate treatment facilities. Edgar has made progress in adopting a Well Head Protection Program, but has not been aggressive in the implementation of this program.

Individual well yields are generally low to inadequate. Having 3-4 wells serving their operations is common for farms in the watershed. It is also common for single-family residential homes to have more than one well serving their home, because of low aquifer yields of the granite aquifer.

Beginning in 1936, the State of Wisconsin has required well drillers to document geological formations that are encountered during well construction. The depths and thickness of the various soil and rock layers are recorded on well construction reports and submitted to the state. These well construction reports, in conjunction with Wisconsin Geological and Natural History Survey reports and other geologic logs, identify groundwater occurrence in the Lower Big Rib River Watershed.

Private well owners, realtors, well drillers, pump installers and local government agencies; collect water samples from private wells. The water samples are analyzed by the Marathon County Health Department Laboratory for the presence of coliform bacteria, nitrate + nitrite (NO₃+NO₂) concentration.

The Central Wisconsin Groundwater Center of the University of Stevens Point conducted well samples in every watershed in the Central Wisconsin Basin for nitrates and triazine. In the Lower Big Rib River Watershed 81 wells were tested for traces of nitrates, of the 81 wells tested, 8.6 percent of them were over the allowable 10 parts per million for safe drinking water. Of the 8.6 percent of the wells that are over 10 parts per million, 1.2 percent of those wells are greater than 20 parts per million. The watershed is slightly below the basin average by 1.4 percent for 20 parts per million or greater throughout the entire Central Wisconsin Basin.

Of the 71 wells tested for triazine in the Lower Big Rib River Watershed, 1.4 percent tested had concentrations over 1.1 parts per billion of triazine. None of the samples taken were over 3.0 parts per billion. Since triazine can not be used to set standards for drinking water limitations it is strongly recommend that if a test result comes back above 1 part per billion of triazine the well should be tested further for total concentrations of atrazine.

WATERSHED RECOMMENDATIONS

1. Fish and Aquatic Habitat Staff should conduct non-wadable monitoring in the Lower Big Rib River.
2. Lower Big Rib River Watershed should remain a high priority for future grant eligibility under the State Nonpoint Source Pollution Abatement Program.
3. Watershed Staff should conduct water quality standards review on Scotch Creek for the Village of Edgar WWTP discharge.
4. Village of Edgar should continue to monitor Total Phosphorus to determine if a limit or control is needed.

Table UW23-1 Lower Big Rib River Watershed Marathon County Square Miles: 133 Stream Miles: 142 NPS Stream Rank: High

Stream Name	Length (miles)	Codified Use	Biological Use (Existing)	Bio. Use Pot.	SUPPORTING USE FULLY-PART-NOT-THRMILES	303d Listed Water	Assess. Categ. M E U	Tren	Integ Indic	Integ Stat.	Data Level ^l	PROBLEMS SOURCE//IMPACT	COM		REF.
													N	R	
Artus Creek T28NR06ES04 WBIC: 1455200	7	DEF	WWFF/0-7.0 ^e	Same	PART/7	N	M 1996-98	U	IBI 15-37 HBI 4.3-4.4	VP-F VG	P,B,H	HAB,SED,NUT, FL // SB,PSB,CL,FLOW	N		8,44
Lower Big Rib River T29NR07ES34 WBIC: 1451800	24.4	DEF	WWSF/0-24.4 ^e	Same	FULLY/24.4	Hg FA/0-10	E	S			P,H	HAB, SED,NUT,FL // MIN,CL,SB,FLOW, WWTP	N		8
Big Rib River -Un. Channel T29NR07ES32 WBIC: 1454200	1	DEF	WWSF/0-1.0 ^e	Same	FULLY/1	N	U	U							
Einert Creek T29NR05ES05 WBIC: 1458100	5	DEF	WWFF/0-5.0 ^e	Same	PART/5	N	M 1996-98		HBI 3.98	VG	P,B,H	HAB,SED,NUT,FL // BDAM,PSB,SB,CL, FLOW	N		8,166
Kennedy Creek T28NR07ES06 WBIC: 1454300	7	DEF	WWFF/0-5.0 ^e	Same	PART/7	N	M 1996-98	U	IBI 14-20 HBI 4.3	VP-P VG	P,B,H	HAB,SED,NUT,FL // SB,CL,PSB,FLOW	N		8,44
Omar Creek T28NR04ES12 WBIC: 1456900	3	DEF	WWFF/0-3.0 ^e	Same	PART/3	N	M 1996-98	U	IBI 57 HBI 6.52	G F - P	P,B,H	HAB,SED,NUT // SB, CL,URB	N		8,44
Pet Brook Creek T28NR05ES08 WBIC: 1456400	5	DEF	WWFF/0-5.0 ^e	Same	PART/5	N	M 1996-98	U	IBI 15	VP	P,B,H	HAB,SED,NUT,FL // SB,PSB,CL,FLOW	N		8,44
Pine Creek T29NR05ES27 WBIC: 1457300	3	DEF	WWFF/0-3.0 ^e	Same	PART/3	N	M 1996-98	U	IBI 25 HBI 3.62	P VG	P,B,H	HAB,SED,NUT,FL // PSB,SB,BY,CL, FLOW	N		8,44
Scotch Creek T28NR05ES01 WBIC: 1455600	18	FAL/0-3.8 LFF/3.8-10 DEF/10-18	WWSF/3.8 ^{ae} LFF/6.2 ^c WWFF/8 ^e	Same Same Same	FULLY/3.8 PART/6.2 PART/8	N	M 1996-98	U	IBI 30-50 HBI 5.1	F - G G	P,B,H	HAB,SED,NUT,FL // SB,CL,URB,FLOW, WWTP	N		8,44
Soda Creek T28NR05ES10 WBIC: 1455800	5	DEF	WWFF/0-5.0 ^e	Same	PART/5	N	M 1996-98	U	IBI 37-40 HBI 5.58	F F	P,B,H	HAB,SED,NUT,FL // SB,CL,FLOW	N		8,44
Unnamed Creek 11-12 T28NR6ES11 WBIC: 1454400	2	DEF	WWFF/0-2.0 ^e	Same	PART/2	N	M 1996-98	U			B		N		8
Unnamed Creek 5-14 T28NR6ES5 WBIC: 1455400	3	DEF	WWFF/0-3.0 ^e	Same	UNK/3	N	M 1996-98	U	IBI 30	F	B	HAB, SED // FLOW,CL	N		8,44
Unnamed Creek 10-2 T28NR5ES10 WBIC: 1455700	3	DEF	WWFF/0-3.0 ^e	Same	FULLY/3	N	M 1996-98	U	IBI 52	G	P,B,H	HAB,SED,NUT,FL // SB,PSB,CL,DAM	N		8,44

Table UW23-2. Lower Big Rib River Watershed. Marathon County

Wisconsin Pollution Discharge Elimination System (WPDES) Program

Facility	Permit No./ Expires	Industrial Or Municipal	Receiving Stream/ Classification G = groundwater	Q710 of Receiving Stream	Design Flow (MGD)	Variances	Phosphorus Limit	Facility Plan Candidate? Y/N	Waste Load Allocation	Recommendations
Cassel Garden Farmers Coop	0053678 30-Sep-04	I	G	NA	0.005	None	Monitoring only	No	No	Business is expanding
Cloverbelt Cheese Factory	0054453 31-Dec-98	I	G	NA	0.005	None		No	No	-Parent Company is Marathon Cheese Corp -Past due permit resistance
Edgar, Village of	0021784 30-Sep-01	M	Scotch Creek LFF	0.6 cfs 0.7 miles downstream	0.5	None	Sludge monitoring only	No	No	Regional water resources management should conduct a triennial standards review on Scotch Creek (Type B)
Marathon City, Village of	0020273 31-Mar-01	M	Rib River FAL	17 cfs	0.300	CBOD (25) Phos (1.6)	1.0 mg/l with a request for 1.6 mg/l pending	Yes	No	Clearwater inflow problems (Type C)
Midwehy Powder Company	0004057 30-Jun-01	I	G	NA	0.05	None	None	No	No	Check ponds for leaking

