Potters Lake
Watershed Planning Project

October 1996

Aron & Associates
26111 W. Loomis Rd.
Wind Lake, WI 53185
(414) 895-6457

TABLE OF CONTENTS

LIST OF MAPS

LIST OF TABLES

POTTERS LAKE
WALWORTH COUNTY WISCONSIN
WATERSHED INVENTORY FINDINGS

INTRODUCTION

In 1989 the State of Wisconsin enacted the Lake Management Planning Grant program. The program was designed to provide cost-sharing assistance and incentives to local communities because they are the front line for lake management. The development of this planning project is one part of a continued effort by local residents to improve Potters Lake. Potters Lake is a 162 acre lake located in the Town of East Troy, Walworth County, Wisconsin (Map 1). This lake oriented community depends on Potters Lake for quality recreation opportunities. The proximity of development and the degree of lake use has the potential to cause serious water quality problems, lessening the opportunity for the quality experiences being sought.

Concern over the condition of the lake prompted the community to create the Potters Lake Protection District (District). Early activities focused on aquatic plant management through harvesting. Other activities have included sediment depth studies, community surveys and carp control projects. In February 1995 the District hired Aron & Associates to conduct a watershed planning project. The study is funded in part by the Wisconsin Department of Natural Resource through a Lake Management Planning Grant to the District. This project will supplement the watershed plan under development by the Walworth County Land Conservation Department for the Honey-Sugar Creek Watershed.

This watershed project provides a portion of the background information needed to prepare a lake protection plan for Potters Lake. The watershed survey was conducted by Aron & Associates staff throughout 1995. Additional data were obtained from the U.S. Geological Survey, DNR and Walworth County Land Conservation Department. It should be noted that this plan does not represent a comprehensive water quality management plan for Potters Lake, but does provide information that will contribute to such a plan at a later date. A comprehensive plan will require additional water quality and biological data collection and analysis.

The scope of this report is limited to the collection of those data which delineate the watershed in which the lake is situated and identification of the land uses in the watershed. The inventory follows approximately the format adopted by the DNR for the nonpoint source pollution control plans pursuant to Chapter NR 120, Wisconsin Administrative Code. The inventory data are used in a preliminary analysis of the pollutant loadings to which the lake

is subjected. The estimates generated through this analysis are examined in light of the information collected by the USGS for the District.

This inventory is comprised of six main sections: (1) a statement of planning goals and objectives, (2) a description of the lake and its watershed, (3) a statement of the current use problems identified in the watershed and the need for protective actions to be taken with the Potters Lake watershed, (4) a statement of actions previously taken to manage the Potters Lake watershed, (5) a preliminary description of some alternative means of watershed management that might be considered in a future lake protection plan, and (6) identification of those elements which can be incorporated into public information programs by the District.

The nonpoint source program is administered by the DNR and Department of Agriculture, Trade and Consumer Protection (DATCP). The program is implemented through priority watershed projects for which a plan has been prepared.

Local units of government implement the plan. Water quality improvement is achieved through implementation of nonpoint source controls (best management practices) and adoption of ordinances. Landowners, land renters, counties, cities, villages, towns sanitation districts, metropolitan sewage districts, regional planning commissions and lake management districts are eligible to participate.

Technical assistance is provided to aid the design of best management practices. State cost share assistance is available to offset the cost of installing these practices. Informational and educational activities are implemented to encourage participation.

This report is a refinement of the nonpoint source plan as it pertains to Potters Lake, currently being written by the Walworth County Land Conservation Department. The County plan uses the existing watershed boundaries for Potters Lake, while this project corrects some of the boundaries. This creates some differences between the two plans in the watershed areas, projected loadings and land use descriptions. This is not a critical issue for the nonpoint source plan since any lands that are not a part of Potters Lake watershed, do continue to be part of the larger Honey-Sugar Creek Watershed.

GOALS & OBJECTIVES

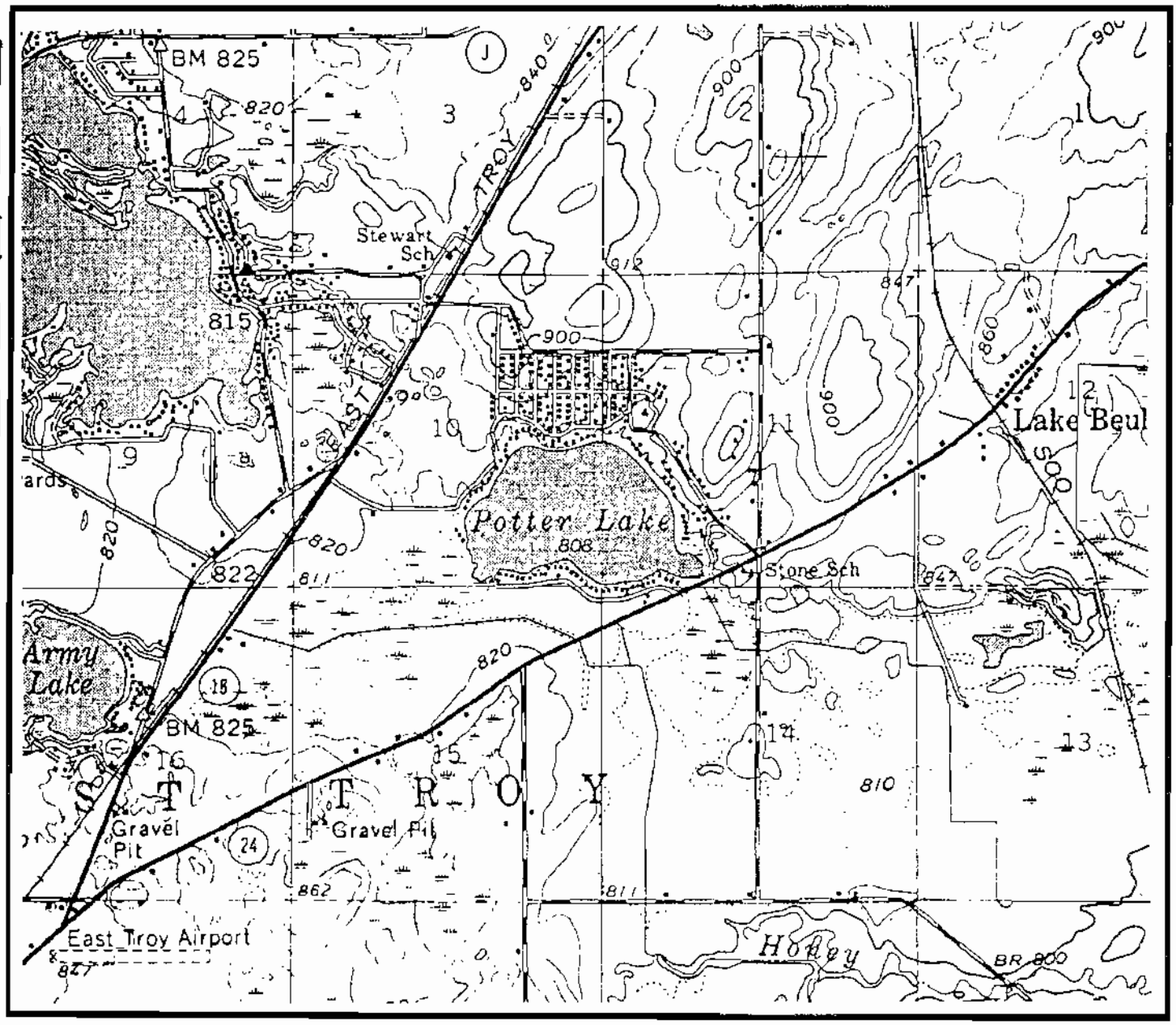
The lake use and management goals and objectives for Potters Lake were developed by the District and its consultant. The goals and objectives are:

• To protect and maintain public health, and promote public comfort, convenience, necessity and welfare, in concert with the natural resource, through the environmentally sound

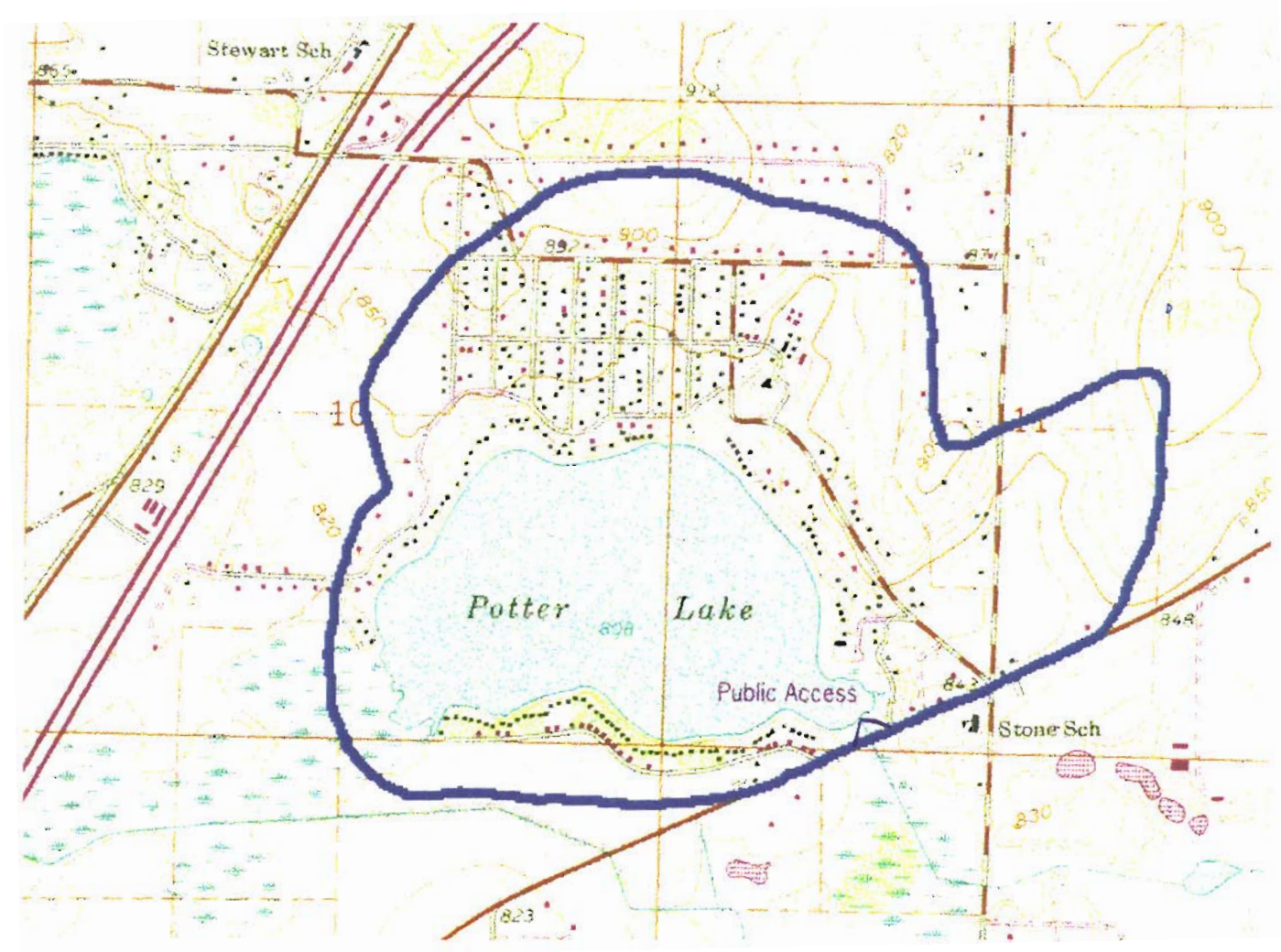
management of the vegetation, fishery and wildlife populations in and around Potters Lake.
• To promote a quality, water-based experience for residents and visitors to Potters Lake consistent with the policies and objectives of the DNR.
• To manage the lake in an environmentally sound manner, pursuant to the standards and requirements set forth in Administrative Codes NR 103, Water Quality Standards for Wetlands, and NR 107, Aquatic Plant Management, to preserve and enhance its water quality and biotic communities, their habitats, and essential structure and function in the waterbody and adjacent areas.
• To effectively control water quality in the Potters Lake basin to better facilitate the conduct of water-related recreation, improve the aesthetic value of the resource to the community and enhance the resource value of the waterbody.

The goals for this planning project are:
• To determine the pollutant loads generated in the Potters Lake watershed.
• To explain the priority watershed process.
• To coordinate with and consult with the Walworth County Land Conservation Department to ensure that no conflicts exist and to provide consistency in recommendations.

