SHORELAND MANAGEMENT CLASSIFICATION SYSTEM for PUBLIC WATERS

SHORELAND MANAGEMENT

Supplementary
Report
No. 1
(Second Edition)

January 1976

DEPARTMENT OF NATURAL RESOURCES
Division of Waters

I. INTRODUCTION

A delicate relationship exists between a life supporting lake or river and the natural setting of the adjacent shoreland. This relationship can be drastically affected by man's activities. Failure to properly use our shoreland resources will inevitably lead to a deterioration of the total lake environment and will drastically diminish the recreational and aesthetic amenities sought and valued by a large segment of Minnesota's citizens. The recognition of this delicate relationship led to the enactment of the Shoreland Management Act.

The Shoreland Management Act is actually two separate pieces of legislation. The original act (Laws of Minnesota 1969, Chapter 777) was passed by the 1969 session of the legislature in order to provide guidance for the wise development of shorelands in unincorporated areas. During the 1973 session of the legislature, the original Shoreland Management Act was amended to also include municipalities (Laws of Minnesota 1973, Chapter 379).

Basically, the Shoreland Management Act requires the Department of Natural Resources to promulgate regulations under Minnesota Statutes Chapter 105 which shall be implemented through county and municipal land use controls (i.e. zoning ordinances). The intent of the act is to provide local units of government with minimum dimensional and performance standards in order to protect and enhance the quality of our surface waters and conserve the economic and natural resource values of the shorelands of public waters.

Since public waters in Minnesota vary widely in character and use, an optimum balance between resource utilization and resource protection can be obtained only if each lake has development standards tailored to it. This, unfortunately, is virtually impossible in Minnesota with over 12,000 lake basins[1]

---

[1]Excludes dry lake basins from Bulletin No. 25, "An Inventory of Minnesota Lakes."

that are capable of some type of public use. For this reason a public waters classification system was incorporated into the Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota,[2] officially adopted June 30, 1970:

CONS 71(a) *PUBLIC WATERS CLASSIFICATION SYSTEM*

The classification system for public waters shall be based upon the suitability of each lake or stream for future or additional development and the desirable level of development.

The classification system recognizes the varied nature of Minnesota lakes. It is flexible enough to insure that development standards for any particular body of water will reflect the unique qualities of the resource.

CONS 71(a)(1) *The classification system of public waters shall consist of Natural Environment Lakes and Streams, Recreational Development Lakes, General Development Lakes and Streams, and Critical Lakes.*

To simplify the administration of this program a shoreland management classification system with three categories was selected. A fourth temporary designation of "critical lake" was intended for a lake which did not clearly fall into one of the three classes. The public waters included in the initial classification for the unincorporated areas consisted of all lakes, ponds and flowages having a basin acreage of 25 acres or more and all rivers and streams having a total drainage area of two square miles or more. When the 1969 Shoreland Management Act was amended to include municipalities, all lakes, ponds and flowages having a basin acreage of 10 acres or more and all rivers and streams having a total drainage area of two square miles or more within municipalities were classified.[3]

---

[2]Rules and Regulations of the Department of Conservation, Chapter Six, Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota.

[3]The classification excluded lakes completely within the Red Lake Indian Reservation and the Boundary Waters Canoe Area.

Goals and Objectives

The primary goal of the classification system is to designate lakes and streams into classes which will provide a balance between general public use and resource protection. The goals are more explicitly stated in the statewide standards:

CONS 71(a)(2) Management Goals and Objectives

> *(aa) Natural Environment Lakes and Streams: to preserve and enhance high quality waters by protecting them from pollution and to protect shorelands of waters which are unsuitable for development; to maintain a low density of development; and to maintain high standards of quality for permitted development.*

The Natural Environment classification is intended for those waters which need a significant amount of protection because of their unique natural characteristics or their unsuitability for development and sustained recreational use. They will be assigned the most restrictive development standards.

> *(bb) Recreational Development Lakes and Streams: to provide management policies reasonably consistent with existing development and use; to provide for the beneficial use of public waters by the general public, as well as the riparian owners; to provide a balance between the lake resource and lake use; to provide for a multiplicity of lake uses; and to protect areas unsuitable for residential and commercial uses from development.*

The Recreational Development classification is intended for those waters which are capable of absorbing additional development and recreational use. They are usually lightly to moderately developed at present. They will be assigned an intermediate set of development standards.

> *(cc) General Development Lakes and Streams: to provide minimum regulations of areas presently developed as high density, multiple use areas;*

and to provide guidance for future growth of commercial and industrial establishments which require locations on public waters.

