

9/1/81

August 28, 1981

3200

File

Joe Kurz JEK

Stream Classification for Rainbow Springs Tributary

The Rainbow Springs Tributary discharges to the Mukwonago River in T5N, R18E, Section 32, NWNW and is part of the Fox River Basin Assessment. The stream flows entirely through land which is part of the Rainbow Springs Resort. The primary land use along the stream is golf course.

The stream originates from a small spring pond in T4N, R18E, Section 6, NWSE and flows north-northeast. The southern outlet from Rainbow Springs Lake discharges to the main stem of the tributary. At the time of the stream classification survey, July 29, 1981, no water was flowing out of the lake but groundwater was flowing into the outlet stream. In the golf course area, the main stem of the tributary flows through a series of four man-made ponds. Discharge from the tributary was estimated at 2.5 cfs. No Q7,10 or Q7,2 information is available for this stream.

Minnow species were common in the tributary and one northern pike was also observed. Heptageniidae and scuds were abundant. Approximately 80-100% of the stream had macrophyte cover, primarily sedges, grasses, Elodea and Potamogeton.

The temperature of the tributary ranged around 16.5 - 16.8°C. The lower reading was taken between the second and third ponds at the golf course road. One would expect higher water temperatures from the ponds. These low temperatures indicate a great influence by groundwater flows. During the development of Rainbow Springs these ponds were dug for holding trout as a private fish hatchery. No records of trout stocking have been documented. It is concluded that these ponds and the stream flowing through them are capable of supporting trout because of the low water temperatures.

It is the recommendation of this Department to classify the Rainbow Springs tributary as continuous, full fish and aquatic life. The Mukwonago River is also classified as continuous, full fish and aquatic life.

JK:jm

cc: Frank Schultz
→ Dan Moran - WQM/2

STREAM SURVEY STATION REPORT

DEPARTMENT OF NATURAL RESOURCES

FORM 3600-39

NAME OF STREAM <i>Rainbow Springs trib</i>		Survey Station No.	POINT OF EXAMINATION <i>~50' upstream of confluence</i>	
COUNTY <i>Waukesha</i>		w/ <i>Mukwonago R.</i>		
Township <i>SN</i>	Range <i>18E</i>	Section <i>32 NWNW</i>	Distance Sampled (ft.) -	GEAR USED -
Avg. Width (ft.) <i>10</i>	Avg. Depth (ft.) <i>1.25</i>	Vol. of Flow (c.f.s.) <i>2.5 cfs</i>	VELOCITY <i>est. 0.2 fps</i>	Max. Flood Crest (ft.)
<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Stained <input type="checkbox"/> Dirty		<input checked="" type="checkbox"/> Sluggish <input type="checkbox"/> Moderate <input type="checkbox"/> Rapid		
WATER		CONDUCTANCE <i>C_f</i> <i>C₇₇</i>	TEMPERATURE °C <i>16.8</i>	pH <i>7.7</i>
		.....Water		.....Air
		.....Time		.....ppm
WATER LEVEL CONDITIONS.....In. Below .....Normal .....In. Above		PRIOR WEATHER CONDITIONS		
POLLUTION <i>runoff possible from golf course</i>				
STREAM BOTTOM TYPES (%)				POOL GRADE
.....Bedrock	.....Hardpan	.....Boulder	<i>10</i>.....Rubble	.....Gravel
<i>40</i>.....Sand	<i>50</i>.....Silt	.....Marl	.....Detritus	POOL-RIFFLE RATIO <i>7-15</i>
AQUATIC VEGETATION (Species)	Abund.	AQUATIC VEGETATION (Species)	Abund.	AQUATIC VEGETATION (Species)
<i>sedges</i>	<i>X</i>	<i>Potamogeton</i>	<i>X</i>	
<i>Elodea</i>	<i>X</i>	<i>Myriophyllum</i>	<i>present</i>	
<i>grasses</i>	<i>X</i>	<i>Silamentous algae</i>	<i>common</i>	
INSTREAM COVER	Scarce	Common	Abundant	Stable
<input checked="" type="checkbox"/> Percut banks		<i>X</i>		<i>X</i>
Rocks, boulders	<i>X</i>			
Logs, trees	<i>X</i>			
Debris		<i>X</i>		
Aquatic Vegetation			<i>X</i>	
AQUATIC LIFE		Scarce	Common	Abundant
<i>Stonefly</i>				
<i>Heptageniidae</i>				<i>X</i>
<i>Mayfly</i>				
<i>Caddisfly</i>				
<i>Shrimp scuds</i>				<i>X</i>
<i>Crayfish</i>				
STREAM BANK VEGETATION <i>Golf course</i>				
.....% Cultivated		.....% Upland Hardwood		.....% Swamp Conifer
.....% Firm Pasture		.....% Upland Conifer		.....% Shrub Marsh
.....% Meadow Pasture		.....% Swamp Hardwood		.....% Open Marsh
STREAM COVER		FISHABILITY		
<input type="checkbox"/> Dense	<input type="checkbox"/> Partly Open	<input checked="" type="checkbox"/> Open		
		<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input checked="" type="checkbox"/> Fair <input type="checkbox"/> Poor
BANK EROSION		DAMS	Number	Height
<input type="checkbox"/> Heavy	<input type="checkbox"/> Medium <input type="checkbox"/> Light	<input checked="" type="checkbox"/> None	<i>0</i>	
		Man-made		
BANK HEIGHTS		Beaver (active)	<i>0</i>	
NEED FOR INSTREAM DEVICES		Beaver (inactive)	<i>0</i>	
<input type="checkbox"/> Heavy	<input type="checkbox"/> Medium <input type="checkbox"/> Light	<input type="checkbox"/> None		
REMARKS <i>minnows common; 1 northern pike observed;</i> <i>80-100% macrophyte cover</i>				