Map 1
Location Map
Potters Lake



Map 2. Potters Lake Study Area



EXISTING CONDITIONS IN POTTERS LAKE AND ITS WATERSHED

Physical Characteristics

Watershed Characteristics: Potters Lake is a small seepage lake on the far northeast end of the Sugar-Honey Creek Priority watershed. The direct tributary drainage area, that area which drains directly to Potters Lake, is shown on Map 2 and is approximately 576 acres. Field inspections of the watershed boundary in 1995 resulted in minor refinements to the boundary as initially identified by DNR and the Southeastern Wisconsin Regional Planning Commission. The refinements have been incorporated into Map 2. The watershed is located wholly within the Town of East Troy. The land uses consist of about 43% urban and 57% rural.

The total tributary drainage area for Potters Lake coincides with the direct tributary drainage area. Table 1 illustrates the various land uses that occur within the Potters Lake watershed. Lake oriented residential lands comprise the principal land use in the watershed, followed by agricultural use.

Lake Characteristics:
The lake is a shallow depression at the base of a moraine bordered on one side by an outwash terrace. The deepest part of the lake basin lies offshore of the terminal moraine to the northeast and the outwash terrace is reflected in shallow waters and adjacent wetlands on the south and southwest. Depth contours are shown on Map 3. Hydrographic and morphologic data are provided in Table 2. The present lake level is only partly controlled by a culvert outlet which flows intermittently from the southeast end of the lake through ditching into Honey Creek.

The lake has a total volume of 1304 acre-feet. Approximately 19% of the lake is less than 3 feet deep. The mean depth on Potters Lake is 8 feet.

Potters Lake

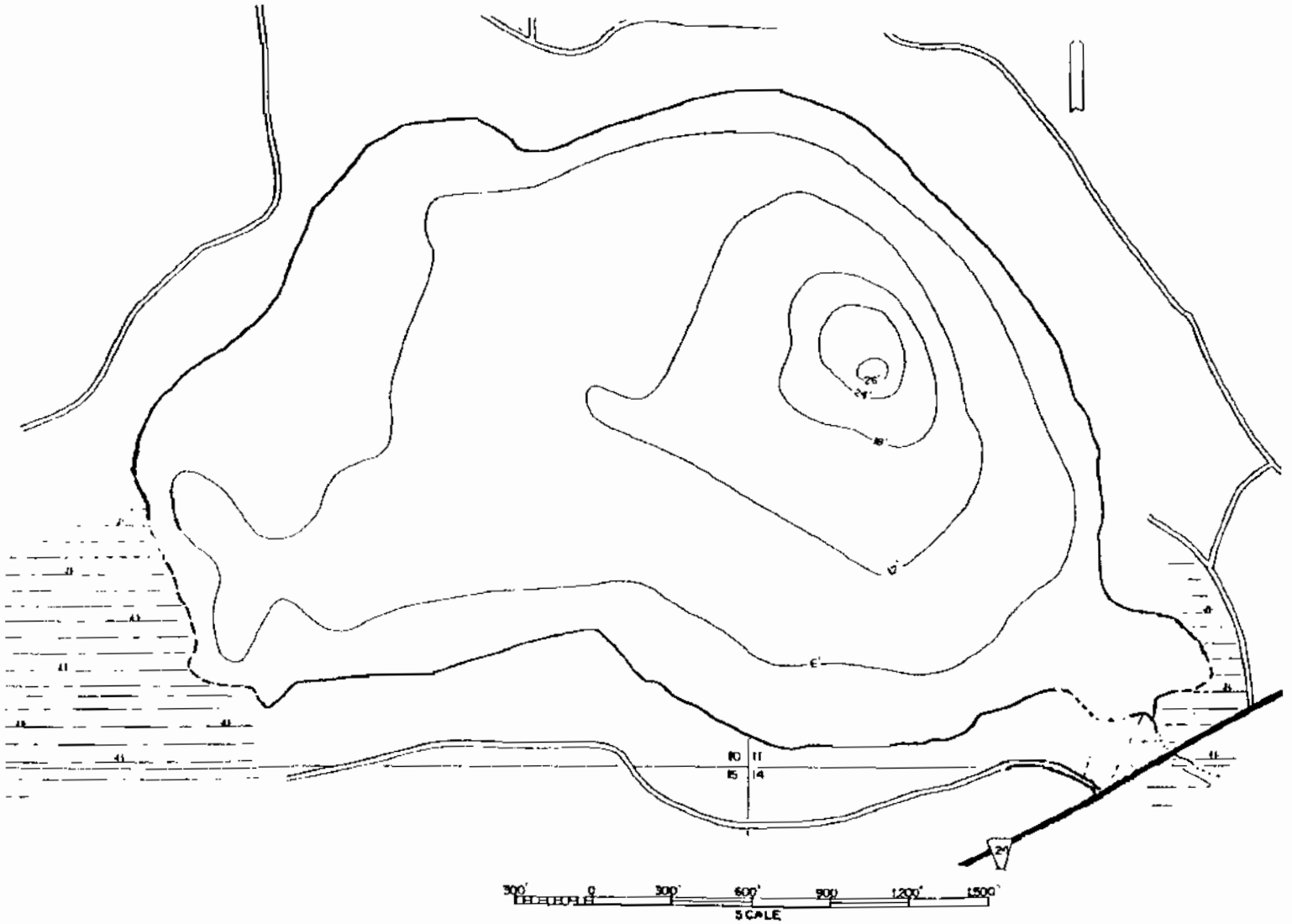


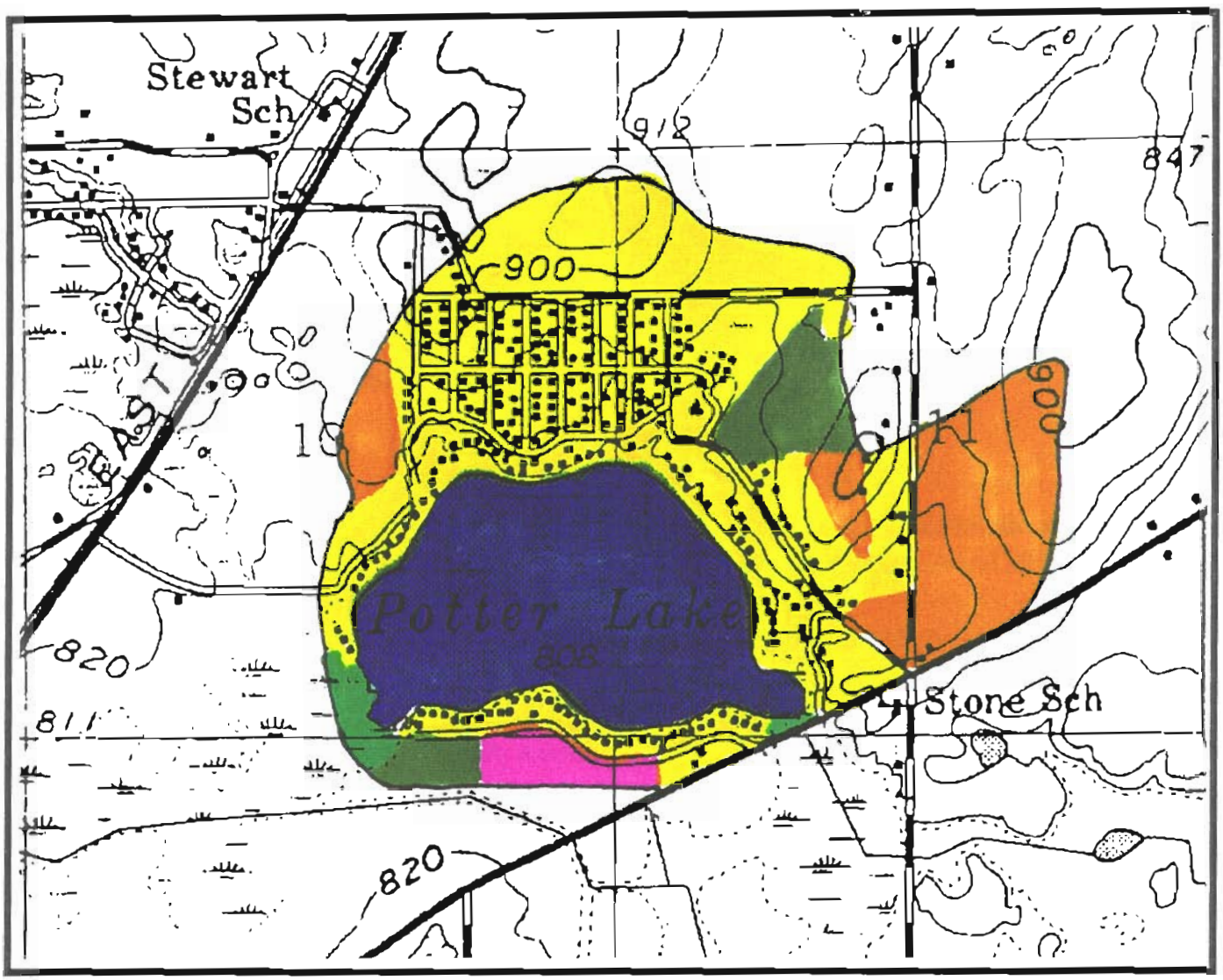
Table 1. Land Use in the Potters Lake Direct Drainage Area, 1996

Land Use Category	Direct Drainage Area Acres	Percent
Urban		
Residential	244	42.5
Transportation/Government	1	0
Subtotal	245	42.5
Rural		
Agricultural	110	19.1
Woodlands	29	5.0
Wetlands	16	2.7
Open Space	14	2.4
Water	162	28.1
Subtotal	331	57.5
TOTAL	576	100

Note: total does not equal 100% due to rounding.

Source: Aron & Associates

Map 4. Land Uses Within the Potters Lake Watershed



- Residential
- Wetlands
- Open Space
- Agricultural
- Woodlands
- Water

Table 2. Hydrography and Morphology of Potters Lake
Walworth County, Wisconsin, 1996

Lake area = 162 acres
Shore length = 2.2 miles
Shore development factor* = 1.23
Maximum depth = 26 feet
Mean depth = 8 feet
Volume = 1304 acre feet
Area less than 3 feet deep = 19%
Area greater than 20 feet deep = 5.5%
Watershed area = 576 acres
Ratio of watershed area to lake area = 3.5 : 1 **

* Shore development factor is defined as the ratio of shoreline to the circumference of a circle with the same area as the lake. A perfectly round lake would have a shore development factor of 1.
** Lakes with drainage areas of greater than 10:1 are more likely to develop water-quality problems (Uttormark and Hutchins, 1978)

Sources: DNR, Aron & Associates

Land Use

Land Use: Residential lands occupy approximately 43% of the direct drainage area to Potters Lake. Surface waters cover about 28% of the watershed with agricultural lands covering approximately 19% of the area. The riparian and neighboring residential areas may be considered to be largely developed, with only limited potential for further expansion. The potential does exist for development in woodlands, open space and agricultural lands. Map 4 illustrates the various land uses in the Potters Lake watershed.

Recreational Use and Public Access: Potters Lake serves a variety of recreation, including boating, swimming, and fishing during the summer months and snowmobiling and ice-fishing during the winter months. The lake is used year round as for passive recreational uses such as walking, bird-watching and scenic viewing. A community survey conducted in 1992 (Aron & Associates) found that scenic viewing was the number one activity of lake residents and property owners. The tranquil nature and scenic beauty of the lake provide a

peacefulness for residents who often indicated "they were always on vacation".

The shoreland area of Potters Lake consists primarily of residential development. A public boat access is located on the southeast shore. Shoreland wetlands are located on the southeast and the west shores. Area residents are in close proximity to Lake Beulah, the Village of East Troy and their associated businesses.

Local Ordinances: The Potters Lake area is subject to county zoning ordinances. The county ordinances include shoreland wetland regulations and construction erosion control.

Sanitary Sewers: The Potters Lake area has public sanitary sewer service. The community began installing sewers in 1977. The service was completely on line in 1981.

Water Quality

Historic Information: Potters lake has very poor to fair water quality and can be classified as a eutrophic lake or one with many nutrients. Table 3 shows the water quality data for Potters Lake. Secchi disc transparencies ranged from 2 feet to 9 feet between 1977 and 1995. Secchi data collected by volunteer Tom Jordens is included in the Appendix. Total phosphorus concentrations ranged from 160 µg/l to 17 µg/l at the surface and 270 µg/l to 17 µg/l at the bottom of the lake. At least two factors may contribute to the large variance between the data collected in the late seventies and that collected in the nineties: 1) the lake was not served by sanitary sewers until 1981, and 2) sampling and/or processing procedures may have varied.