The General Development classification is intended for those bodies which are at present highly developed or which, due to their location, may be needed for high density development in the future. They will be assigned the least restrictive set of development standards.

(dd) *Critical Lakes: to provide a more restrictive set of standards for badly deteriorated lakes which cannot be reasonably managed in any of the public waters classes defined above. These lakes, designated by the Commissioner, shall be studied in further detail to determine appropriate standards for shoreland development for each individual lake. Until such studies are completed, these lakes shall be subject to the standards applied to Natural Environment Lakes and Streams.*

The Critical designation was intended for those waters which required further study to determine a satisfactory management program. These waters have peculiar physical or developmental characteristics which set them apart from other lakes.

II. THE CLASSIFICATION PROCESS

Criteria

The most critical task in developing a classification system is to ensure reliability of the criteria selected for the classification process. These criteria must accurately reflect the physical and cultural characteristics of each body of water, and they must provide the means for analyzing bodies of water

and grouping them into appropriate categories.

CONS 71(a)(3) *Criteria for determining the classification of any public water shall be:*

(aa) *Size - relating to available space for development on the shore and for use of the water space.*

(bb) *Crowding Potential - relating to the ratio of lake surface area to the length of shoreline.*

(cc) *Amount and type of existing development.*

(dd) *Existing natural characteristics of the public waters and surrounding shorelands.*

(ee) *County and regional public waters needs.*

Additional criteria were considered when classifying public waters in municipal areas.

NR 82(f)(1)(aa) *Those waters whose shores are presently characterized by industrial, commercial or high density residential development shall be classified General Development.*

(bb) *Those waters whose shores are presently characterized by medium density residential development with or without limited service-oriented commercial development shall be classified as Recreational Development.*

(cc) *Those waters whose shores are presently characterized by low density, single-family residential development shall be classified as Natural Environment.*

(dd) *Those waters whose shores are not yet densely developed, so that the future character of the water is a matter of choice, shall be classified as either Natural Environment or Recreational Development, depending on:*

(i) *Existing natural characteristics of the waters and shorelands;*

(ii) *The ability of the waters and adjacent shorelands, based on size and crowding potential, to accept without designa-*

tion, medium density shoreland development;

(iii) State, regional, county and municipal plans;

(iv) Existing land use restrictions.[4]

Size and shape are important indicators of the capability of a body of water to absorb additional development and recreational use. Larger lakes will not deteriorate as rapidly as small ones when developed, due to a larger volume of water and a greater likelihood of some portions of the lake remaining undeveloped. Irregularly shaped lakes have a greater proportion of miles of shoreline to water area than large round ones. This ratio of shoreline to acreage is called crowding potential and is a good indicator of potential developmental problems. When the shoreline of a lake with high crowding potential is completely developed, utilization of available water space will be greater than on a lake with a low crowding potential. This ratio is an important factor in determining how much development pressure a lake can absorb.

Existing development was weighted heavily in the classification process, since legal constraints dictate a reasonable correlation between newly adopted zoning controls and the existing pattern of development. For example, strict lot size and setback requirements might be unreasonable if applied to a heavily developed lake. Existing development for a lake is measured by average density of dwellings per mile of shore.

Classification must also be based upon the physical characteristics of the shoreland areas. Factors such as soil types, vegetative cover, on-shore land slope, off-shore lake bed slope and ecological classification (previously determined by the Division of Fish and Wildlife) can be used as indicators of the

---

[4]Rules and Regulations of the Department of Natural Resources, Chapter Six, Standards and Criteria for the Management of Municipal Shoreland Areas of Minnesota.

suitability of the shoreland areas for future development. Many areas around shallow lakes have soils that are unsuitable for building sites or soil absorption sewage treatment systems. Often times, shallow lakes with gently sloping shoreland areas have the groundwater level very near the ground surface. The statewide shoreland management standards preclude construction of soil absorption units in areas where the groundwater level will be less than four (4) feet from the bottom of the proposed system. They also stipulate that the lowest floor of any building constructed in shoreland areas must be at least three (3) feet above the highest known water level.

Management considerations cannot be based solely upon characteristics of an individual body of water. They must also consider the waters in a state, regional, county and municipal context. The demand for shoreland is greater in areas where population pressures are high, or where improved highways make formerly isolated areas more accessible. Individual municipal, county and regional public water needs must be considered in determining a shoreland management classification. Careful resource management plans insure steady economic growth in stride with increased recreational demand, while still preventing resource deterioration.

The classification system, therefore, had to be carefully structured. It has to take into account the physical capability of a public water to assimilate increased development and use. It had to account for the intensity of existing use patterns and development densities, and it had to consider the resource in a regional context.