Table UW23-3. Lower Big Rib River Watershed. Marathon County. NPS Groundwater Rank: High

Municipal Water Supply Data														
Marathon City		Sanitary Survey Date 1998			Population 1695			PWSID 73701518			Ave. Day Use 200,000 Gallons			
Well	Entry Point	Unique Well No.	Well Const. Report	Geology	Well Depth	Casing Length	Screened Interval	Capacity (gpm)	Nitrate (ppm)	Treatment	Wellhead Protection	Calculated Fixed Radius	Flood Plain	Wetland
1	200	BG299	No	Sand & Gravel	86'	56'	56'-86'	350	4.4	I, FL, CL, pH	No	1365'	Yes	No
3	200	BG301	No	Sand & Gravel	79'	48'	48'-79'	240	0.75	I, FL, CL, pH	No	3663'	Yes	No
4	200	GK732	Yes	Sand & Gravel	90'	70'	70'-90'	400	0.34	I, FL, CL, pH	No	1930'	No	No
Edgar		Sanitary Survey Date 1996			Population 394			PWSID 73701507			Ave. Day Use 115,000 Gallons			
Well	Entry Point	Unique Well No.	Well Const. Report	Geology	Well Depth	Casing Length	Borehole Interval	Capacity (gpm)	Nitrate (ppm)	Treatment	Wellhead Protection	Calculated Fixed Radius	Flood Plain	Wetland
7	7	BG296	Yes	Granite	205'	35'	35'-205'	125	4.19	FI, CI, PO4	Yes	<1200'	No*	No*
8	200	BG297	Yes	Granite	400'	46'	46'-400'	108	2.55	FI, CI, PO4	Yes	<1200'	No*	No*
9	200	BG298	Yes	Granite	335'	31'	31'-335'	130	2.55	FI, CI, PO4	Yes	<1200'	No*	No*
10	10	CO542	Yes	Granite	400'	43'	43'-400'	200	1.25	FL, CI, PO4, pH	Yes	<1200'	No*	No*
11	11	EN733	Yes	Granite	388'	47'	47'-388'	150	1.18	FL, CI, PO4, pH	Yes	<1200'	No*	No*

* Area around the wells may have been floodplain or wetland designation, but was filled during construction.

LITTLE RIB RIVER WATERSHED (UW24)

WATERSHED SUMMARY

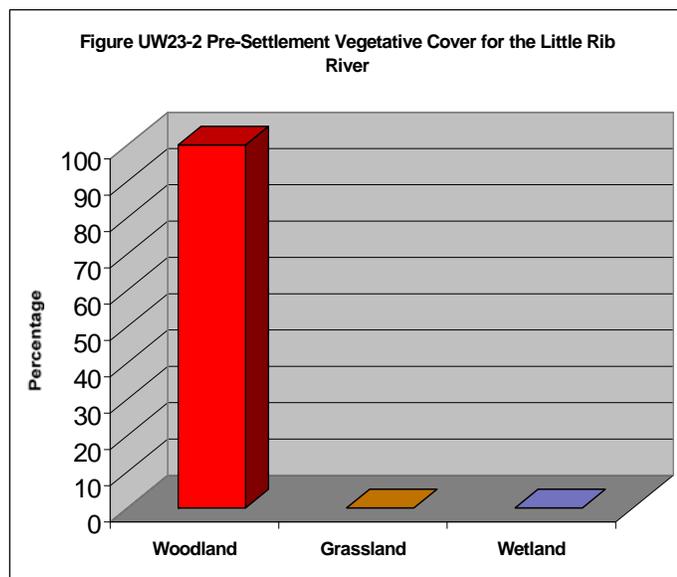
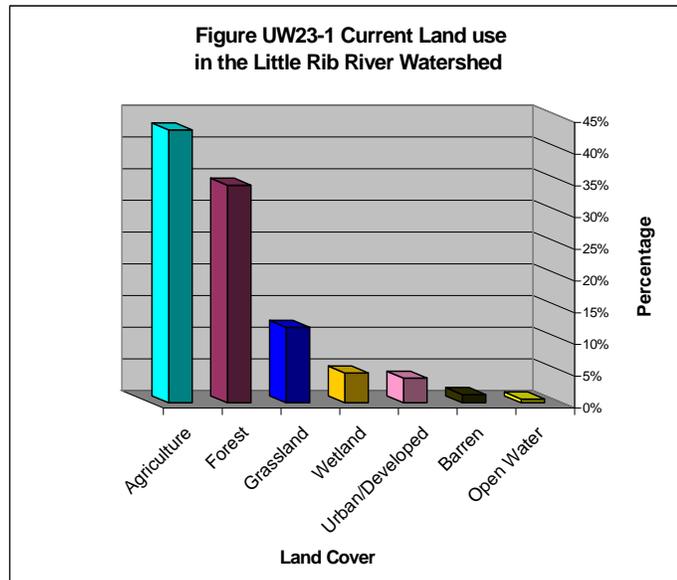
The Little Rib River Watershed (Map UW24) is located in the Marathon and Lincoln Counties. Information concerning watershed streams is listed below in Table UW24-1. Steep slopes and shallow soils characterize the Little Rib River Watershed. Stream flows vary significantly depending on the gradient of the slopes. During runoff events, elevated levels of bacteria and BOD occur in watershed streams, likely from animal waste (Kaatz, 1987, 1988). Both the Marathon County Animal Waste Management Plan and Soil Erosion Control Plan identify the Little Rib River as a priority for soil erosion and animal waste control. The potential for surface and groundwater contamination is high because steep slopes, shallow soils and bedrock that is within five feet of the surface, characterize the area. This watershed has been chosen as a priority watershed project under the Wisconsin Farmers Fund for animal waste control. This watershed was ranked using the Nonpoint Source Priority Watershed Selection Criteria. Based on surface and ground water data, the overall ranking is medium, establishing a priority for future grant eligibility through the Nonpoint Source Program.

Marathon County's Land Conservation Department estimates that there are approximately 350 earthen manure pits installed prior to adoption of Marathon County's animal waste storage ordinance. Many of these pits may not meet technical standards and could potentially contaminate groundwater (Kaatz, 1987,1988).

POPULATION DEMOGRAPHICS

The population outlook for this watershed is average compared to the rest of the basin. The fifteen-year outlook predicts that the population growth will be slightly below average and remain constant around one percent growth. (North Central Wisconsin Regional Planning Commission, 2000, Wisconsin Department of Administration, 2000)

Before settlement of this watershed, the entire original vegetation was woodland (Figure UW23-2). Currently the landscape is primarily covered with 46% agriculture and 34% woodlands. Grassland and wetlands make up 17% of the land use (Figure UW24-1) (Enterprise Information, 1998).



WATERSHED STREAMS

Little Rib River

The Little Rib River is a twenty-two mile warm water stream that flows into the Big Rib River west of the City of Wausau. The lower portion of the Little Rib River is classified as a warm water sport fishery while the upper portion is classified as a warm water forage fishery.

The lower portion habitat had extensive bank erosion and lacked coarse substrate. Limiting factors of in-stream habitat for the upper portion include, lack of fish cover, bank erosion, and sedimentation.