(use back of sheet for additional remarks)

DATE OF SURVEY <i>July 29, 1981</i>	INVESTIGATOR <i>Joe Kurz</i>
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STREAM SURVEY STATION REPORT

DEPARTMENT OF NATURAL RESOURCES

FORM 3600-39

NAME OF STREAM <i>Rainbow Springs trib</i>		Survey Station No.	POINT OF EXAMINATION <i>in between ponds bisected by golf course road</i>		
JNTY <i>Waukesha</i>					
Township <i>SN</i>	Range <i>18E</i>	Section <i>31 NESE</i>	Distance Sampled (ft.) -	GEAR USED -	
Avg. Width (ft.)	Avg. Depth (ft.)	Vol. of Flow (c.f.s.)	VELOCITY <input type="checkbox"/> Sluggish <input type="checkbox"/> Moderate <input type="checkbox"/> Rapid		Max. Flood Crest (ft.)
WATER <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Stained <input type="checkbox"/> Dirty		CONDUCTANCE C _f C ₇₇	TEMPERATURE <i>oe</i> <i>16.5</i> Water <i>12:20</i> Time		pH <i>7.7</i>
WATER LEVEL CONDITIONS.....In. Below .....Normal .....In. Above		PRIOR WEATHER CONDITIONS			
POLLUTION <i>Golf course runoff</i>					
STREAM BOTTOM TYPES (%)Bedrock .....Hardpan .....Boulder .....Rubble .....Gravel.....Sand .....Silt .....Marl .....Detritus				POOL GRADE - POOL-RIFFLE RATIO -	
AQUATIC VEGETATION (Species) <i>Nitella</i>	Abund. <i>X</i>	AQUATIC VEGETATION (Species) <i>Ceratophyllum</i>	Abund. <i>X</i>	AQUATIC VEGETATION (Species) <i>Utricularia</i>	Abund. <i>common</i>
INSTREAM COVER	Scarce	Common	Abundant	Stable	Unstable
.....erect banks	-				
.....Rocks, boulders	-				
.....Logs, trees	-				
.....Debris	-				
.....Aquatic Vegetation			<i>X</i>		
STREAM BANK VEGETATION <i>Golf course</i>					
.....% Cultivated		.....% Upland Hardwood		.....% Swamp Conifer	
.....% Firm Pasture		.....% Upland Conifer		.....% Shrub Marsh	
.....% Meadow Pasture		.....% Swamp Hardwood		.....% Open Marsh	
STREAM COVER <input type="checkbox"/> Dense <input type="checkbox"/> Partly Open <input type="checkbox"/> Open			FISHABILITY <input checked="" type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor		
BANK EROSION <input type="checkbox"/> Heavy <input type="checkbox"/> Medium <input type="checkbox"/> Light <input type="checkbox"/> None			DAMS Man-made		
BANK HEIGHTS			Beaver (active)		
NEED FOR INSTREAM DEVICES <input type="checkbox"/> Heavy <input type="checkbox"/> Medium <input type="checkbox"/> Light <input type="checkbox"/> None			Beaver (inactive)		
REMARKS <i>Ponds have heavy macrophyte growth; pond outlets unobstructed & below water line; ponds remain quite cool in temperature, possibly</i> (use back of sheet for additional remarks)					
DATE OF SURVEY <i>July 29, 1981</i>			INVESTIGATOR <i>Joe Kurz</i>		