Data Sources

The primary data resource for the classification was the Lakeshore Development Study, conducted by the Department of Geography, University of Minnesota. This study was an inventory of the physical and cultural characteristics of most of Minnesota's lakes with development potential. The study included all lakes

150 acres or larger which were not completely within publicly owned land or the seven county metropolitan area. The basic data unit was the government lot (less than 40-acre parcel adjoining a lake).

Records of the Division of Waters and the Division of Fish and Wildlife supplied technical and biological information to supplement the Lakeshore Study. These records contained such data as water levels, locations of spawning beds, lake bottom contours, median lake depths, water quality, fish counts and locations of control structures. Other sources consulted for additional information included the Metropolitan Lake Inventory prepared by the Division of Fish and Wildlife, U.S. Geological Survey topographic maps, air photos, U.S. Forest Service Maps, Iron Range Resources and Rehabilitation Commission land ownership maps and Department of Highways general county highway maps. Field surveys were made in those cases where information was not available on a lake or stream within DNR or other agency files.

Critical Values

Critical "cutoff" values for the classification criteria were determined by statistical analysis. Some of the criteria did not lend themselves to statistical analysis, such as soils information or ecological type. They required subjective evaluation.

Development density cutoffs were determined by a frequency distribution which listed, in order, the average development density values for lakes. This list was then plotted and the frequency curve analyzed for natural breaks. By comparing these breaks with existing development patterns, the following limits for the three lake classes were determined:

CLASSIFICATION	DEVELOPMENT DENSITY (dwellings per mile)
Natural Environment	less than 3
Recreational Development	3 - 25
General Development	greater than 25

Crowding potential cutoff values were determined in a similar manner. The resultant values are as follows:

CLASSIFICATION	CROWDING POTENTIAL (acres of water per mile of shore)	
Natural Environment	less than 60	(high)
Recreational Development	60 - 225	(medium)
General Development	greater than 225	(low)

(Note: Crowding potential was not used exclusively in the determination of lake class. It was used concurrently with the other criteria and given priority only in cases of a low development density.)

Lake Depth and Ecological Class were used to isolate lakes unsuitable for shoreland development. Two ecological classes, Winterkill-Roughfish and Bullhead-Panfish, are indicative of lakes displaying poor development characteristics. These ecological classes usually have some or all of the following characteristics: shallowness, eutrophic conditions, heavy aquatic vegetative growth, low dissolved oxygen levels, and shallow groundwater table. Lake depth of less than 15 feet and ecological class of Winterkill-Roughfish or Bullhead-Panfish were used to determine Natural Environment Lakes.

The idea is to establish strict development standards to discourage development in areas where many potential development problems exist. Due to the shallow nature of these lakes, recreational opportunities may be somewhat limited. These lakes are often more suited for waterfowl and game production than for recreational uses. Emergent vegetation can often limit surface recreational use, such as boating or swimming. Heavy use by large motors on shallow lakes may also cause unnecessary stirring of bottom sediments which can recycle large amounts of nutrients back into the lake system.

Soils and Vegetation data for the shoreland areas were also used in lake class determination. Soils are closely related to natural vegetation and topographic conditions. This information was applied subjectively when the four preceeding criteria alone did not determine a category for a particular lake. Soil types are an important indication of lakeshore quality and suitability for development. Their occurrence often dictates the placement of buildings and soil absorption sewage treatment systems. These physical characteristics were considered in the classification process in the following manner:

CLASSIFICATION	*DOMINANT SOIL GROUP*	*VEGETATION*	*SLOPES*
NE	Wet, Clay or Bedrock	No Trees or Shrubs	Flat
RD or GD	Sand, Loam	Decidious or Coniferous Trees	Moderate to Steep

These determinations were based upon engineering capabilities of the soil types and land slopes. Here again, the attempt was made to limit development in unsuitable areas.

III. RESULTS OF THE CLASSIFICATION

Approximately 10,200 lake basins and approximately 25,000 miles of rivers and streams in the state were classified under the shoreland management program. Almost 9,700 of these basins were classified for the county program and over 500 were added in the municipal program. Since the amount of information available was not constant for all bodies of water, the classification process had

to be adjusted to allow for a subjective determination in some cases.

County Lakes

Every lake basin in unincorporated areas between 25-150 acres was classified as Natural Environment, unless development was detected. The detailed amount of data available for large lakes was not available for smaller lakes. By nature of their size, these lakes are highly susceptible to overcrowding. Therefore, the decision was made to initially classify them in a restrictive category. When development already existed on these lakes (information obtained from county highway maps), they were classified as Recreational Development.