Potters Lake does stratify during the summer months. The lower levels of the water column become void of oxygen and that area can then no longer support fish. Once void of oxygen, the sediments then release moderate nutrients into the water column. In fall when the lake mixes thoroughly, the nutrients are distributed throughout the water column, sometimes producing algae blooms. Ongoing water quality monitoring is recommended.

Watershed Modelling: To guide future studies of Potters Lake and to assist with the priority watershed planning process, an initial assessment of the impact of watershed land use on the water quality of Potters Lake was obtained through the use of simple empirical water quality models, specifically Unit Area Loads and the OECD models as described by Ryding and Rast[1].

[1] Ryding, S.O. and Rast, W., "Chapter 7. Estimating the Nutrient Load to a Water body" in UNESCO Man and the Biosphere Series Volume 1, The Control of Eutrophication of Lakes and Reservoirs, Parthenon Press, London, 1989.

The water quality of a lake is the summation of the contaminant inputs from all the various land uses within the watershed. These inputs have been quantified in the form of Unit Area Loads (UALs) which reflect the average amount of contaminant generated per unit area of water shed surface under a particular land use. Values for Wisconsin have been tabulated by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) and are set forth in Table 4. Similarly, an elementary rainfall-runoff relationship was used as a means of estimating water inflow, the transport mechanism that moves the contaminants into lakes. The two variables, mass and flow, were used to derive a range of values for the contaminant loading rate used in the OECD water quality models. The results of this modelling are set forth in Tables 4 through 6. The implications of these results are discussed below.

Surface Inflow Estimates: The estimated inflow of approximately 564.48 acre-feet per year was calculated using the notes in Table 4. The Southeastern Wisconsin Regional Planning Commission has determined that a 35% rainfall/ runoff coefficient is representative of this region. The actual water inflows to Potters Lake have never been measured. In 1979, the DNR estimated the average annual runoff to be 360 acre/feet/year. The USGS estimated based on nearby gauging stations was calculated to be almost 800 acre-ft/yr (S. Field pers. comm.). When considering the inflow to determine the water residence time (TW), the 564.48 acre-ft/yr produced a residence time of 2.3 years, an estimate consistent with other seepage lakes of similar size in Wisconsin[2]. Groundwater inflows were assumed to equal groundwater outflows.

Water Loading Rates and Water Residence Times: These variables, especially the water residence times, are used as surrogate values for in-lake sedimentation rates, and are critical determinants of pollutant transmission through the system. An accurate estimate of inflows, from which these values are derived, will enhance the quality of the model results. The estimated average water residence time for Potters Lake is about 2.3 years, which as discussed above, is consistent with estimates for other seepage lakes of similar size within Wisconsin.

[2] Wisconsin Department of Natural Resources Technical Bulletin No. 138, Limnological Characteristics of Wisconsin Lakes, 1983; the mean retention time for seepage lakes in Wisconsin is 2.15 years. This period is the time required for a volume of water equal to the volume of the lake to enter the lake from the watershed.

Pollutant Loads and Pollutant Loading Rates: The pollutant loads to Potters Lake were estimated to be approximately 116,148 lbs of sediment, 210 pounds of phosphorus and 61 pounds of lead as set forth in Tables 4 and 6. Lead is used in these analyses as a surrogate value for heavy metals and other pollutants contributed primarily from urban sources. The most important source of lead and metals in runoff is from transportation, which can contribute up to 67 percent of the total load of metals to the environment. The forecasted lead load may accurately reflect the total metal load generated even though the actual concentration from lead may be expected to decline in future years as its use is phased out.

Table 3. Water Quality Data, Potters Lake

Walworth County, Wisconsin

Date	Total Phosphorus (µg/l)		Secchi (ft)	Chlorophyll a (µg/l)	Notes
	Top	Bottom			
4-76	130	80	8.9	-	d
4-77	160	150	5.0	-	d
7-77	-	-	2.0	14	d
7-77	-	-	2.2	35	d
8-77	-	-	2.5	10	d
9-77	-	-	2.3	26	d
4-78	150	170	3.0	-	d
4-23-93	25	22	6.6	14.6	u
6-21-93	34	89	3.6	16.2	u
7-21-93	32	270	2.6	21.7	u
8-10-93	33	110	2.0	18.2	u
4-11-94	26	26	5.9	6.1	u
6-15-94	45	90	2.6	15.0	u
7-18-94	33	89	3.9	7.9	u
8-10-94	44	128	2.6	16.0	u
4-4-95	22	19	5.6	12.0	u
6-19-95	18	88	4.6	3.1	u
7-6-95	28	141	3.9	2.3	u
8-17-95	17	88	9.2	3.5	u

Notes:
d = Sampling conducted by DNR, dates as reported by DNR.
U = Sampling conducted by USGS
- = Data not available

Water quality sampling was conducted by DNR in 1960 and 1966 (DNR1969) however, the information was not collected in a way that permits comparison.

Table 4. Unit Area Pollutant Loading Rates used for the Potters Lake Watershed.

Land Use	Unit Area Loading Rates in pounds/acre/year		
	Total Suspended Solids	Phosphorus	Lead*
URBAN			
Residential, Medium Density	147	0.38	0.16
Government	214	0.57	0.23
Construction Sites	20000	13.0	0.07
RURAL			
Agriculture	450	0.86	0.01
Woodlands/Open Land	3	0.03	0.004
Wetlands	3	0.03	0.004
Water	188	0.13	0.13

* Lead is used as a surrogate variable for urban heavy metals.

Source: Southeastern Wisconsin Regional Planning Commission

Table 5. Summarized Model Input Variables Used In This Study

Parameter/Units	Magnitude	Notes
Inflow (Q) acre-feet/year	$Q_{35} = 564.40$	(a)
Water Residence Time (Tw) yrs	$Tw_{35} = 2.3$	(b)
Water Loading Rate (qs) meters/yr	$qs_{35} = 1.06$	(c)
Pollutant Loads (J) lbs/yr	$J_{sed} = 116,148$ $J_P = 210.47$ $J_{pb} = 61.48$	(d)
Pollutant Loading Rate (L) lbs/acre/yr	$L_{sed} = 716.9$ $L_P = 1.30$ $L_{pb} = 0.38$	(e)

Notes:

(a) Estimated from the annual average precipitation of 33.65 inches multiplied by the drainage area (AD) from Table 2, using a rainfall-runoff coefficient of 35% (Q_{35})

(b) Calculated as lake volume (V) from Table 2 divided by inflow (Q)

(c) Calculated as mean depth in meters, from Table 2, divided by the water residence time

(d) Estimated as the product of watershed area by land use category, from Table 1, and the unit area load (UAL) pollutant export coefficients, from Table 3, for sediment (J_{sed}), phosphorus (J_P) and lead (J_p).

(e) Calculated as the pollutant load (j) divided by the lake surface area (A) from Table 2

Source: Aron & Associates

Table 6. Selected Results From the Water Quality Models Used In This Study

Pollutant	Predicted Concentration[a] 1995	Observed Concentration mean (year)
Sediment mg/l	30.14	-
Phosphorus mg/l	0.041[b]	0.021 (1995)
Lead mg/l	0.0159	-

[a] The OECD nutrient loading model was used to estimate in-lake concentrations; the generalized form of this model is:

$$[C] = L / qs\ (1+(Tw)^{0.5})$$

where [C] is the concentration in milligrams per liter, L is the pollutant loading rate in grams per square meter of lake surface per year, qs is the water loading rate in meters per year, and Tw is the water residence time in years; qs $(1+(Tw)^{0.5})$ is a surrogate value for in-lake sedimentation. Note: Conversions of the data presented in this Table to the metric equivalents, used in the calculations, were made using factors published by the American Society of Civil Engineers.

[b] Phosphorus concentrations have been corrected using the 1982 OECD relationship:

$$[P] = 1.55\ [C]^{0.82}$$

where [P] = the predicted in-lake annual mean total phosphorus concentration, and [C] = the mean annual inflow total phosphorus concentration from footnote a.

Source: Aron & Associates

Table 7. Summarized Output From the Water Quality Models Used In This Study

Water Quality Indicator[a]	Units	Predicted Concentration 1995	Observed Concentration (year)
Secchi Disc Transparency	meters	3.4	1.8 (1995) 1.2 (1994)
Chlorophyll a	ug/l	6.9	5.2 (1995) 11.25 (1994)

Secchi Disk Transparencies (SDT) and Chlorophyll a concentrations (CHL) have been predicted from the in-lake total phosphorus concentrations using the 1982 OECD relationships:

$$SDT = 14.7\,[C]^{-0.39} \qquad CHL = 0.37[C]^{0.79}$$

where [C] = the mean annual inflow total phosphorus concentration in ug/l.

Aquatic Plant, Fisheries, Wildlife and Waterfowl

The quality and chemical composition of the water entering a waterbody, in combination with the morphology of the lake basin, determines the nature and extent of the biological response observed. Abundant aquatic plant growth is found throughout most of Potters Lake. An aquatic plant survey was conducted in 1992. Eleven submergent species and one floating leaf species was found. The aquatic plant species found in 1992 are listed in Table 8. Two exotic species dominate the vegetation, Eurasian watermilfoil (*Myriophyllum spicatum*) and curly leaf pondweed (*Potamogeton crispus*). The District has conducted a harvesting program since 1976.

Potters Lake has good sport and panfish populations. Largemouth bass, northern pike and panfish populations support local anglers. The DNR stocked hybrid muskies from 1975 through 1980. On October 12, 1992 the DNR performed a fish shocking survey on Potters Lake. A total of 478 fish were captured and identified representing twelve species of fish. The species are summarized in Table 9. The most common species was yellow perch, approximately 72% of the fish sampled. In general, panfish dominate the fishery in Potters Lake accounting for 88% of the fish surveyed. The DNR has indicated a thorough fish survey is planned for 1998 (D. Welch, pers. comm.)

Although the urban nature of the immediate shoreline tends to limit the lake's value to wildlife, shoreland wetlands provide habitat and cover for waterfowl and small animals. The lake's aquatic vegetation, specifically muskgrass and slender naiad are valued as good food sources for waterfowl.

Table 8. Aquatic Plants in Potters Lake, 1992

Scientific Name	Common Name
Chara sp.	muskgrass
Ceratophyllum demersum	coontail
Elodea canadensis	common waterweed
Heteranthera dubia	water star grass
Myriophyllum spicatum	Eurasian watermilfoil
Najas flexilis	slender naiad
Nitella sp.	nitella
Nymphaea sp.	white water lily
Potamogeton crispus	curly leaf pondweed
P. pectinatus	sago pondweed
P. zosterformis	flat stem pondweed
Zannichellia palustris	horned pondweed

Source: Aron & Associates

Table 9. Summary of Fish Species in Potters Lake, 1992

Scientific Name	Common Name
Amhloplites rupestris	rock bass
Catostomus commersoni	white sucker
Esox americanus vermiculatus	grass pickerel
Esox lucius	northern pike
Ictalurus melas	black bullhead
Ictalurus natalis	yellow bullhead
Lepomis gibbosus	pumpkinseed
Lepomis macrochirus	bluegill
Lepomis sp.	green sunfish
Micropterus salmoides	largemouth bass
Perca flavescens	yellow perch
Pomoxis nigromaculatus	black crappie

Source: DNR

Controllable Pollutant Loads

The Potters Lake watershed, only 576 acres in size, is relatively small. Urban land use, almost all in medium density residential development, is already sewered. Urban lands represent 42% of the watershed area.

Urban

Urban runoff carries a variety of pollutants to surface water. Some pollutants are specific to urban runoff while others are also found in runoff from agricultural areas. Pollutants found primarily in urban runoff include heavy metals (lads, copper, zinc, cadmium and chromium) and a large number of toxic organic chemicals (PCB's, aromatic hydrocarbons, esters and many others). Other substances in urban runoff that are also found in rural areas include sediment, nutrients, bacteria and other pathogens, and pesticides.

The pollutants in urban runoff depend on the configuration of "source" areas. Residential areas contain more lawn area than commercial areas, while commercial areas have more rooftop, street, and parking lot surfaces. Lawns can be important sources of fertilizers and pesticides. Rooftop areas are important sources of zinc and atmospheric pollutants. Their connections to the storm drainage system may be direct or indirect, depending on the use of downspouts, grassed areas, drain tiles, etc. Streets are sources of significant amounts of lead, cadmium, sediment and other pollutants, depending on their condition and the amount of traffic.