The lower IBI scores were a result of low number of top carnivore and sucker species. The lower reach had sport fish present likely a result of migration from the Big Rib River. No sport fish were found in the upper reach, therefore it is proposed to stay at a Warm Water Forage Fishery classification.

Fishery surveys were completed at four sites that were previously studied in 1975 and 1981. Fewer trout or no trout were found in 2001 when compared to the earlier years. Decreased trout densities in 2001 may be the result of changes in stream habitat or water temperatures. According to 1981 observations, substrate was comprised of coarse materials. The 2001 habitat surveys indicated that in-stream habitat was limited by sedimentation and lack of cover. Water temperatures may have also resulted in fewer trout collected in 2001. These surveys were completed in August, while the historic studies were conducted in May. Although trout may inhabit these areas when water temperatures are favorable, they would more often migrate to areas where water temperatures are suitable.

West Fork of the Little Rib River

The West Fork of the Little Rib River is a ten-mile stream that empties into the Little Rib River southeast of Little Chicago. The existing stream classification for the upper reaches is a Warm Water Forage Fishery, while the lower reaches are classified as a Warm Water Sport Fishery.

In-stream habitat conditions throughout the West Fork are impacted by bank erosion, lack of fish cover and pools, shallow stream depth, and fine sediment deposition. Woody debris and over hanging vegetation are the predominant types of fish cover in the entire stream.

Low IBI scores were a result of high numbers of omnivore species and low numbers of top carnivore species. Also, the total number of fish in the cold water portion was less than 25, which is less than the minimum necessary to calculate an IBI. The lower reaches will stay at Warm Water Sport Fishery classification due to possible migration of sport fish from the Little Rib River. Trout were present at the upper site, therefore the proposed biological use classification is Class II upstream STH 107 with an unknown potential use classification. Additional fishery surveys should be conducted in the upper reaches to better define the fisheries classification in the upper reaches.

Two fishery survey sites were sampled in 2001 that were previously sampled in 1981. No trout were found during either 1981 or 2001 surveys.

Figure UW24-3. Total number of stream miles in the Little Rib River Watershed.

Exceptional Resource Waters = 2.0
(ERW or Cold I)

Outstanding Resource Waters = 0.0
(ORW or Cold II)

Cold III = 0.0

Warm Water Sport Fishery = 16.8
(WWSF)

Warm Water Forge Fishery = 19.2
(WWFF)

Limited Forage Fishery = 0.0
(LFF)

Limited Aquatic Life = 0.0
(LAL)

Unknown Classification = 43.0
Total of Stream Miles = 81.0
Number of Streams / Ditches = 26

Little Brook Creek

Little Brook Creek is a four-mile long stream and is classified as a Warm Water Forage Fishery. The creek empties into the lower portion of the Little Rib River. Limiting factors of in-stream habitat in the lower reaches include deteriorating banks, fine sediment deposition, shallow channel depth and no adult fish cover. Limiting factors of habitat in the upper reaches include fine sediment deposition and lack of riffles.

Fishery surveys completed in the upper and lower reaches of Little Brook Creek found different fish communities. The fishery at the upper site was represented by warm water species with brook stickleback and central mudminnow being the most dominant. The lower IBI score was a result of high numbers of tolerant fish species and low numbers of top carnivore and lithophil species. However, the IBI score may not be accurate due to the stream being less than the minimum number of fish captured necessary to calculate an accurate IBI.

Fishery surveys found relatively high densities of brook trout at the lower site. The fishery was represented by several year classes of trout including young of the year, indicating that natural reproduction is occurring.

The presence of brook trout at the lower site is likely a result of colder water temperatures and improved habitat conditions for trout. A comparison of instantaneous temperatures between the two sites indicate that water temperatures were eight degrees Fahrenheit cooler at the lower site. Streamflow measurements collected within one day of each other show that discharge was approximately 1 cfs higher at the lower site. Since no tributary inputs were found between the sites, increased streamflow and colder water temperatures are likely a result of groundwater input.

Based on fishery survey results, the proposed biological use classification for Little Brook Creek would be Class I trout water from the mouth to County Highway O. The classification upstream of County Highway O would remain Warm Water Forage Fish.

WISCONSIN POLLUTION DISCHARGE ELIMINATION SYSTEM PROGRAM (WPDES)

Table UW24-2 summarizes the WPDES found in Little Rib River Watershed.

Bletsoes Honey Bee Cheese Factory

Bletsoe's manufactures colby and monterey jack cheese from approximately 23,000 pounds of raw milk per day. Wastewater consists of washwater from cheese manufacturing (1200 gallons per day), truck wash and rinse and boiler blowdown (30 gallons per day). Washwater is discharged to a ridge and furrow system. Whey from the jack cheese is shipped to a nearby dairy. Boiler water blowdown is discharged to a concrete, in-ground barrel before running into a six-inch wide ditch in an adjacent farm field. All the boiler water infiltrates into the ground within 100 feet of the outfall and is considered groundwater discharge.

GROUNDWATER

The Little Rib River Watershed contains four of the wells serving the City of Wausau with a fifth well currently under construction (Table UW24-3). These four wells are very prolific shallow sand and gravel wells producing between 1100 and 2500 gpm. All the wells contain excessive concentrations of iron and manganese and are therefore routed to a central lime softening plant for removal of iron and manganese. Once the water reaches the plant; alum, lime and flocculent enhancing polymers are added in a mixing chamber. The flocculated particles are settled out in the clarifier units and the decanted water is recarbonated, fluoridated, routed to sand filters and then discharged to a clearwell where it can be pumped to the customers. Sodium hypochlorite and ammonia are mixed to form chloramines to maintain a protective residual within the clearwell and the distribution system.

Sodium silicates are also added to produce a protective coating in the plumbing systems to reduce the leaching of lead and copper into the water. The combined nitrate level leaving the plant is 0.93 ppm. The city has a Well Head Protection program and is looking into a Groundwater Guardians chapter to further educate the public on the importance of protecting the groundwater resource.

The Central Wisconsin Groundwater Center of the University of Stevens Point conducted well samples in every watershed in the Central Wisconsin Basin for nitrates and triazine. In the Little Rib River Watershed 125 wells were tested for traces of nitrates, of the 125 wells tested, 4.0 percent of them were over the allowable 10 parts per million for safe drinking water. Of the 4.0 percent of the wells that are over 10 parts per million, .8 percent are greater than 20 parts per million. This watershed's average is slightly below the basin average by 1.8 percent for 20 parts per million or greater throughout the entire Central Wisconsin Basin.

Of the 8 wells tested for triazine in the Little Rib River Watershed, none of the wells tested had concentrations over 1.1 parts per billion of triazine. Since triazine can not be used to set standards for drinking water limitations it is strongly recommend that if a test result comes back above 1 part per billion of triazine the well should be tested further for total concentrations of atrazine.

WATERSHED RECOMMENDATIONS

1. Basin Team should use the Groundwater Information Network (GIN) when identifying potential groundwater impacts due to NPS pollution, to determine any public drinking water supplies affected by high nitrates or bacteria levels in the Little Rib River Watershed, possibly linking those sites back to poorly designed barnyards or manure pits
2. Little Rib River Watershed should be considered a priority for future grant eligibility under the State Nonpoint Source Pollution Abatement Program.