For lakes over 150 acres in size, the data processing technique was used to place each lake in an appropriate class. Table I indicates the relative weight assigned to each criterion in the classification process. For a lake to be classified as a Natural Environment lake, it had to meet all of the values of column 1: very little development and high crowding potential (under 60 acres of water surface per mile of shoreline). Since these lakes are highly susceptible to overcrowding and since they are undeveloped or lightly developed at present, they were afforded a greater degree of protection under the shoreland regulations.

A lake was also classified Natural Environment if its physical characteristics were conducive to developmental problems. Lakes with all of the values of column 2 are probably more suitable for waterfowl or game management purposes than for lakehome development and were classified accordingly.

If a lake had between 3 and 25 dwellings per mile of shoreline it was placed in the Recreational Development class (column 3). Here development density was the weighted factor. A lake that is developed to a density greater than three dwellings per mile was not classified as Natural Environment since Natural Environment standards might conflict with the existing development. Areas that

require added protection on these lakes may be regulated by land use zoning controls applied to the specific area.

A lake with less than three (3) dwellings per mile of shoreline was also classified as Recreational Development if it was suitable for development (column 4); sufficient depth to support game fish (over 15 feet deep and not a winterkill-roughfish or bullhead-panfish lake), sand or loam soil (clay in some instances) and coniferous or decidious forest cover.

General Development standards provide for the least restrictive land use controls and are intended for highly developed, multi-use lakes. Lakes which have average development densities greater than 25 dwellings per mile were designated as General Development (column 5). Lakes which are developed to this level usually do not have much remaining land for development. Thus, the application of more restrictive zoning controls would do little to remedy lake deterioration.

In some cases, however, lakes which are not highly developed were classified as General Development if the lake is physically capable of absorbing substantial future development (column 6). The most important criterion was a low crowding potential. This factor indicates that the lake probably is not susceptible to overcrowding. Lakes such as Winnibigoshish, Leech, Mille Lacs, and Red are examples which meet this criterion. They do not have very high average development densities at present, and by nature of their size and shape are capable of supporting greater development densities than would be afforded under a Recreational Development classification.

Seven (7) lakes were unclassifiable due to special development or environmental problems. These lakes were termed Critical and designated for further study before a final set of development standards was applied. A cursory review showed that most of these lakes had long standing water quality problems. The lakes were generally shallow, and occasional winterkills cause fish management problems. They

were usually highly developed. Since the shoreland management program is limited to the use of land use controls, little can be accomplished in terms of redevelopment or remedial actions.

Proximity to Municipalities

Most county lakes bordering upon a municipality were classified as General Development. This decision was based upon the assumption that shoreland was needed for urban uses, as well as recreational uses and the fact that the county does not have jurisdiction over municipal areas in applying land use controls.

Municipal Lakes

Lake basins lying within or bordering on municipalities were classified in the same manner as those basins classified in the county phase of the shoreland management program. For many of these lakes, a classification had already been assigned under the county shoreland management program. These classifications were retained in order to maintain continuity.

For the lakes that were found to be within one or several municipalities, data were collected on existing development, crowding potential and the other criteria used to help classify the lakes in the county program. These data were then analyzed using the same technique as summarized in Table I.

Rivers and Streams

The state does not yet have a complete stream inventory. Most rivers and streams were placed in the General Development category to be reasonable in formulating a sound and workable program. Streams continually regenerate themselves, so they do not pose as critical a problem of water quality as do lakes. The exceptions to our stream classification were wild and scenic waterways and designated trout streams. These exceptions are not unreasonable, since these streams have been recognized by governmental agencies as waters worthy of pres-

ervation and since easements along these streams are usually purchased.

Preliminary Distribution

The percentages of lakes under the county program, by lake class were: Natural Environment - 85%; Recreational Development - 12%; and General Development - 3%. The Natural Environment category is inflated because the small lakes were summarily placed in this category. If lakes under 150 acres are excluded, the percentages are: Natural Environment - 48%; Recreational Development - 42%; and General Development - 10%.

The percentages of lakes added under the municipal shoreland program, by lake class were: Natural Environment - 57%; Recreational Development - 33%; and General Development - 10%.

A tabulation of the results of the preliminary classification, by county and municipal phases of the shoreland management program, is shown in the appendix.

IV. APPLICATION TO SHORELAND MANAGEMENT

Review of Preliminary Classification

The shoreland management program is intended to be a locally administered and enforced program. The public waters classification, along with the statewide standards, sets the basic framework for local administration. Due to certain time limitations, the classification had to be completed in a short period of time. The Division could not possibly gather the amount of information needed to classify all lake basins, especially small lakes, consistent with local land use management programs. For these reasons the classification by the Division was intended to be preliminary. Each county and municipality should review its

classification to insure compatibility with any existing land use plans.