Construction site erosion and sedimentation is a major water quality concern in watersheds. It can destroy aquatic communities in lakes and streams. It can cause reduced capacity of storm water conveyance systems resulting in localized flooding. Also, any water quality improvements that occur through implementation of nonpoint source controls downstream can be negated by construction erosion upstream.

Thirty one percent of the sediment load to Potters Lake and 44% of the phosphorus load comes from the urban area. Because most of the urban area is already developed practices to improve water quality are limited. Grass swales that dominate the stormwater conveyance systems should be maintained and should not be replaced by storm sewers. During the 1995 field inspections, a number of urban practices where identified that can contribute to water quality problems. Burning in ditches and ditches being used as mulch piles are two practices that should be discouraged. Less noticeably, the use of fertilizers and pesticides, especially if applied at inopportune times, are also problematic. Car washing on roadways, improper disposal of automobile fluids, pet waste, salts on roads and walkways in winter, etc. can all increase the pollutant loading washing from urban lands into Potters

Lake. Educational activities that improve the quality of urban runoff can be expected to reduce loadings by 5 to 10%.

Drainage modifications such as ditching and channelizing of streams and wetlands has immediate and long-term detrimental effects on water chemistry, temperature and fish and wildlife habitat. Channelized streams tend to have uniform velocities and substrates that are unsuitable for many forms of aquatic life. Drainage of wetland areas has the effect of lowering water tables, reducing base flows in the stream and sometimes creating flooding problems downstream.

The DNR summary of eligible urban nonpoint source projects and the cost share rates are included in the Appendix.

Rural

Agricultural land comprises only 20% of the land use in the Potters Lake watershed yet it contributes 43% of the sediment and 45% of the phosphorus loads to the lake. One site on the east end of the Potters Lake watershed, was determined by the Walworth County Land Conservation Department staff to be considered a "critical" site. Critical sites are now regulated by the nonpoint source program. Participation in the nonpoint source program contains a mandatory element for critical sites in order to ensure the success of the practices implemented in the program. County staff will be working with the landowner to implement measures to improve the quality of runoff from the site.

Conversion of a relatively small amount of land (19 acres) into open space use can reduce the sediment loading from these areas by approximately 8500 lbs per year and the phosphorus loading by approximately 15.77 lbs per year. If the same amount of land is converted into residential development reductions of only 5800 lbs sediment and 9 lbs of phosphorus per year can be expected. Another consideration in the conversion of agricultural lands to residential use is the increased runoff during construction. The sediment load from the 19 acres under construction would be 380,000 lbs, or the equivalent of almost 8 years of sediment loading under the agricultural use. The additional phosphorus loading to the lake during construction would be more than 2.5 times the existing loading. It is therefore recommended that the land identified on Map 5 should be acquired and maintained in open space with complete vegetative cover. The state guidelines for acquisition of lands is included in the Appendix.

As illustrated in Table 10, woodlands, wetlands and open space contributes little loading to Potters Lake. Aside from the water quality values these lands provide, they also contribute to the aesthetic and wildlife value of the community. These land areas should be protected

in existing conditions. The wetlands are shoreland wetlands and therefore should be protected through county shoreland zoning, permanent protection is only guaranteed through public ownership. Acquisition of these areas should be pursued. If acquisition is not possible, the District should carefully monitor activities in these areas to protect the important resource from destruction. Acquisition of lands is eligible for 50% cost shared funds from the NPS program. Additional funds may be available from the Lake Protection Grant program for an additional 25% of acquisition costs. Appraisals required in the acquisition procedures are also eligible for nonpoint source funding. Acquisition procedures for the state programs are included in the appendix. Once the Sugar-Honey Creek watershed plan is approved, the District should apply for a NPS grant to assist with the proposed acquisition. Funds for project management are also available through the local assistance grant program of the NPS program. Another alternative if acquisition of the agricultural lands is not possible, is to lease the lands from the landowner. Under this scenario, the District would pay the landowner a fee to leave the land in open space. This could cost approximately $50 to $75 per acre per year. Grant funds are not available to assist with this scenario. The DNR summary of eligible rural nonpoint source projects and the cost share rates are included in the Appendix.

Acquisition Recommendations

Map 5 identifies the sites recommended for acquisition. Lands are grouped into four categories, including wetlands, recommended acquisition, possible acquisition, and areas needing management.

Of the Group 1 lands, there are two parcels targeted. The first is a portion of the critical site identified by Walworth County Land Conservation. The site to be acquired should be a minimum of 150 feet by 150 feet. A larger area will allow more filtering to take place before water leaves the field. The site should be planted in vegetation to provide a buffer for runoff. The site is zoned agriculture. Value will be determined by the appraisal process. The district should be cautioned to follow the procedures carefully. Cost should not be discussed with the landowner until *after* the appraisal is complete and certified.

The second parcel is across the road from the first. This site could provide the opportunity for additional filtering from the farm field. If it is not possible to acquire all the land, the District should attempt to obtain the stream corridor or an easement on the stream corridor to maintain sufficient vegetation to improve the filtering capacity of the corridor.

Group 2 lands are all wetlands. Because wetlands, especially shoreland wetlands are protected by regulation of state and local authority, acquisition of these lands should take place after the uplands identified in Group 1 are acquired.

Group 3 is a former camp. If possible, the wooded and open space should be acquired and preserved. If this site is developed, the loss of habitat and the potential for erosion could be significant.

Group 4 identifies a highly erodable field that has a history of being cropped. At a minimum the District and/or the County should work with the landowner to reduce the potential for soil loss from this site.

InLake

If nutrient loadings to the lake are reduced by the actions proposed in this plan, the sediments in the lake may continue to provide a nutrient source that should be managed. USGS indicates that "during the summer anoxic period, there are moderate amounts of phosphorus being released from the bottom sediments" (USGS, 1994). If further study confirms that this is a problem, an alum treatment may need to be undertaken once the land use activities are under control to achieve an inlake phosphorus concentration of 20µg/l . An alum treatment would cost approximately $60,000 with 70% of the project cost eligible under the NPS program.

Table 10 . Contaminant Loads Resulting from Land Use Activities In the Potters Lake Direct Drainage Area										
	Under Existing Conditions									
land use	acreage	sed load lbs	sed load %	p load lbs	p load %	pb load lbs	pb load %	UAL Sed	UAL P	UAL pb
URBAN										
residential	244	35868	30.86%	92.72	44.00%	39.04	63.53%	147	0.38	0.16
transportation/govern	1	214	0.18%	0.57	0.27%	0.23	0.37%	214	0.57	0.23
construction sites	0	0	0.00%	0	0.00%	0	0.00%	20000	13	0.07
RURAL										
agriculture	110	49500	42.59%	94.6	44.89%	1.1	1.79%	450	0.86	0.01
woodlands	29	87	0.07%	0.87	0.41%	0.0116	0.02%	3	0.03	0.0004
wetlands	16	48	0.04%	0.48	0.23%	0.0064	0.01%	3	0.03	0.0004
open space	14	42	0.04%	0.42	0.20%	0.0056	0.01%	3	0.03	0.0004
water	162	30456	26.21%	21.06	9.99%	21.06	34.27%	188	0.13	0.13
TOTALS	576	116215	100.00%	210.72	100.00%	61.4536	100.00%			

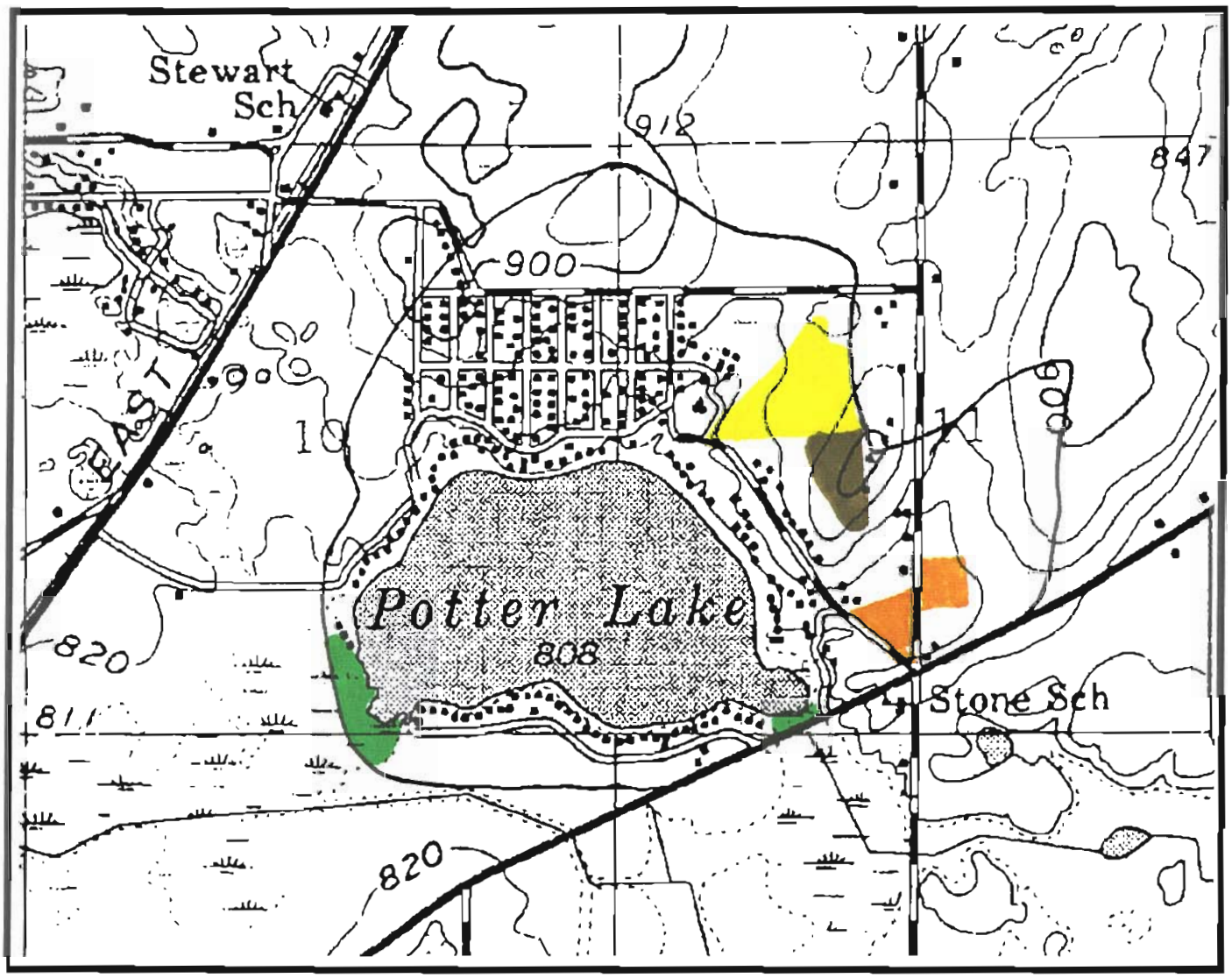
Table 11 . Contaminant Loads Resulting from Land Use Activities In the Potters Lake Direct Drainage Area										
	Under Planned Conditions									
land use	acreage	sed load lbs	sed load %	p load lbs	p load %	pb load lbs	pb load %	UAL Sed	UAL P	UAL pb
URBAN										
residential	244	35868	33.30%	92.72	47.56%	39.04	63.72%	147	0.38	0.16
transportation/govern	1	214	0.20%	0.57	0.29%	0.23	0.38%	214	0.57	0.23
construction sites	0	0	0.00%	0	0.00%	0	0.00%	20000	13	0.07
RURAL										
agriculture	91	40950	38.01%	78.26	40.14%	0.91	1.49%	450	0.86	0.01
woodlands	29	87	0.08%	0.87	0.45%	0.0116	0.02%	3	0.03	0.0004
wetlands	16	48	0.04%	0.48	0.25%	0.0064	0.01%	3	0.03	0.0004
open space	33	99	0.09%	0.99	0.51%	0.0132	0.02%	3	0.03	0.0004
water	162	30456	28.27%	21.06	10.80%	21.06	34.37%	188	0.13	0.13
TOTALS	576	107722	100.00%	194.95	100.00%	61.2712	100.00%			
Note: Converts 19 acres of agricultural land to open space use.										