**Table UW24-1. Little Big Rib River Watershed
NPS Stream Rank: Priority Watershed**

Marathon and Lincoln Counties

Square Miles: 80

Stream Miles: 142

Stream Name	Length (miles)	Codified Use	Biological Use (Existing)	Biological Use Potential	SUPPORTING USE FULLY-PART- NOT-THRMILES	303(d) Listed Water	Assess. Categ. M E U	Trend	Integ Indic	Integ Status	Data Level	PROBLEMS SOURCE//IMPACT	COM N R	REF.
Bottle Creek T30NR07ES34 WBIC: 1470300	2.0	DEF	CWFF/2.0	UNK/2.0	UNK/2.0		E 2001	U	IBI=20	Poor	B,P,H	NMM, CL,SB/FLOW,HAB		8,161
Little Brook T29NR07ES19 WBIC: 1452200	4.0	DEF	Cold I/0- 3 ^e WWFF/3-4 ^e	Same ^e Same ^e	PART/3.0 PART/1		M 2001	U	IBI=40-60 HBI=1.6	F - G Excel.	B,P,H	DEV,SB/HAB,SED,TEMP	N	8,44, 161
Little Rib River T29NR07ES33 WBIC: 1451900	22.0	DEF DEF	WWSF/0-13.3 ^e WWFF/13.3- 22 ^e	Same	PART/13.3 PART/8.7		M 2001	U	IBI=32-57 HBI=2.4- 3.9	F - G V.G. - E	B,P,H	BY/NUT, NPS,SB/ HAB, ,PSB,SED, BAC,FLOW	N	8,95, 94,41, 161
W. Fk. Little Rib Ri. T29NR06ES03 WBIC: 1452300	10.0	DEF DEF DEF	WWSF/0-3.5 ^e WWFF/3.5-6 ^e Cold II/6-10 ^e	Same Same Same	PART/3.5 PART/2.5 PART/4		M 2001	U	IBI=46 HBI=3.8- 3.9	F - G V.Good	B,P,H	NPS,SB,CL,NUT/ HAB,SED,FLOW	N	8,41, 161
Un. Creek 24-1 T29NR06ES24 WBIC: 1452300	6.0	DEF DEF	CWFF/0-2 ^e Cold I/2-6 ^e	UNK/2.0 Same	UNK/6.0 PART/4		M 2001	U	IBI=26-50	P - F	B,P,H	NPS,SB,CL/HAB,SED,FLOW		6
Un. Creek 29-6 T29NR07ES29 WBIC: 1452000	5.0	DEF	WWFF/0-5	Same	PART/5.0		M 2001	U	IBI=49 HBI=4.1	Fair V.Good	B,P,H	SB,NPS/HAB,SED,FLOW		161
Un. Creek 13-16 T30NR05ES13 WBIC: 1453500	1.0	DEF	Cold I/0-1.0 ^e	Same ^e	PART/1.0		M 2001	U	IBI=40	Fair	B,P,H	NPS/SED,HAB		41,161
Un. Creek 3-12 T29NR06ES03 WBIC: 1452700	1.0	ERW	Cold I/0-1.0 ^b	Same ^e	FULLY/1.0		M 2001	U	IBI=70 HBI=3.1	Good Excel.	B,P,H	NPS,SB/SED		41,161
Un. Creek 33-4 T30NR06ES33 WBIC: 1454000	4.0	Cold II	Cold I/0-4.0 ^e	Same	PART/4.0		M 2001	U	IBI=40	Fair	B,P,H	SB,CL,NPS,NUT/ TEMP,SED,HAB		161
Un. Creek 9-10 T30NR06ES9 WBIC: 1453900	2	DEF	WWFF/2 ^e	Same	PART/2.0		M 2001	U	IBI=10	V. Poor	B,P,H	NPS/SED,HAB		161
Un. Creek 31-2b T30NR06ES31 WBIC: 1453100	2	DEF	Cold II/2.0 ^e	Same	PART/2.0		M 2001	U	IBI=40	Fair	B,P,H	NPS,/HAB		161
Un. Creek 30-15 T30NR06ES30 WBIC: 1453200	2	DEF	Cold I/2.0 ^e	Same	PART/2.0		M 2001	U	IBI=50	Fair	B,P,H	NPS,NUT/HAB		161
Un. Creek 29-14 T29NR07ES29 WBIC:	0.5	DEF	WWFF/0.5 ^e	Same	PART/2.0		M 2001	U	IBI=0	V. Poor	B,P,H	DEV/HAB,SED		161
Un. Creek 28-3 T30NR06ES28 WBIC: 1453700	3	DEF	WWFF/0-3 ^e	Same	PART/3.0		M 2001	U	IBI=29	Poor	B,P,H	NPS,SB,PSB/HAB		161
Un. Creek 21-4 T30NR06ES21 WBIC: 1453800	2	DEF	Cold II/0-2 ^e	Unk/2	Unk/2		M 2001	U	IBI=7	V. Poor	B,P,H	NPS,NUT/FLOW,HAB,TEMP		161

Un. Creek13-9 T29NR06ES13 WBIC: 1452400	1	DEF	Cold II/0-2 ^e	Same	PART/2		M 2001	U	IBI=80	Good	B,P,H	NPS/SED,HAB		161
Un. Creek 11-6 T29NR06ES11 WBIC: 1452600	2	DEF	Cold II/0-2 ^e	Unk/2	Unk/2		M 2001	U	IBI=40	Fair	B,P,H	NPS,SB/SED,HAB,TEMP		161
Un. Creek 9-6 T29NR06ES24 WBIC:1452300	1.5	DEF	WWFF/1.5 ^e	Same	PART/1.5		M 2001	U	IBI=0	V. Poor	B,P,H	NPS,SB/SED,HAB		161
2 Unnamed Creeks	2.0													

**Table UW24-2. Little Rib River Watershed. Marathon and Lincoln Counties
Wisconsin Pollution Discharge Elimination System (WPDES) Program**

Facility	Permit No./ Expires	Industrial Or Municipal	Receiving Stream/ Classification G = groundwater	Q710 of Receiving Stream	Design Flow (MGD)	Variances	Phosphorus Limit	Facility Plan Candidate? Y/N	Waste Load Allocation	Recommendations
Bletsoes Honey Bee Cheese Factory	0050644 31 Dec 2003	I	G	NA	0.005	None	NA	No	No	None

Table UW24-3. Little Rib River Watershed. Lincoln and Marathon Counties NPS Groundwater Rank: Priority Watershed

Municipal Water Supply Data														
Wausau		Sanitary Survey Date 1999			Population 38777			PWSID 73701023			Ave. Day Use 5.4 MGD			
Well	Entry Point	Unique Well No.	Well Const. Report	Geology	Well Depth	Casing Length	Screened Interval	Capacity (gpm)	Nitrate (ppm)	Treatment	Wellhead Protection	Calculated Fixed Radius	Flood Plain	Wetland
6	200	BG328	Yes	Sand & Gravel	100'	61.5'	61.5'-100'	1750	0.53	L, V, Cl, Fl, S	Yes	2911'	No	No
7	300	BG329	Yes	Sand & Gravel	100'	61'	61'-100'	1675	0.93	L, V, Cl, Fl, S	Yes	2829'	No	No
9	300	BG331	Yes	Sand & Gravel	100'	60'	60'-100'	1100	0.93	L, V, Cl, Fl, S	Yes	2264'	No	No
10	200	AR650	Yes	Sand & Gravel	160'	125'	125'-165'	2500	0.53	L, V, Cl, Fl, S	Yes	3649'	No	No

BLACK CREEK WATERSHED (UW25)

WATERSHED SUMMARY

The Black Creek Watershed (Map UW25) is located in Taylor and Marathon counties. The watershed received the highest watershed index score of all 20 watersheds in the Marathon County Animal Waste Management Plan. The ranking was based on livestock densities near surface waters; the high percentage of NPS was contributed to animal wastes, soil types, topography, and the impact of wastes on water quality. The Marathon County Land Conservation Committee recommended this watershed be considered as a priority watershed to control animal waste.