STREAM SURVEY STATION REPORT

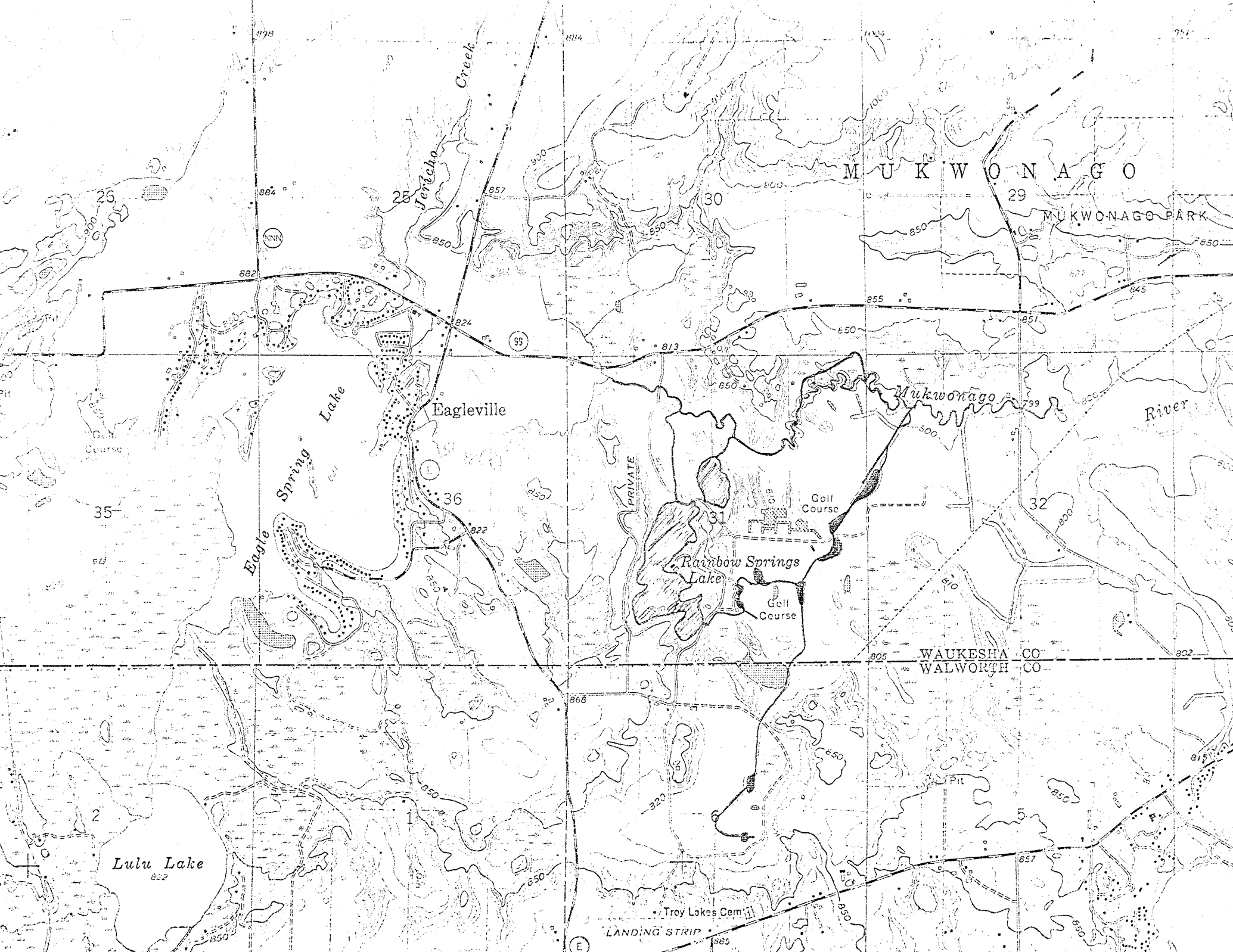
DEPARTMENT OF NATURAL RESOURCES

FORM 3600-39

NAME OF STREAM <i>Mukwonago R.</i>		Survey Station No.	POINT OF EXAMINATION <i>~ 10' upstream of confluence</i>	
JNTY <i>Waukesha</i>		with <i>Rainbow Springs tributary</i>		
Township <i>SN</i>	Range <i>18E</i>	Section <i>32 NWNW</i>	Distance Sampled (ft.) -	GEAR USED -
Avg. Width (ft.) <i>15</i>	Avg. Depth (ft.) <i>2.0</i>	Vol. of Flow (c.f.s.) <i>6.0</i>	VELOCITY <i>est 0.2 fps</i>	Max. Flood Crest (ft.)
		<input type="checkbox"/> Sluggish <input type="checkbox"/> Moderate <input type="checkbox"/> Rapid		
WATER <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Stained <input type="checkbox"/> Dirty		CONDUCTANCE C _f C ₇₇	TEMPERATURE °C <i>17.2</i>	pH <i>7.7</i>
WATER LEVEL CONDITIONS.....In. Below Normal In Above		PRIOR WEATHER CONDITIONS		
POLLUTION <i>None</i>				
STREAM BOTTOM TYPES (%)				POOL GRADE
.....Bedrock Hardpan Boulder Rubble <i>20</i>.....Gravel <i>60</i>.....Sand <i>20</i>.....Silt Marl Detritus				POOL-RIFFLE RATIO <i>5-7</i>
AQUATIC VEGETATION (Species)	Abund.	AQUATIC VEGETATION (Species)	Abund.	AQUATIC VEGETATION (Species)
<i>Sagittaria</i>	<i>X</i>			
<i>Potamogeton commun</i>				
INSTREAM COVER	Scarce	Common	Abundant	Stable
<i>Scrub banks</i>	<i>X</i>			<i>X</i>
Rocks, boulders	<i>X</i>			
Logs, trees			<i>X</i>	
Debris		<i>X</i>		