Table 12. Anticipated Water Quality Results of Plan Recommendation

	Predicted-Existing	Predicted-Planned	Existing
Phosphorus	41 µg/l	38 µg/l	21 to 37 µg/l
Secchi Disk Transparency(meters)	3.4	3.5	1.2 to 1.8
Chlorophyll a	6.9 µg/l	6.5 µg/l	5.2 to 11.25 µg/l

Source: Aron & Associates

Map 5. Areas Recommended for Aquisition Within the Potters Lake Watershed



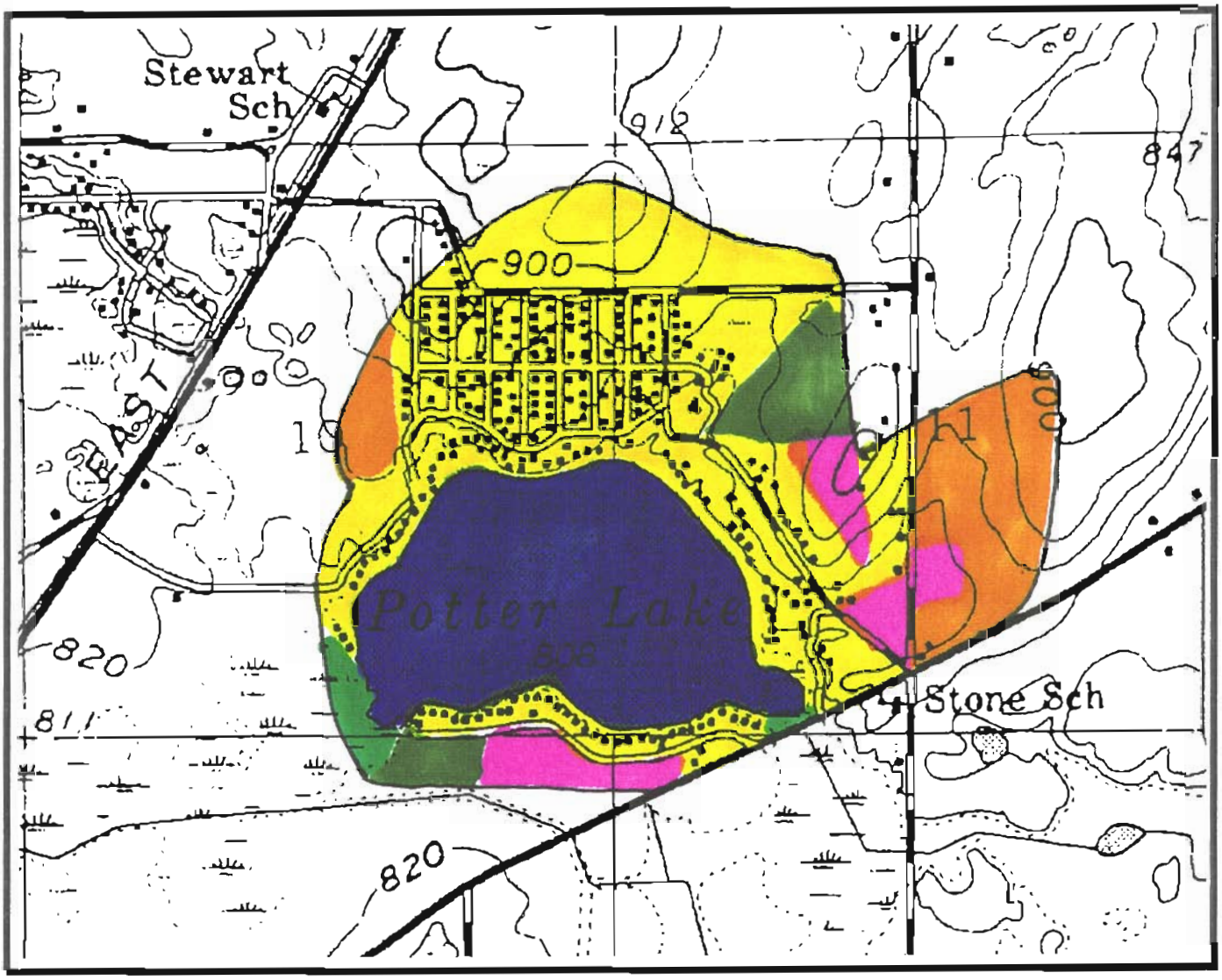
Group 1 - Lands Recommended For Acquisition

Group 2 - Wetlands To Be Acquired

Group 3 - Lands For Possible Acquisition

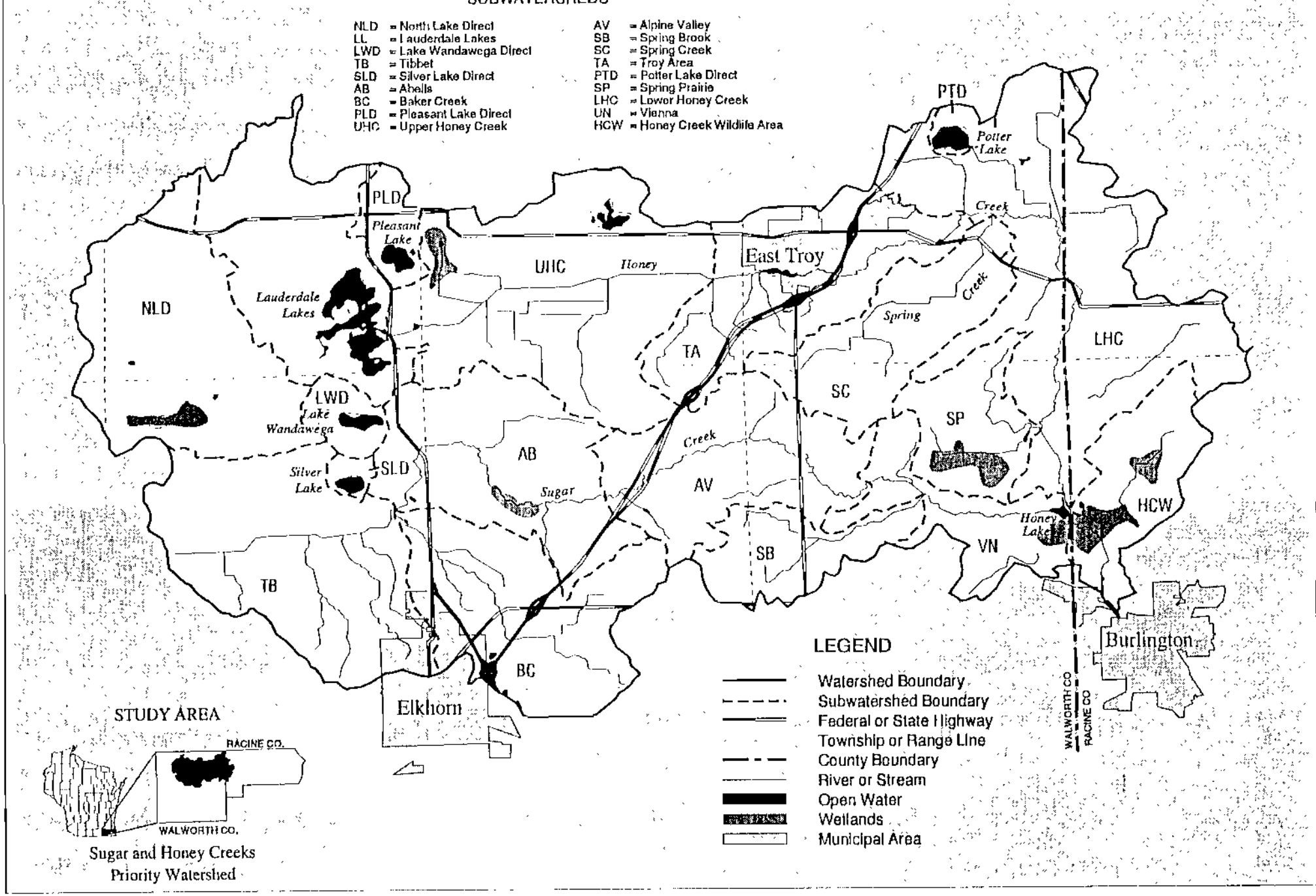
Group 4 - Lands Needing Management Activities

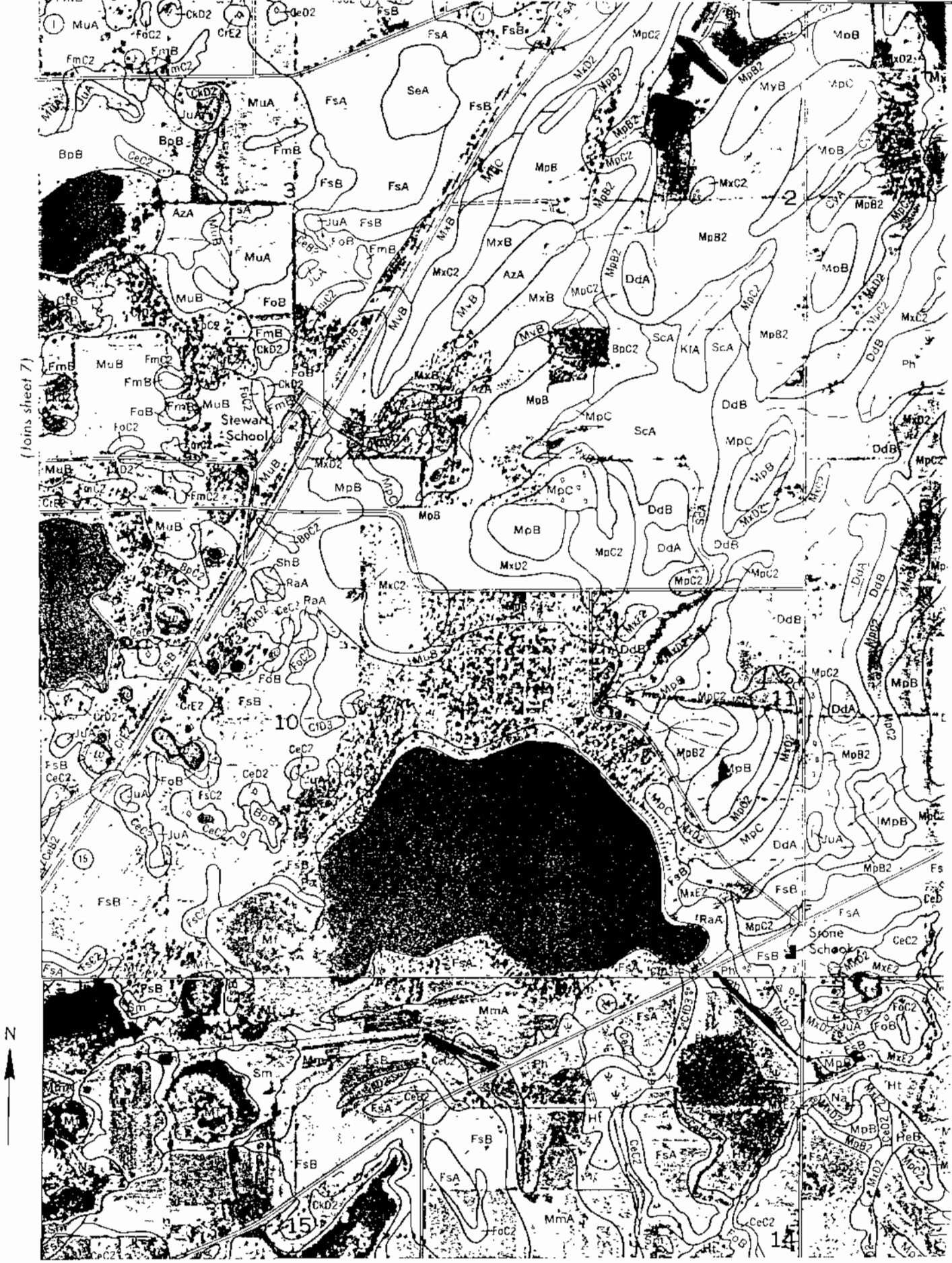
Map 6. Land Uses Within the Potters Lake Watershed Under Planned Conditions



- Residential
- Wetlands
- Open Space
- Agricultural
- Woodlands
- Water

Sugar and Honey Creeks Priority Watershed




(Joins sheet 7)
Stewart School
Stone School
N
Scale 1 to 340
5000
4000
3000
2000
1000
0

Shoreline Protection

Shoreline erosion could be expected to increase as lake use increases in response to improved water quality. Sensitive areas of shoreline, susceptible to recession, should be protected. Shoreline structures should be maintained to ensure long term stability. Shoreline protection measures that are unobtrusive and wildlife friendly should be used. Retaining walls of concrete, wood or steel are visually intrusive and act as barriers to frogs, turtles and other wildlife that depend on land access. Retaining walls provide no habitat for near shore small critters that are a crucial food source for fish. More natural options include various combinations of natural vegetation buffer strips and rock rip rap. Natural vegetation also has an added benefit of restricting access for Canadian geese, a major source of problems for many lakes. Canadian geese favor lawns that extend to the lakeshore. Because their presence increase the phosphorus loading to lakes, the use of natural vegetated buffer strips should be encouraged.