The watershed was ranked using the Nonpoint Source Priority Watershed Selection Criteria. Based on NPS impacts on surface water quality, the watershed was ranked high, establishing a priority for future grant eligibility through the State Nonpoint Source Pollution Abatement Program. In 1996, the Black Creek Watershed was up for Priority Watershed Selection. However, due to program restructuring, no more were chosen; developing a plan to increase water quality in the watershed is necessary.

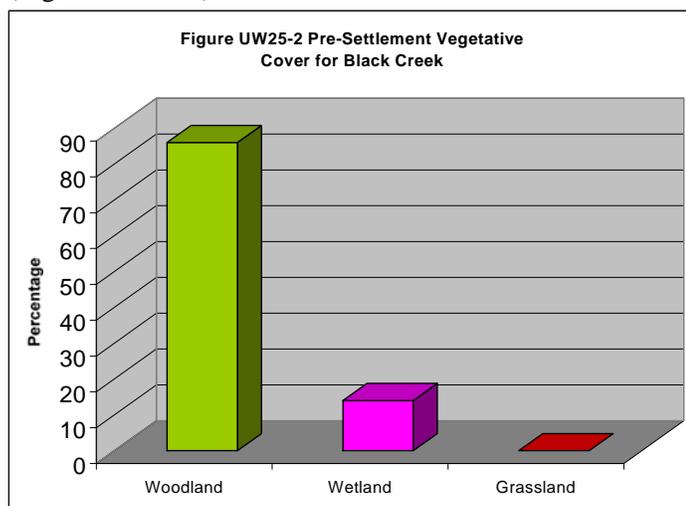
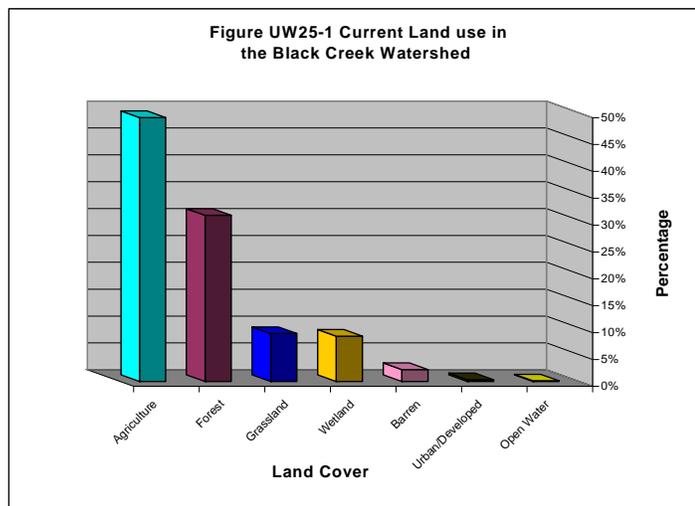
POPULATION DEMOGRAPHICS

Population in this basin is only one percent of the entire basin. Projected populations predicted the watershed in increase by only 74 people in the next 15 years. Development is not a major concern in this watershed due to the slow increase in the projected population. (North Central Wisconsin Regional Planning Commission, 2000, Wisconsin Department of Administration, 2000)

The Black Creek Watershed has had several changes to its landscape in the past century. According to land survey records from the mid-1800s, original vegetation consisted primarily of woodlands with some wetlands (Figure UW25-2). The current land use consists of agriculture(49%), woodlands(31%), grasslands(9%), and wetlands(8%) (Figure UW25-1). Current grasslands are comprised of vacant farms or land not suited for farming. A common practice is to convert farms not suitable for farming to tree plantations or to grasslands. (Enterprise Information, 1998)

WATERSHED STREAMS

A summary of watershed streams is listed in Table UW25-1. Figure UW25-3 indicates total number of stream miles in the Black Creek Watershed.



Beaver Creek

Biotic index sampling conducted in 1990 revealed fair water quality conditions.

Black Creek

A 1972 Fisheries Management Survey Report indicated streambank pasturing was a problem above County Highway M. This portion of the creek is classified Class III trout water. The impacts of streambank pasturing on water quality are unknown, but it is assumed sedimentation and fish habitat destruction is occurring.

The village of Athens discharges its WWTP effluent to Black Creek.

There are known sand and gravel excavations on or near the creek. Several sites have dewatering areas feeding the creek. It is unknown if this is impacting water quality

Drewek Creek

Biotic index sampling conducted in 1990 revealed fair water quality conditions.

Potato Creek

Biotic index sampling conducted in 1990 revealed fairly poor water quality conditions.

Unnamed Creek (T30, R3E, S21, SE, NW, 37)

There are known sand and gravel excavations on or near this creek, which is classified as a Class I trout stream. It is unknown if these non-metallic mining operations are impacting water quality.

Unnamed Creek (T30N, R3E, S25, SW, SW, 37)

There are known sand and gravel excavations on or near this creek. The stream is presently classified a Class I trout stream. It is unknown if these non-metallic mining operations are impacting water quality in this creek.

WISCONSIN POLLUTION DISCHARGE ELIMINATION SYSTEM PROGRAM (WPDES)

Table UW25-2 summarizes the WPDES found in Black Creek Watershed.

Village of Athens

The Village of Athens operates a three cell aerated lagoon system. Because the discharge is to a stream classified as fish and aquatic life with a low flow ($7Q_{10}$), limits lower than the categorical limits must be met when the stream flow and temperature are not adequate to handle such a discharge. A table is included in the permit that indicates what the allowable discharge, in pounds of BOD per day, is under low flow conditions. The design life of the plant is until 2004, major improvements occurred in 1984 and the average daily flow is 135,800 gallons a day with a BOD load of 225 (#/day).

Gad Cheese

Gad Cheese manufactures cheese from milk. Whey permeate is discharged via land spreading (after being stored in manure pits). Boiler water is discharged to an absorption pond on site.

Figure 25-3. Total number of stream miles in the Black Creek Watershed.

Exceptional Resource Waters = 12.3
(ERW or Cold I)

Outstanding Resource Waters = 1.0
(ORW or Cold II)

Cold III = 5.9

Warm Water Sport Fishery = 15.1
(WWSF)

Warm Water Forge Fishery = 17.0
(WWFF)

Limited Forage Fishery = 0.0
(LFF)

Limited Aquatic Life = 0.0
(LAL)

Unknown Classification = 24.7

Total of Stream Miles = 76.0

Number of Streams / Ditches = 24.0

GROUNDWATER

The Black Creek Watershed contains the 6 wells serving the Village of Athens. There are two distinct wellfields serving the village. Three wells from the older system are located near the banks of the Black River in the northwest corner of the village. These wells are very low yielding granite bedrock wells, the capacity from the three wells combine to produce about 20 gpm. The other three wells, located on the western edge of the village, are shallow sand and gravel wells. Each of these wells produces about 60 gpm, which is the main source of water supply for the village. Municipal Water Supply summary is found in Table UW25-3 including NPS ranking for ground water and well descriptions.

All six wells are pumped through an aerator and into a ground storage reservoir. The aerator removes radon gas and carbon dioxide. The reduction in carbon dioxide serves to raise the pH, thereby reducing the amount of sodium hydroxide needed to reduce the corrosivity of the water. Chlorine and fluoride are also added at this central location.

The combined nitrate concentration from all the wells is 2.88 ppm. The village has not adopted a formal Wellhead Protection Plan for the village but they have worked closely with the neighboring landowner adjacent to the west wellfield to minimize the agricultural inputs to the agricultural fields adjacent to Wells 10, 11 and 12. There is concern that due to the shallow nature of the wells and the very limited formation available, a drought situation could result in a limited water supply for the village. The village is being encouraged by the Department to look for additional water sources now before a drought situation develops.