Aquatic Vegetation			<i>X</i>	
AQUATIC LIFE				
Stonefly Scarce Common Abundant Mayfly Caddisfly Shrimp Crayfish				
STREAM BANK VEGETATION				
.....% Cultivated		.....% Upland Hardwood		.....% Swamp Conifer
.....% Firm Pasture		.....% Upland Conifer		<i>X</i>% Shrub Marsh
.....% Meadow Pasture		.....% Swamp Hardwood		.....% Open Marsh
STREAM COVER			FISHABILITY	
<input type="checkbox"/> Dense <input checked="" type="checkbox"/> Partly Open <input type="checkbox"/> Open			<input checked="" type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	
BANK EROSION			DAMS	
<input type="checkbox"/> Heavy <input type="checkbox"/> Medium <input type="checkbox"/> Light <input checked="" type="checkbox"/> None			Man-made Number Height Pool Area Above <i>0</i>	
BANK HEIGHTS			Beaver (active)	
NEED FOR INSTREAM DEVICES			Beaver (inactive)	
<input type="checkbox"/> Heavy <input type="checkbox"/> Medium <input type="checkbox"/> Light <input type="checkbox"/> None			- -	
REMARKS <i>Numerous minnows observed ; 30-50% macrophyte cover ; sucker redds observed in gravel areas</i>				

(use back of sheet for additional remarks)

DATE OF SURVEY <i>July 29, 1981</i>	INVESTIGATOR <i>Joe Kurtz</i>
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MUKWONAGO

MUKWONAGO PARK

Eagleville

Mukwonago

River

Rainbow Springs Lake

WAUKESHA CO
WALWORTH CO

Lulu Lake

Troy Lakes Cem

LANDING STRIP