The lake shoreline of Potters Lake was surveyed by the Walworth County Land Conservation Department staff. Shoreline stabilization treatments varied. Rock, bricks, wood structures, retaining walls, and vegetation were some of the more common shoreline treatments. None of the lakeshore exhibited severe or even moderate erosion that might be eligible under this or the nonpoint source plan. A few areas minor problems were found producing low levels of sediment to the lake, but the overall nonpoint source impact from the eroding lakeshore is insignificant.

Public Information

The District currently uses a local newsletter to communicate with landowners and residents. The newsletter is distributed twice a year. Regular and frequent communication with the community is an important component of a priority watershed program. The District should consider applying for a nonpoint source local assistance grant to produce newsletters at least four times a year. Grant funds should be sought to cover the costs associated with the newsletters, including development, publishing and mailing. The newsletters should be distributed to all landowners and residents within the direct drainage area to Potters Lake. Local public officials, DNR and county staff and state officials should be included in the mailing list. As part of this project, a packet of available educational materials will be provided to the District. The District should also consider distributing a similar packet to all residents and landowners within the direct drainage area.

Understanding the wants, needs and level of knowledge of the local community is crucial to implementation of educational and water quality projects. The community survey con-

ducted in 1992 provided the District a good basis for planning activities. Turnover of residents and landowners in lake areas can sometimes approach 20% per year. Surveys should be repeated every five years to accurately reflect the community.

Summary

This report, which documents the findings of a study requested by the Potters Lake Protection District, examines existing and anticipated land uses and land use problems encountered in the Potters Lake watershed and their effect on lake water quality. This report is complementary to other activities undertaken by the District and is designed to highlight those areas where further study is desirable to achieve the lake protection goals of the District.

Potters Lake is a eutrophic lake close to the large population center in southeast Wisconsin. The primarily developed watershed leaves little room for alternatives to improve water quality, however, this plan attempts to make recommendations that will improve the water quality of Potters Lake. The following activities should be undertaken:

- Water quality monitoring by USGS should continue beyond the current planning grant project. Beginning with 1997, this should be funded though the nonpoint source local assistance grant (LAG). Continued monitoring will provide better data on the success of project activities and is crucial for long term protection of the lake.
- The District should continue monitoring and assessment of: aquatic vegetation, fisheries, community attitudes and opinions.
- A quarterly newsletter should be distributed throughout the Potters Lake watershed providing regular information about land use activities to improve Potters Lake. This should be funded through the NPS LAG. Other activities that may be undertaken to improve public education may include public meetings, pamphlets, tours and school activities.
- The District should establish and maintain regular communication with the county and the town to ensure adequate enforcement of erosion control within the watershed.
- The District should attempt to acquire those lands identified on Map 5 to improve the long term quality of the runoff into Potters Lake. The District should work with the county and DNR to follow the appropriate procedures for the potential acquisitions.
- The District should encourage the Town of East Troy to participate in the Sugar-Honey Creeks watershed project. Potential activities include street sweeping, maintenance of ditches and swales, yard waste management, leaf collection and reduction of road de-icing products.
- The District should continue to participate in the Sugar and Honey Creeks Watershed Citizens Advisory Committee.

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URBAN COST-SHARING for CLEANER WATER

PUBLISHED FOR THE WISCONSIN PRIORITY WATERSHEDS PROGRAM

The Wisconsin Priority Watersheds Program recognizes that urban as well as rural areas create "nonpoint source" or runoff pollution. In urban areas, nonpoint source pollution can be reduced through construction site erosion control, stormwater pollution control, stream bank stabilization, and pollution prevention practices. To help local governments implement nonpoint source programs, the State provides two types of financial assistance:

Local Assistance Grants—for additional local government *staff*

Cost Sharing—for nonpoint source pollution control *practices*

This publication explains cost–sharing for urban areas. Separate publications on local assistance grants and rural cost-sharing are available from offices listed on the back.

What is Cost-Sharing?

Cost–sharing is a means of dividing the responsibility for water quality improvements. It has proven successful because both landowners and the public get something of value. Eligible landowners—including local governments—get technical and financial help to manage land so that it does not cause nonpoint source pollution. The public, in turn, gets cleaner water. Both groups may realize added benefits through more dollars in the local economy, increased property values, or simply the feeling of doing the right thing.

Under the Watershed Program, a voluntary cost–sharing agreement commits the State to provide a share of the funds needed to control high–priority sources of water pollution. The local government or landowner provides the remaining share, and carries out and maintains needed water quality practices. Part or all of the local share may be an "in–kind" match, calculated as the value of labor and/or machinery. Funds from other programs may also be available to cover some local costs.

Local governments eligible to participate in the cost–sharing program include cities, villages, towns, counties, lake districts, sanitary districts, drainage districts, metropolitan sewerage districts and regional planning commissions.

What Is Eligible For Urban Cost-Sharing?

A watershed plan identifies activities eligible for cost–sharing in each community in a priority watershed. State cost–sharing is targeted for practices that reduce nonpoint sources of pollution from *existing* urban development. High priorities usually include stormwater ponds or infiltration trenches to serve existing commercial, industrial, and high–density residential areas (6 units/acre or more). Other high priorities are practices that reduce stormwater flows and stabilize stream banks in areas with serious stream bank erosion and stream bed scour.

Activities that are not eligible for cost–sharing include stormwater controls for new development or industrial activities covered by state stormwater permits. Construction site erosion control practices such as silt fences also are not eligible for cost–sharing.

Urban Cost-Sharing Rates

Water Quality Practice	State Cost–Share Rate
Stormwater Ponds or Wetland Basins	70%[1]
Infiltration Trenches	70%[1]
Grass Swales	70%[1]
Porous Pavement	70%[1]
Stormwater Filtration Devices	70%
Land Purchases, Storm Sewer Re-routing and Removal of Structures	50%[2]
Stream Bank and Shoreline Stabilization	70%
Stabilization of Critical Eroding Areas	70%[3]
Drop Spillways and Channel/Grade Stabilization Structures	70%
Shoreline Buffers	70%[3]
Wetland Restoration	70%[3]
Lake Sediment Treatment	70%

[1]For eligible land uses in urban development that existed before the watershed plan was adopted.

[2]If necessary for the installation of structural practices such as stormwater ponds.

[3]The State or local government may purchase an easement in conjunction with these practices

FIVE STEPS TOWARD COST-SHARING

1. **MUNICIPALITY AGREES TO PARTICIPATE**

To qualify for state financial assistance under the Watershed Program, a local government must agree to implement some basic nonpoint source pollution control measures including adopting and enforcing a construction erosion control ordinance, developing a public information program, and implementing pollution prevention programs (such as storm drain stenciling). Local assistance grants provide state funding for some of these programs (see separate fact sheet).

2. **SITES ARE EVALUATED**

The watershed plan identifies, in general terms, eligible areas in each municipality that are eligible for cost–sharing and the level of pollution control needed. However, the local government may need to conduct further engineering feasibility and site studies to determine the best locations and types of pollution control practices. The Department of Natural Resources and local government work together to select areas where further studies are most needed.

3. **PRACTICES ARE SELECTED**

In some cases, feasibility studies may recommend publicly–owned nonpoint source controls that serve large areas. In other cases, studies may indicate that private ownership is more appropriate. The local government receives state financial assistance for both types of controls through a nonpoint source grant. When work is needed on private lands, local governments pass state cost–sharing funds to the landowners through cost–share agreements. Local government staff contact the owners and work with them to select appropriate practices and develop cost–share agreements.

4. **AGREEMENTS ARE SIGNED**

The voluntary signing of a nonpoint source grant or cost–share agreement is an important step. With this, a local government or landowner commits to carry out and maintain selected practice(s). The agreement outlines what will be done, estimated costs, and completion date(s). As part of the agreement, detailed designs are drawn up in accordance with standards and specifications adopted by the State. Design costs are eligible for up to 100% state funding.

5. **WORK IS COMPLETED AND PAYMENT RECEIVED**

Finally, the work is carried out. Local government staff inspect the practice and certify proper installation. Following satisfactory completion of each practice, the landowner or municipality receives the eligible cost– share payment. Payments may be made in installments for portions of work acceptably completed. Once the practice is installed, operation and maintenance costs are the responsibility of the landowner or local government.

For more information, please refer to Chapter NR120 of the Wisconsin Administrative Code or contact:

Wisconsin Department of Natural Resources,
Nonpoint Source Coordinator

Lake Michigan District	(414) 492-5900
North Central District	(715) 369-8940
Northwest District	(715) 635-4062
Southeast District	(414) 263-8696
Southern District	(608) 275-3280
Western District	(715) 839-3700

University of Wisconsin–Extension,
Water Quality Education

Northeast Area	(414) 465-2317
Southeast Area	(414) 475-2881
Southern Area	(608) 265-3257
Western Area	(715) 836-5513

While this fact sheet pertains to urban cost-sharing, a parallel rural effort is also part of the Watershed Program. Other publications on rural and urban nonpoint source pollution control programs can be obtained from the offices listed above.

A publication of the University of Wisconsin–Extension (UWEX) in cooperation with the Wisconsin Department of Natural Resources under funding from the Wisconsin Nonpoint Source Water Pollution Abatement Program. Carolyn D. Johnson, UWEX Southeast Area Urban Water Quality Educator (12/94)

RURAL COST-SHARING for CLEANER WATER

PUBLISHED FOR THE WISCONSIN PRIORITY WATERSHEDS PROGRAM

WHAT IS COST-SHARING?

Cost-sharing is a means of dividing the responsibility for water quality improvements. For many years, conservation programs have used cost-sharing to benefit both landowners and the public. It has proven successful because both landowners and the public get something of value. Eligible landowners get technical and financial help to manage land so that it does not cause nonpoint source pollution. The public, in turn, gets cleaner water. Both groups may realize added benefits through sustained land productivity, more dollars in the local economy, or simply the feeling of doing the right thing.

Under the Priority Watersheds Program, a voluntary cost-sharing agreement commits the State to provide a major share of the funds needed to control high-priority sources of water pollution. You, the landowner, provide the remaining share, and carry out and maintain needed water quality practices. Part or all of your financial share may be an "in-kind" match, calculated as the value of your time, machinery or a conservation easement donated to the State or an approved group.

The cost-share rates below are available for a limited time, with technical assistance provided free

CONSERVATION PRACTICE	STATE COST-SHARE RATE
Contour Farming	50%[1] or $6/acre one-time payment
Contour Strip Cropping	50%[1] or $12/acre one-time payment
Field Strip Cropping	50%[1] or $10/acre one-time payment
Field Diversions	70%
Terraces	70%
Grass Waterways	70%
Reduced Tillage	
Continuous Row Crops & Long Rotations	50% or $45/acre over 3 years
Short Rotations, Forage & Small Grains	50% or $15/acre one-time payment
Green Manure Crop	$25/acre/year for up to 3 years
Nutrient & Pesticide Management	50%
Pesticide Spill Control Basins	70%
Stabilization of Critically Eroding Areas	70%[2]
Grade Stabilization Structures	70%
Agricultural Sediment Basins	70%
Shoreline & Streambank Fencing & Stabilization	70%
Shoreline Buffers	70%[7]
Wetland Restoration	70%[4]
Barnyard Runoff Management	70%[4]
Cattle Mounds	70%
Animal Lot Relocation	70%[5]
Manure Storage Facilities	70% of the first $20,000
	50% of the remainder[3,4]
Manure Storage Abandonment	50%
Roofs for Barnyard & Manure Storage Facilities	70%
Fencing Livestock from Woodlots	50%
Intensive (Rotational) Grazing	50%[6]
Milkhouse Waste Control Facilities	70%

[7]70% cost-sharing is available to recreate any wildlife habitat lost by putting in contour farming or strip-cropping practices
[2]The State or local government may agree to purchase an easement in conjunction with these practices.
[3]$35,000 maximum grant including manure transfer equipment that is part of and used exclusively for the system. For leased storage tanks, the rate is 70% of the downpayment and lease cost up to a maximum of $20,000.
[4]A landowner with a debt to asset ratio of more than 60% may receive more. In economic hardship cases, the cost-share rate for barnyard runoff management is 85% and for manure storage is 85% for the first $20,000 and 75% for the rest. The maximum grant for both is $45,000.
[5]Up to a maximum of 70% of the appraised value of buildings, structures or lots replaced.
[6]$2000 maximum per watering system installed with rotational grazing, flat rate for fencing

FIVE STEPS TOWARD COST-SHARING

1. **LANDS MUST BE ELIGIBLE** — The plan for your watershed includes an inventory of lands that pose water quality problems and are elibigle for cost-sharing. County Land Conservation staff will contact you to discuss whether the inventory identifies your land as eligible for cost-sharing.