The Central Wisconsin Groundwater Center of the University of Wisconsin-Stevens Point conducted well samples in every watershed in the Central Wisconsin Basin for nitrates and triazine. In the Black Creek Watershed 41 wells were tested for traces of nitrates, of the 41 wells tested, 2.4 percent of them were over the allowable 10 parts per million for safe drinking water. All 2.4 percent of the wells that are over 10 parts per million had concentrations greater than 20 parts per million. The watershed average is slightly below the basin average by .2 percent for 20 parts per million or greater.

Of the 4 wells tested for triazine in the Black Creek Watershed, none of the wells tested had concentrations over 1.1 parts per billion of triazine. Since triazine can not be used to set standards for drinking water limitations it is strongly recommend that if a test result comes back above 1 part per billion of triazine the well should be tested further for total concentrations of atrazine.

WATERSHED RECOMMENDATIONS

1. Lower Big Eau Pleine Watershed should be considered a high priority for future grant eligibility under the State Nonpoint Source Pollution Abatement Program.
2. Fish and Aquatic Habitat Staff should conduct baseline monitoring for watershed streams.
3. Village of Athens should continue to monitor Total Phosphorus to determine if a limit or control is needed.

Table UW25-1 Black Creek Watershed Marathon and Taylor Counties Square Miles: 81 Stream Miles: 76 NPS Stream Rank: High

Stream Name	Length (miles)	Codified Use	Biological Use (Existing)	Biological Use Potential	SUPPORTING USE FULLY-PART-NOT-THR/MILES	303(d) Listed Water	Assess. Categ. M E U	Trend	Integ Indic	Integ Status	Data Level	PROBLEMS SOURCE//IMPACT	COM N R	REF.
Beaver Creek T30NR03ES06 WBIC: 1458200	5.0	DEF	WWFF/0-5.0 ^a	Same	UNK/5.0		E	U		F	B,P,H		R	8
Black Creek T29NR05ES06 WBIC: 1458200	21.0	FAL Cold	WWSF/0-15.1 ^e Cold III/15.1-21 ^e	Same Same	PART/15.1 PART/5.9		M	U			B	PSM/ NPS/ NMM	R	8,153,84,1 99,94,161, 17,201
Drewek Creek T29NR04ES02 WBIC: 1458600	5.0	DEF	WWFF/0-5.0 ^a	Same	UNK/5.0		M	U		F	B,H,P		R	8,44
Potato Creek T29NR04ES02 WBIC: 1459000	7.0	DEF	WWFF/0-7.0 ^a	Same	UNK/7.0		M	U		P	B,H,P		R	8,44
Unnamed Creek T29NR04ES04 WBIC: 1458800	5.0	DEF	UNK/0-5.0	UNK/5.0	UNK/5.0		U	U						
Unnamed Creek T30NR03ES21 WBIC: 1459900	5.0	ERW DEF	Cold I/0-1.3 ^b UNK/1.3-5	Same	UNK/1.3 UNK/3.7		M	U						8,153
Unnamed Creek T29NR04ES02 WBIC: 1458300	3.0	ERW	Cold I/0-3.0 ^b	Same	UNK/3.0		M	U						153
Unnamed Creek T30NR03ES05 WBIC: 1460600	1.0	Cold	Cold II/0-1.0 ^b	Same	UNK/1.0		M	U						153
Unnamed Creek T30NR03ES17 WBIC: 1460500	3.0	Cold	Cold III/0-3.0 ^b	Same	UNK/3.0			M				NMM/	R	153
Unnamed Creek T30NR03ES21 WBIC: 1460400	1.0	ERW	Cold I/0-1.0 ^b	Same	UNK/1.0		M	U		B,P				153,199
Unnamed Creek T30NR03ES25 WBIC: 1459200	1.0	ERW	Cold I/0-1.0 ^b	Same	UNK/1.0		M	U		B,P		NMM/	R	153,199
12 Unnamed Cr.	16													

Table UW25-2. Black Creek Watershed. Marathon and Taylor Counties Wisconsin Pollution Discharge Elimination System (WPDES) Program

Facility	Permit No./ Expires	Industrial Or Municipal	Receiving Stream/ Classification G = groundwater	Q710 of Receiving Stream	Design Flow (MGD)	Variances	Phosphorus Limit	Facility Plan Candidate? Y/N	Waste Load Allocation	Recommendations
Village of Athens	0022365 30 June 2004	M	Black Creek FAL	0.25 cfs	0.236	None	NA	No	NA	None
Gad Cheese	0053431 30 Sept 1999	I	G	NA	0.030	None	NA	No	NA	None

Table UW25-3.Black Creek Watershed.

Marathon and Taylor Counties

NPS Groundwater Rank: High

Municipal Water Supply Data														
Athens				Sanitary Survey Date 1997			Population 1003			PWSID 73701496		Ave. Day Use 80,000 Gallons		
Well	Entry Point	Unique Well No.	Well Const. Report	Geology	Well Depth	Casing Length	Screen/Bore Interval	Capacity (gpm)	Nitrate (ppm)	Treatment	Wellhead Protection	Calculated Fixed Radius	Flood Plain	Wetland
4	200	BG284	Yes	Granite	53'	27'	27'-53' (B)	11	2.88	A, Cl, pH, FI	No	<1200'	No	No
7	200	BG286	Yes	Granite	115'	37'	37'-115' (B)	7	2.88	A, Cl, pH, FI	No	<1200'	No	No
9	200	BG288	Yes	Granite	102'	21'	21'-27.5' (S)	2	2.88	A, Cl, pH, FI	No	<1200'	No	No
10	200	BG289	Yes	Sand & Gravel	54'	49.5'	49.5'-54' (S)	60	2.88	A, Cl, pH, FI	No	1509'	No	No
11	200	BG335	Yes	Sand & Gravel	52'	47'	47'-52' (S)	60	2.88	A, Cl, pH, FI	No	1496'	No	No
12	200	BG336	Yes	Sand & Gravel	60'	55'	55'-60' (S)	60	2.88	A, Cl, pH, FI	No	1496'	No	No

Treatment Code Index:

FI -Fluoridation

Cl - Chlorination

PO4 - Polyphosphate Addition

I - Iron and Manganese Removal

pH - pH adjustment with Sodium Hydroxide

V - Volatile Organics Removal

Z - Zeolite Softening

L - Lime Softening

O - Ozone

A - Aeration

UPPER RIB RIVER WATERSHED (UW26)

WATERSHED SUMMARY

The Upper Rib River Watershed (Map UW26) is located in the counties of Marathon, Lincoln and Taylor. The portion of the Upper Rib River Watershed in Lincoln County contains high valued streams not degraded by NPS pollution and apparently not seriously threatened by watershed land use. Existing natural areas act as buffer zones, preventing NPS pollution from reaching the streams. However, the streams need protection from major changes in land use through development.

Biotic index sampling showed streams in the watershed had both excellent and fair water qualities. Not all streams were evaluated.

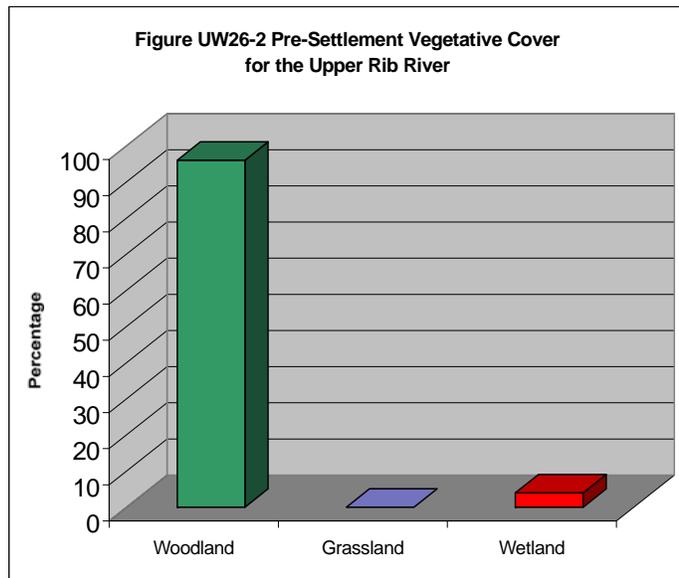
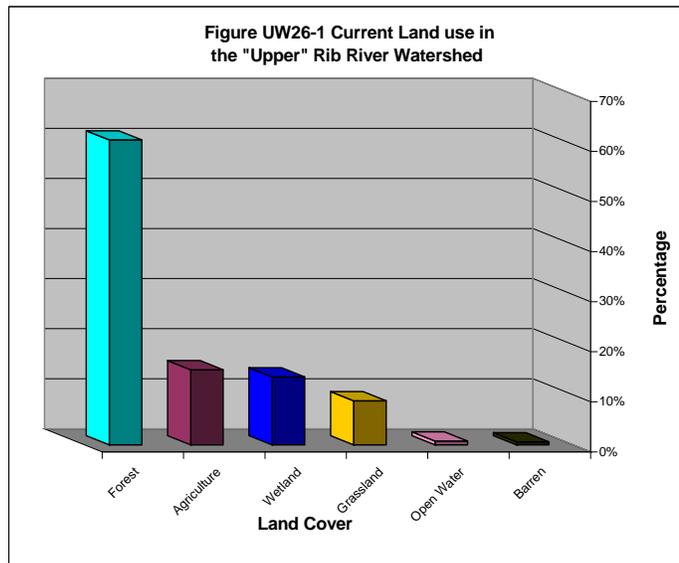
The watershed was ranked using the Nonpoint Source Priority Watershed Selection Criteria. Based on NPS impacts on surface water quality and habitat, the watershed ranked low for NPS pollution control work. This low ranking may be a reflection of a lack of data. More monitoring needs to be conducted in the watershed to determine if a low priority ranking is justified.

Numerous sand and gravel washing operations are on or near the Big Rib River in Lincoln, Marathon, and Taylor Counties. Zmuda (1987) indicated that there were 75 excavation sites disturbing nearly 900 acres of the Big Rib River Watershed. The long-term cumulative impacts to this riverine system caused by sand and gravel excavations are unknown.

POPULATION DEMOGRAPHICS

The Upper Big Rib River Watershed is the second smallest watershed in the basin, but the population density per square mile is average compared to the rest of the basin. The population projection predicts the watershed to slightly increase in the next 15 years. (North Central Wisconsin Regional Planning Commission, 2000, Wisconsin Department of Administration, 2000)

The original vegetation in the mid-1800s was primarily woodland in this watershed (Figure UW26-2). Currently the land use is divided up between forest(61%), agriculture(15%), wetlands(14%), and 9% grasslands (Figure UW26-1) (Enterprise Information, 1998).



WATERSHED STREAMS

A summary of watershed streams is listed in Table UW26-1. Figure UW26-3 indicates total number of stream miles in the Upper Rib River Watershed.

Big Rib River (Upper)

The Upper Big Rib River has an excellent fishery. Classified as a Class I, II, and III trout stream, it also contains Class A musky waters, and small mouth bass and walleye fisheries. Biotic index sampling conducted in 1978 indicated excellent water quality.

As noted above, sand and gravel excavations affect the Big Rib River (Upper). Fish stranding has occurred in isolated excavations adjacent to the river. Sediment may be entering the stream as a result of gravel washing.

East Lemke Creek

Biotic index sampling conducted in 1978 showed East Lemke Creek had fair water quality.

Joe Martin Creek

Dissolved oxygen levels drop below 5.0 ppm in late spring and summer months.

McGinnis Creek

The lower portion of McGinnis Creek is classified as a Class II trout stream. It is one of the few streams in western Marathon County capable of supporting trout. Beaver are active in this creek.

Sand and gravel excavations occur on lower McGinnis Creek. It is unknown if these operations are having an adverse impact on water quality. A 1976 stream survey report conducted by the DNR revealed streambank pasturing occurs on lower McGinnis Creek resulting in destruction of fish habitat, bank erosion and stream sedimentation.

Mink Creek

Biotic index sampling conducted in 1978 showed Mink Creek had fair water quality.

Sheep Ranch Creek

The creek's biological use is both a limited forage fishery and Class II trout water. The Village of Rib Lake WWTP discharges to this creek.

Sivernagle Creek

Biotic index sampling conducted in 1978 showed Sivernagle Creek had fair water quality.

WATERSHED LAKES

There are ten named lakes in this watershed with only one over 100 acres (Table UW26-2). Nonpoint source runoff may not be significant throughout the watershed, however localized impacts could exist. Water quality conditions of most lakes is unknown. Data should be collected on lakes to determine current water quality conditions.

Figure UW26-3. Total number of stream miles in the Upper Rib River Watershed.

Exceptional Resource Waters = 12.5
(ERW or Cold I)

Outstanding Resource Waters = 39.3
(ORW or Cold II)

Cold III = 12.5

Warm Water Sport Fishery = 6.1
(WWSF)

Warm Water Forge Fishery = 57.3
(WWFF)

Limited Forage Fishery = 1.5
(LFF)

Limited Aquatic Life = 0.0
(LAL)

Unknown Classification = 80.4

Total of Stream Miles = 209.6

Number of Streams / Ditches = 58

WISCONSIN POLLUTION DISCHARGE ELIMINATION SYSTEM PROGRAM (WPDES)

Village of Rib Lake

The design life of the plant is until 1995. The wastewater treatment plant was constructed in 1981 and refurbished in 1995. The average daily flow is 200,000 gallons a day with a BOD load of 151 (#/day) and the facility has a “Walker Process” activated sludge package (Table UW26-3).

GROUNDWATER

The Central Wisconsin Groundwater Center of the University of Wisconsin-Stevens Point conducted well samples in every watershed in the Central Wisconsin Basin for nitrates and triazine. In the Upper Rib River Watershed 96 wells were tested for traces of nitrates, of the 96 wells tested, none of the wells tested were over the allowable 10 parts per million for safe drinking water in the state of Wisconsin.

Of the 3 wells tested for triazine in the Upper Rib River Watershed, all the wells had triazine concentrations below .1 parts per billion. All the wells tested are way below the standards for drinking water limitations in the state of Wisconsin. It is strongly recommend that if a test result comes back above 1 part per billion of triazine the well should be tested further for total concentrations of atrazine.

WATERSHED RECOMMENDATIONS

1. Fish and Aquatic Habitat Staff should conduct baseline monitoring on watershed streams and lakes.
2. Watershed Staff should conduct NPS appraisal monitoring on Rib Lake's 3.7-mile watershed area to determine if the source of phosphorus load entering Rib Lake is natural, from high-phosphorus soils, or from nonpoint sources of pollution.
3. Watershed Staff should conduct spring runoff-related NPS impact assessment monitoring on Joe Martin Creek to see if this is the source of low dissolved oxygen levels.