2. **COUNTY STAFF EVALUATE THE SITE** — With your approval, county staff will work on-site to verify possible nonpoint sources of pollution on your land. The site evaluation is a "double-check" to verify that your land is eligible for cost-sharing.

3. **YOU SELECT PRACTICES** — If your land is eligible, you work with county staff to identify conservation practices that will reduce nonpoint source pollution and fit into your farming operation. You may have several options available. Once you have selected appropriate conservation practices, county staff will draw up plans.

4. **AGREEMENTS ARE SIGNED** — Signing a cost-share agreement is an important step. With this, you commit to carry out and maintain the practice(s) which you helped select. Your agreement with the county outlines what will be done, estimated costs, and completion date(s). If several practices are planned, you help develop a schedule. After the agreement is signed, you have five years to complete all planned conservation work, with state cost-sharing guaranteed.

5. **WORK IS COMPLETED AND PAYMENT RECEIVED** — Finally, the work is carried out. County staff inspect the practice and certify proper installation. Following satisfactory completion of each practice, you receive the eligible cost-share payment. You may ask to be paid in installments for portions of work acceptably completed. Once the practice is installed, operation and maintenance costs are your responsibility.

For more information, please refer to your watershed plan and Chapter NR120 of the Wisconsin Administrative Code or contact your county Land Conservation Department or DNR Nonpoint Source Coordinator.

Wisconsin Department of Natural Resources,
Nonpoint Source Coordinator

Lake Michigan District	(414) 492-5900
North Central District	(715) 369-8940
Northwest District	(715) 635-4062
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A publication of the University of Wisconsin–Extension (UWEX) in cooperation with the Wisconsin Department of Natural Resources under funding from the Wisconsin Nonpoint Source Water Pollution Abatement Program. Carolyn D. Johnson, UWEX Southeast Area Urban Water Quality Educator (12/94)

Secchi depth data record

Lake: Potters(?) # 0753800(?)
County: [illegible]
Volunteer(s): [illegible]
Sampling Year: 1994

DATE	SECCHI DEPTH (FT)	COLOR (CIRCLE)	RECREATION ENJOYMENT (CIRCLE)	COMMENTS: LAKE LEVEL, WEATHER, WILDLIFE, ICE-ON, ICE-OFF ALGAE BLOOMS, PLANTS, ETC. (CONTINUE ON BACK OF PAGE)
4/22/94	5'	C/B G B	1 2 3 4 5	[illegible] 7.80
5/5/94	5'	C/B G B	1 2 3 4 5	7.45 [illegible] sunny
5/21/94	4'	C/B G B	1 2 3 4 5	7.35 " "
[illegible]	[illegible]	C/B G B	1 2 3 4 5	7.25 " " 12
6/5/94	[illegible]	C/B G B	1 2 3 4 5	[illegible] " " hazy
[illegible]/94	2 1/2	C/B G B	1 2 3 4 5	7.08 " " [illegible]
[illegible]	[illegible]	C/B G B	1 2 3 4 5	7.00 " " 17
6/26/94	4'	C/B G B	1 2 3 4 5	7.05 " " 9
7/8/94	4'	C/B G B	1 2 3 4 5	6.90 " overcast 2
7/[illegible]/94	4'	C/B G B	1 2 3 4 5	6.90 " " 3
7/3[illegible]/94	3 1/2'	C/B G B	1 2 3 4 5	6.56 " " 6
8/13/94	2 1/2'	C/B G B	1 2 3 4 5	6.75 " " 3
8/27/94	2 1/2'	C/B G B	1 2 3 4 5	7.00 " sunny 5
9/5/94	2 1/2'	C/B G B	1 2 3 4 5	6.80 " overcast 3
9/[illegible]/94	2 1/2'	C/B G B	1 2 3 4 5	6.85 " sunny 4
9/18/94	3 1/2'	C/B G B	1 2 3 4 5	6.79 " " 4
9/25/94	3'	C/B G B	1 2 3 4 5	6.70 " " 5
10/9/94	3 1/2'	C/B G B	1 2 3 4 5	[illegible] " Partly Sunny 1
[illegible]/94	[illegible]	C/B G B	1 2 3 4 5	6.57 " sunny 1
[illegible]	[illegible]	C/B G B	1 2 3 4 5	6.71 [illegible]
[illegible]	[illegible]	C/B G B	1 2 3 4 5	6.90 [illegible]
[illegible]	[illegible]	C/B G B	1 2 3 4 5	[illegible] Partly Cloudy [illegible]
4/11/95	4 1/2	C/B G B	1 2 3 4 5	7.35 Sunny [illegible]
5/6/95	[illegible]	C/B G B	1 2 3 4 5	7.55 Sunny [illegible] fishing boats

MARK SECCHI DEPTH WITH A STAR (*) IF DISK HIT LAKE BOTTOM

Secchi depth data record

Lake: Potters # 0753800
County: Walworth
Volunteer(s): Tom Jennings
Sampling Year: 1995

DATE	SECCHI DEPTH (FT)	COLOR (CIRCLE)	RECREATION ENJOYMENT (CIRCLE)	COMMENTS: LAKE LEVEL, WEATHER, WILDLIFE, ICE-ON, ICE-OFF ALGAE BLOOMS, PLANTS, ETC. (CONTINUE ON BACK OF PAGE)
5/23/95	6'	C/(B G) B	1 2 (3) 4 5	7.71 Sunny, no breeze [illegible]
5/28/95	5'	C/(B G) B	1 2 (3) 4 5	7.80 More weeds at this time of year, than [illegible]
6/7/95	7 1/2	C/(B G) B	1 2 (3) 4 5	7.75 Cutter down last week. Needs to [illegible]
6/14/95	4'	C/B (G B)	1 2 3 (4) 5	7.60 "working (6/14/95) Needs to [illegible] 18 boats [illegible]
6/24/95	4'	C/B (G) B	1 2 3 4 (5)	7.48 Needs heavy cutter 12 [illegible]
7/13/95	4'	C/B (G B)	1 2 (3) 4 5	7.20
7/18/95	4'	C/B (G B)	1 2 (3) 4 5	7.32
7/24/95	4 1/2'	C/B (G B)	1 2 (3) 4 5	7.28
8-2-[illegible]	5'	C/B (G B)	1 2 (3) 4 5	7.25
8/12/95	7'	C/B (G B)	1 2 (3) 4 5	7.40
8/13/95	7 1/2'	C/B (G B)	1 2 (3) 4 5	7.40
8/17/95	7 1/2'	C/B (G B)	1 2 (3) 4 5	7.56 12 hrs. after heavy rain
8/26/95	6 1/2	C/B (G B)	1 2 (3) 4 5	7.62
9/[illegible]/95	6 1/2	C/B (G B)	1 2 (3) 4 5	7.60
9/[illegible]/95	6'	C/B (G B)	1 2 (3) 4 5	7.66
9/[illegible]/95	7'	C/B G B	1 2 3 4 5	7.10
10/8/95	5'	C/B (G B)	1 2 (3) 4 5	7.49
10/20/95	5'	C/B (G B)	1 2 (3) 4 5	7.40
12/[illegible]/95	5'	C/B (G B)	1 2 (3) 4 5	7.55
1/[illegible]/96	12 1/2'	(C/B) G B	1 2 (3) 4 5	7.95
1/20/96	11'	(C/B) G B	1 2 (3) 4 5	7.91
4/27/96	~~7~~ 9'	C/B G B	1 2 3 4 5	7.90 no [illegible]
5/7/96	~~7~~ 9'	C/B G B	1 2 3 4 5	7.45 " "
5/8/96	~~[illegible]~~ 8'	C/B G B	1 2 3 4 5	8.00 " "

MARK SECCHI DEPTH WITH A STAR (*) IF DISK HIT LAKE BOTTOM

Secchi depth data record

Lake: T. Allen
County: Nicollet
Volunteer(s): Tom Gardner
Sampling Year: 1996

DATE	SECCHI DEPTH (FT)	COLOR (CIRCLE)	RECREATION ENJOYMENT (CIRCLE)	COMMENTS: LAKE LEVEL, WEATHER, WILDLIFE, ICE-ON, ICE-OFF ALGAE BLOOMS, PLANTS, ETC. (CONTINUE ON BACK OF PAGE)
5/5/96	7'	C/B G (5)	1 2 (3) 4 5	7.96
5/25/96	6'	C/B (G) B	1 2 (3) 4 5	7.96
5/27/96	7'	C/B (G) B	1 2 (3) 4 5	8.00
5/31/96	6 1/2'	C/B (G) B	1 2 (3) 4 5	8.00
6/2/96	6'	C/B (G) B	1 2 (3) 4 5	8.04
6/10/96	8'	C/B (G) B	1 2 (3) 4 5	8.16
6/16/96	9'	C/B (G) B	1 2 (3) 4 5	8.11
6/20/96	11'	C/B (G) B	1 2 (3) 4 5	8.58 "Highest Lake Level on 50 yrs
6/23/96	11'6"	C/B (G) B	1 2 (3) 4 5	8.48
6/28/96	13'	C/B (G) B	1 2 (3) 4 5	8.40
6/29/96	12'	C/B (G) B	1 2 (3) 4 5	8.30
6/30/96	13'5"	C/B (G) B	1 2 (3) 4 5	8.28
7/4/96	7'	C/B (G) B	1 2 (3) 4 5	8.26
7/19/96	9'	C/B (G) B	1 2 (3) 4 5	8.00
7/20/96	8'	C/B (G) B	1 2 (3) 4 5	7.92
7/21/96	8'	C/B (G) B	1 2 (3) 4 5	7.92
7/22/96	8'	C/B (G) B	1 2 (3) 4 5	7.92
7/23/96	8 1/2'	C/B (G) B	1 2 (3) 4 5	7.92
7/28/96	8 1/2'	C/B (G) B	1 2 (3) 4 5	7.82
8/2/96	7 1/2'	C/B (G) B	1 2 (3) 4 5	7.78
8/16/96	5 1/2'	C/B (G) B	1 2 (3) 4 5	7.78 heavy algae bloom in lake
		C/B G B	1 2 3 4 5	
		C/B G B	1 2 3 4 5	
		C/B G B	1 2 3 4 5	

MARK SECCHI DEPTH WITH A STAR * IF DISK HIT LAKE BOTTOM

Honey/Sugar Watershed Citizens Advisory Committee

PURPOSE

To foster public involvement in the watershed cleanup effort and in building a long-term commitment to clean water

Roles and Responsibilities

1. Help us prepare a pollution control plan for the Honey/Sugar Creeks that represents the needs and interests of the people in the watershed. This will require a 12 month commitment.

2. Help build a long-term commitment to clean water. This will entail continued involvement beyond the first year. It will also include assistance in identifying and recruiting new committee members.

3. Help the people in the watershed learn about the value of the local water resources, local water resource problems and the watershed project. You can achieve this by:

    - ☼ Serving as the information link between this committee and the group or community that you represent.

    - ☼ Getting people involved in watershed activities such as a tour, stream cleanup, school project or public event sponsored by the watershed project.

    - ☼ Identifying opportunities that will allow us to reach out to the people in the watershed.

4. Serve as the eyes and ears for the watershed staff. Tell them what is/isn't working and what problems or opportunities are on the horizon.

5. Help the watershed staff mesh the opportunities of the program with the needs and unique characteristics of the watershed.

State of Wisconsin
Bureau of Community Assistance
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

Land Acquisition and Appraisal Procedures

Whenever a federal, state, local or tribal unit of government acquires property for public purposes, whether from a willing seller or through condemnation it must comply with Federal and State Relocation and Real Property Acquisition laws under the Uniform Relocation Act Amendments of 1987.

This law concerns the acquisition and relocation process and impacts acquisition procedures. Eminent Domain is the right of a government take land from a landowner for public purposes, regardless of their willingness to sell. Compensation for the taking of the property is set by fair market value of the property. We advise all land buyers to seek the advise of counsel as to the applicability of s. 32.06, Stats. on the non condemnation purchases. It is extremely important that the land acquisition procedures are followed carefully as non-compliance with the laws may nullify a grant award.

NOTE: Because Nonprofit Conservation Organizations (NCO) do not have the power of Eminent Domain, there is a different set of land acquisition and appraisal procedures for this group. NCOs should contact their Community Services Specialist for a copy of the correct procedures.

I. Buyer Responsibilities

The responsibility for complying with required acquisition or relocation procedures rests with the buyer under State and Federal law.

The following is the general sequence for land acquisition which complies with required procedures:

Initial Contact with Potential Seller of Property

The initial contact by the buyer should be to determine if the owner of the property is willing to sell the property for outdoor recreation purposes. At this time price should not be discussed by the buyer. The owner should be informed in writing that the property needs to be appraised and that they may accompany the appraiser (see appraiser classifications below) during the property inspection. If the land may be acquired by eminent domain, the procedure established by State law (s. 32.06, Wisconsin stats.) must be followed.

II. Approval of Appraisal by the Department of Natural Resources

Appraisals must be performed by a Certified or Licensed appraiser as described in Chapter 458, Wisconsin stats. and Chapters RL80-86, Wis. Adm. Code.

Licensed Appraisers are approved to appraise:

- Residential properties (1-4 units) up to one million dollars ($1,000,000) in value.
- Nonresidential properties up to two hundred fifty thousand dollars ($250,000) in value.

Residential Certified Appraisers are approved to appraise:

- All residential properties (1-4 units).
- Nonresidential properties up to two hundred fifty thousand dollars ($250,000) in value.

General Certified Appraisers are approved to appraise:

- All real estate without limits on value or type of property.
- * Reviewers must have General Certification.

Preparation of the Appraisal

The appraiser must be familiar with the Department of Natural Resources appraisal report guidelines (attached at the back of this handout) and the statutory rules governing the determination of just compensation (Chapter 33, Wisconsin Statutes) and the Uniform Appraisal Standards for Federal Land Acquisition and the Uniform Standards of Professional Appraisal Practice. It is strongly recommended that the buyer choose an appraiser who has previously completed acceptable past work in public land acquisition.

We recommend that the appraiser be told that payment for the appraisal is subject to complying with the appraisal guidelines as condition of the appraisal contract. The buyer would not be required to pay for appraisals which do not meet the appraisal guidelines. This would include any additional time required by the appraiser to bring the appraisal report into conformance.

The appraisal must be prepared according to DNR appraisal guidelines (see attached guidelines). A legal description or survey of the area to be appraised must be provided to the licensed or certified appraiser. Please note that appraisals must have original photographs and exhibits: one for the Department of Natural Resources, one or more for the buyer and one for the landowner. The appraisal must logically support the determined market value of the targeted property.
Buyers are recommended to have an environmental hazards assessment performed before proceeding past the appraisal stage.

Your local DNR Real Estate Supervisor will help you obtain an appraisal which complies with the guidelines. However, the Department cannot approve appraisals that do not comply. Upon approval of the appraisal, the buyer is given the fair market value of the property and is then in a position to negotiate for purchase.

Acquisition of property with a fair market value above two hundred thousand dollars $200,000 total market cost (NOT cost shared) will require two appraisals. Property with an appraisal value at or below two hundred thousand dollars ($200,000) will not be required to have a second appraisal.

However, the property owner has the right to have a second appraisal prepared at the buyer's expense. The cost of the appraisal may not be eligible for cost sharing assistance. Eligibility for cost sharing assistance will depend on the type of financial assistance (grant program) applied for.

If the owner chooses a second appraisal, the appraisals must be done according to the appraisal guidelines and is subject to DNR review to establish fair market value.

If a qualified appraiser is unknown or unavailable the sponsor should contact the District Community Services Specialist for assistance in locating experienced appraisal firms.

The District Real Estate Agent may grant written exceptions to allow appraisals by unlicensed or uncertified appraisers for routine appraisal assignments under fifty thousand dollars ($50,000) if there is a lack of qualified appraisers available to complete the work in a timely manner.

III. Just Compensation Statement (Form 8700-102)

Just Compensation can be defined as the fair market value for a given property as determined by a certified or licensed appraiser following the appraisal guidelines and all benefits due to the seller in exchange for the transfer of their property.

To assure the seller is offered just compensation for their property and is aware of the relocation benefits due them, a signed statement must be presented to the seller advising them of the certified appraised value of the property.

This document is used at the start of negotiations with the landowner. It reflects the fair market value (appraised value) and establishes whether or not it involves the relocation or displacement of an owner or tenant is involved. A statement will be drawn for the landowner to sign which is evidence that they have been informed as required by law.

IV. Approval of relocation plan by the Department of Industry, Labor and Human Relations, Equal Rights Division

The buyer must prepare plans in accordance with DILHR guidelines which meet the requirements of State and Federal law. These plans are then submitted to DILHR for approval. Plans are needed where buildings, farm land are used or occupied. Be aware that summer homes and cottages may be eligible for relocation benefits. Some relocation costs are associated with every acquisition of land even though these may be only recording fees and other costs of the sale. The buyer must show a copy of their letter from DILHR approving there location plan or stating that no plan is required. The buyer should also submit a description of the acquisition to the Department of Industry, Labor and Human Relations, Equal Rights Division.

Public law 91-646 (Federal Uniform relocation Assistance and Real Property Acquisition Policies of Act of 1970) establishes a uniform and equitable land acquisition policy. This law provides a program of relocation payments, replacement housing and other assistance to owners and tenants displaced from their homes, farms and other places of business. Relocation payments are eligible for fifty percent (50%) grant assistance on approved projects.

Wisconsin s. 32.185 - 32.27. Stats. and Chapter ILHR 202, Wisconsin Administrative Code, provides for relocation assistance payments, relocation assistance service and expenses incidental to property transfer. The Department of Industry, Labor and Human Relations (DILHR) is responsible for the implementation of the law.

V. Offer to Option Form (8700-1071)

The buyer and seller now know what the appraised fair market value of the property and whether relocation benefits are applicable.

The written offer to option at fair market value must be made by the buyer. Form 8700-107 (offer to Option) or Offer to Purchase forms approved by the Wisconsin Real Estate Board may be used. The Offer to Option or Offer to Purchase may be conditional on the buyer obtaining state of federal financial assistance.

If the owner is willing to sell, they should be given information about their rights under the Uniform Relocation Act. Information pamphlets on relocation benefits can be obtained by contacting the DILHR Equal Rights Division, 201 E. Washington Avenue, P.O. Box 8928, Madison, WI 53708, Telephone (608) 266 ~~6860~~.
8897

VI. Option to Purchase

If the seller accepts, the buyer has an option to purchase. An agreement is drawn up outlining the details of purchase. If a down payment is offered to secure the purchase, it can be included as part of the purchase price and is eligible for reimbursement.

The option may also contain the following clause to protect the buyer in case federal and state funds are not available within the option time.

"This option is contingent upon the approval of a state or federal grant."

When a price is agreed upon, an option should be drawn up and signed.

- Waiver of entitlement - appraised fair market value (Form 8700-106) If the value is less than the appraised value, form 8700-106 must be completed by the landowner.

- If the price is higher than the appraised value, the buyer should understand that the grant will still only cover fifty percent (50%) of the approved fair

market value. Costs over the approved appraised value will be borne entirely by the buyer.

VII. If the Appraised Fair Market Value is not accepted, then one of the following situations exists:

1. Form 8700-106 - When an owner or displaced person voluntarily accepts an amount less than the fair market value, this form must be completed. Cost sharing assistance is based on the approved fair market value or the purchase price whichever is less.

2. The buyer agrees to purchase the property at more than the approved appraised value. In this case, cost sharing assistance is only available up to the approved appraised value. The buyer will pay 100% of the costs in excess of the appraised value.

3. Eminent Domain (Condemnation) - If the land is to be acquired by eminent domain, the local buyer must follow s. 32.06, Wisconsin Statutes.

4. Project fails because buyer and seller cannot agree on price.

Application Procedures for Land Acquisition Financial Assistance
Outline of steps needed to secure financial assistance

STEP 1. **Buyer**

Contacts District Community Services Specialist (CSS) for Site Inspection to determine if the land is eligible for assistance. If eligible proceed to step 2.

STEP 1A. **Buyer**

In some cases, it may be necessary for buyers to acquire property before all grant program requirements can be met. In these emergency situations a wavier to acquire the property before a grant agreement is signed by the Department may be issued.

Retroactivity: Buyers must submit in writing, requests for retroactivity BEFORE purchase of targeted property. Written statements must contain specific reasons for the request and be accompanied by location maps. All appraisal and acquisition guidelines must be followed. Ask your Community Services Specialist for information before proceeding.

STEP 2. **Buyer**

Contracts with a qualified licensed or certified real estate appraiser. Submits one original copy of the Real Estate Appraisal report to the District CSS. The real estate appraisal must be in conformance with the attached Appraisal Guidelines. The appraisal must be approved with the certified fair market value determined by the Department of Natural Resources prior to the initiation of negotiations over the price of the property. Wait for review and approvals in step 3 and proceed to step 4

STEP 3. **DNR**

Reviews appraisal to insure conformance with the appraisal guidelines. Any deficiencies in the appraisal must be corrected before just compensation is established. Approves appraisal and certifies value.

STEP 4. **Buyer**

Negotiates a price and secures an option with appropriate deed restrictions (see examples below) based on appraised fair market value. Prepares information sheet for relocation assistance. Submits application with required attachments.
Wait for review in step 5 and proceed to step 6.

STEP 5. **DNR**

Reviews, evaluates and ranks projects. Enters into agreement with the successful applicant for financial assistance.

STEP 6. **Buyer**

Purchases land (executes deed which includes appropriate deed restriction clause) after a financial assistance agreement with DNR is signed. Makes relocation payments, if applicable.
NOTE: Deed must contain Deed Restriction Clauses.

Deed Restriction Clauses

Following are clauses to be included in the deed:

LAWCON

"By the acceptance of this deed the grantee, for itself and successors and assigns, hereby covenants and agrees not to sell, lease, assign or mortgage the premises herein described without the prior written approval of the Secretaries of the Department of Natural Resources and the Department of the Interior, their designee, or any successor."

ADLP and other state grant programs	"By the acceptance of this deed the grantee, for itself and its successors and assigns, hereby covenants and agrees not to sell, lease, assign or mortgage the premises herein described without the prior written approval of the Secretary of the Department of Natural Resources, his/her designee, or any successor."
IMPORTANT	IF YOU DO NOT UNDERSTAND THE PROCEDURES OR OUTLINE, DO NOT PROCEED. CONTACT YOUR LEGAL COUNCIL OR THE DISTRICT COMMUNITY SERVICES SPECIALIST.

COMMUNITY SERVICES SPECIALISTS

	Counties Served
Lake Michigan District 1125 N. Military Avenue Box 10448 Green Bay, WI 54307-4034 Telephone: (414) 492-5821 Fax Number: (414) 492-5913	Brown, Calumet, Door, Florence, Kewaunee, Manitowac, Marinette, Menominee, Oconto, Outagamie, Shawno, Waupaca, Waushara, Winnebago
Western District 1300 W. Clairemont Avenue Box 4001 Eau Claire, WI 54702 Telephone: (715) 839-3751 Fax Number: (715) 839-6076	Buffalo, Chippewa, Clark, Crawford, Dunn, Eau Claire, Jackson, La Crosse, Monroe, Pepin, Pierce, St. Croix, Trempealeau, Vernon
Southern District 3911 Fish Hatchery Road Madison, WI 53711 Telephone: (608) 3265 Fax Number: (608) 275-3338	Columbia, Dane, Dodge, Fond Du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Lafayette, Marquette, Richland, Rock, Sauk
North Central District 107 Sutliff Box 818 Rhinelander, WI 54501 Telephone: (715) 362-7616 Fax Number: (715) 369-8932	Adams, Forest, Juneau, Langlade, Lincoln, Marathon, Oneida, Portage, Vilas, Wood
Northwest District Highway 70 West Box 309 Spooner, WI 54801 Telephone: (715) 635-4159 Fax Number: (715) 635-4105	Ashland, Barron, Bayfield, Burnett, Douglas, Iron, Polk, Price, Rusk, Sawyer, Taylor, Washburn
Southeastern District 2300 N. King Drive P.O. Box 12436 Milwaukee, WI 53212 Telephone: (414) 263-8610 Fax Number: (414) 263-8483	Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, Waukesha

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