**Table UW26-1 Upper Big Rib River Watershed Marathon, Taylor and Lincoln Counties Square Miles: 51 Stream Miles: 234
NPS Stream Rank: Low**

Stream Name	Length (miles)	Codified Use	Biological Use (Existing)	Biological Use Potential	SUPPORTING USE FULLY-PART- NOT-THRMILES	303(d) Listed Water	Assess. Categ. M E U	Trend	Integ Indic	Integ Status	Data Level	PROBLEMS SOURCE//IMPACT	COM N R	REF.
Baldwin Creek T31NR04ES31 WBIC: 1462300	9.0	DEF DEF	Cold II/0-1.0 ^e UNK/1-5.5 WWFF/5.5-9 ^e	Same Same	UNK/1.0 UNK/4.5 UNK/3.5		M	U			B		R	9,55
Big Rib River T29NR07ES34 WBIC: 1451800	57.0	DEF Cold Cold Cold ERW Cold DEF	WWSF/24.4-30.5 ^e Cold II/30.5-33 ^b Cold III/33-39.4 ^b Cold/39.4-43.9 ^b Cold I/43.9-49.4 ^b Cold II/49.4-55.1 ^b UNK/55.1-57	Same Same Same Same Same Same Same	UNK/6.1 UNK/2.5 UNK/6.4 UNK/4.5 UNK/5.5 UNK/5.7 UNK/1.9		M	U		E	B,H,P, C	NMM/SED	R	9,55,36,153,171, 37,199,198,200, 12,161
Coffee Creek T31NR03ES19 WBIC: 1463500	2.0	DEF	UNK/0-2.0	UNK/2.0	UNK/2.0		M	U		F	B,H,P		R	36
Copper Creek T33NR03ES29 WBIC: 1465900	6.0	DEF	WWFF/0-6.0 ^e	Same	UNK/6.0		M	U					R	36,143
E. Lemke Creek T32NR03ES34 WBIC: 1464300	11.0	DEF	WWFF/0-11.0 ^e	Same	UNK/6.0		M	U					R	36,161
Grass Creek T30NR05ES18 WBIC: 1461300	6.0	ERW	Cold I/0-6.0 ^b	Same	UNK/6.0		M	U					R	55,153,167
Joe Martin Creek T31NR03ES03 WBIC: 1464000	6.0	DEF	WWFF/0-6.0 ^e	Same	UNK/6.0		M	U			B,C	NPS/D.O.	R	36
Layman Creek T32NR03ES08 WBIC: 1465800	8.0	DEF	WWFF/0-8.0 ^e	Same	UNK/8.0		M	U					R	36
Lemke Creek T31NR02ES03 WBIC: 1464200	5.0	DEF	WWFF/0-5.0 ^e	Same	UNK/5.0		M	U					R	36
McGinnis Creek T30NR05ES30 WBIC: 1461100	10.0	Cold DEF	Cold II/0-5.2 ^b WWFF/5.2-10 ^e	Same	PART/5.2 UNK/4.8		M	U			B,H,P	BDAM/HAB NPS/HAB PSB/HAB/NMM	R	9,55,153,199,168
Mink Creek T31NR03ES14 WBIC: 1463300	9.0	Cold DEF	Cold II/0-6.1 ^b UNK/6.1-9	Same Same	UNK/6.1 UNK/2.9		M	U		F	B,H,P		R	36,153,143,12, 161,22
Porky Creek T32NR03ES17 WBIC: 1465700	4.0	DEF	WWFF/0-4.0 ^e	Same	UNK/4.0		M	U					R	36
Sheep Ranch Creek T33NR02ES35 WBIC: 1467900	6.0	LFF Cold	LFF 0-1.5 Cold II/1.5-4.5 ^b	Same Same	UNK/1.5 UNK/4.5		M	U			B	PSM/ BDAM/	R	36,153,147
Silvernagle Creek T32NR02ES12 WBIC: 1467400	9.0	DEF	WWFF/0-9.0 ^e	Same	UNK/9.0		M	U		F	B,H,P	BDAM/	R	36,161

Stream Name Cont.	Length (miles)	Codified Use	Biological Use (Existing)	Biological Use Potential	SUPPORTING USE FULLY-PART- NOT-THRMILES	303(d) Listed Water	Assess. Categ. M E U	Trend	Integ Indic	Integ Status	Data Level	PROBLEMS SOURCE//IMPACT	COM N R	REF.
Spring Creek T32NR02ES12 WBIC: 1463000	5.0	Cold DEF	Cold II/0-1.9 ^b UNK/1.9-5	Same Same	UNK/1.9 UNK/3.1		E	U					R	9,36,153
Stoney Creek T30NR04ES14 WBIC: 1462100	4.0	DEF	UNK/0-4.0	UNK/4.0	UNK/4.0		M	U					R	55
Wood Creek T32NR03ES20 WBIC: 1465600	9.0	Cold	Cold II/0-9.0 ^b	Same			M	U					R	36,153
Unnamed Creek T32NR03ES23 WBIC: 1464600	5.0	DEF	UNK/0-5.0	UNK/5.0	UNK/5.0		M	U						36
Unnamed Creek T31NR04ES31 WBIC: 1462600	2.0	Cold	Cold II/0-2.0 ^b	Same	UNK/2.0		M	U						153
Unnamed Creek T31NR04ES33 WBIC: 1461800	2.0	Cold	Cold II/0-2.0 ^b	Same	UNK/2.0		M	U						153
Unnamed Creek T30NR04ES12 WBIC: 1461500	2.0	Cold	Cold II/0-2.0 ^b	Same	UNK/2.0		M	U						153
37 Unnamed Cr.	57													

Table UW26-2. Upper Big Rib River Watershed. Marathon , Taylor and Lincoln Counties NPS Lake Rank: Low

Lake Name	Fishery Use	Access	Area (acres)	Max/Mean Depth (Feet)	Lake Type	Watershed Drainage	Phos. Class	TSI Range	Fish Advis.	LMO	Impair Source/Impact	Aquatic Plant Data	Exotics	Self-Help Monitoring	Recommends.
St. Clair Lake T33NR03ES07 1466200	Panfish LM Bass N. Pike	BR	6	26	SE	.1	1C		NT	No					
Camp Eight Creek T33NR03ES25 1466600	Trout	BR	2.0	15/NR	DG				NT	No					
Wood Lake T33NR03ES23 1467100	Panfish LM Bass	BR	63.0	33/12	DG	1.2			NT	No					
Wellington Lake T33NR02ES32 1467800	Panfish LM Bass N. Pike	BR	43.0	41/13	SE	.8	1C		NT	No					
Kennedy Lake T33NR02ES22 1468100	Panfish LM Bass N. Pike		12.0	8/NR	DG	2.0			NT	No					
James Lake T33NR02ES15 1468900	Panfish LM Bass Walleye		50.0	37/16	SE	.2	1C		NT	No					
Little Rib Lake T33NR02ES27 1000100	Panfish LM Bass N. Pike		24.0	22/NR	SE	.1	1C		NT	No					
East Lake T33NR02ES20 982900	Panfish LM Bass	W	5.0	21/NR	SE	.1	1C		NT	DIST					
Rib Lake T33NR02ES35 1469100	Panfish Walleye N. Pike	BR	320.0	9/6	DG	2.9			NO	No					
Mud Lake T33NR03ES16 1466800			3.0	6/NR	SE	.1	1C			No					

Table UW26-3. Upper Big Rib River Watershed. Marathon, Taylor and Lincoln Counties Wisconsin Pollution Discharge Elimination System (WPDES) Program

Facility	Permit No./ Expires	Industrial Or Municipal	Receiving Stream/ Classification G = groundwater	Q710 of Receiving Stream	Design Flow (MGD)	Variances	Phosphorus Limit	Facility Plan Candidate? Y/N	Waste Load Allocation	Recommendations
Village of Rib Lake	WI-0029017 12/31/2000	M	Intermediate Aquatic life	0.20	0.200	NA	None	No	NA	None