Special attention should be given to lakes under 150 acres. Under certain conditions the existing classification of Natural Environment may result in a degree of resource protection over and above what is necessary for these lake basins. Many of these lakes are shallow and swampy. They probably never will be developed for seasonal home uses. These lakes may be reclassified by the Division at county or municipal request. Also, some of these lake basins may now be dry. Such lakes may be omitted from the shoreland program once the Division has been notified of their status.

Rivers and streams may also be reclassified should the local unit of government desire a more restrictive category to be consistent with local recreational and land use plans.

Basically, shoreland management classifications are intended to indicate which set of minimum statewide development standards must be applied to a particular body of water. The local units of government are reminded that they have the option of imposing controls more restrictive than those called for in the statewide standards, particularly for parts of lakes or streams which may need additional protection.

It was the policy of the Division to maintain the same classification for an entire body of water. A main goal of the shoreland management program is to protect water quality. A classification which varies over different areas would not necessarily achieve this goal. However, a number of instances have arisen where the unique geometry and geography of a particular water body have indicated a need for more than one management classification. In these <u>few</u> cases, the Division will give consideration to adopting more than one management classification for the body of water.

Reclassification

Minnesota Regs. CONS 71(a)(5) and NR 82(f)(4) allow the Commissioner of

Natural Resources to reclassify any public water as he deems necessary. Generally, the decision to change the shoreland management classification of a public water is initiated by a request from the local unit of government in which the body of water is located. It is the established policy of the DNR to only consider a request for the reclassification of a public water body when such a request is submitted in the form of an official resolution of the County Board of Commissioners, City Council or Local Planning Commission.

In addition to the official request, the local unit of government should also supply as much of the following data as possible:

1. Crowding potential
2. Development density
3. Percent of shoreland in public ownership
4. Number of existing undeveloped platted lots
5. Shoreland physical characteristics (soil and vegetation types, slope, etc.)

With this additional data, the official requests for shoreland management reclassification will be referred to DNR regional shoreland management personnel. The regional staff will evaluate the request and make the final determination. Once the preliminary classification has been finalized, the local unit of government may then proceed to develop its shoreland management ordinance.

Land Use Zoning

As prescribed in CONS 71(b) and NR 83(a) and (b), local units of government are required to delineate land use districts or zones for shoreland areas which are compatible with the designated shoreland management classification.

These land use zoning districts shall be established to provide for:

(1) *Management of areas unsuitable for development due to physical characteristics and the management of areas of unique natural and biological characteristics in accordance with compatible uses.*

(2) *The reservation of areas suitable for residential development from encroachment by commercial and industrial establishments.*

(3) *The centralization of service facilities for recreational areas and enhancement of economic growth potential for those areas suitable for limited commercial development.*

(4) *The management of areas where use may be directed toward commercial or industrial uses, rather than recreational or residential uses, which by their nature require location in shoreland areas.*

The criteria to be used for land use zoning districts shall be based on considerations of: preservation of natural areas; present ownership and development of lakeshore and adjacent land; shoreland soil types and their engineering capabilities; topographic characteristics; vegetative cover; county socioeconomic development needs and plans as they involve water and related land resources; the land requirements of industry requiring location in shoreland areas; and the necessity to preserve and restore certain areas having great historical or ecological value.

It is the responsibility of each local unit of government to prescribe uses of shorelands, such as residential or commercial, to provide for the most beneficial public use. The statewide shoreland regulations point out considerations which should be used to determine the types of allowable uses based on compatibility with the unique characteristics of the resource. The shoreland management classification, therefore, does not eliminate the need to delineate land use zones. It does prescribe standards which must be applied to uses allowed along a given body of water.

V. SUMMARY

The Minnesota Shoreland Management Classification System may be summarized as follows:

A. Goals of Classification System

1. To provide a flexible management tool which recognizes the varied char-

acter of Minnesota's public waters.

2. To provide for the application of different development standards to different kinds of lakes and streams in order to achieve a balance between resource protection and resource utilization.

B. Basis for the Classification

1. Lakes were classified depending upon their existing degree of resource utilization (intensity of development), and
2. Upon their existing physical character (capability to withstand future development).

C. Shoreland Management Classes

1. Natural Environment Waters - are little developed at present and require the greatest degree of resource protection.
2. Recreational Development Waters - are moderately developed at present and are physically capable of supporting additional development.
3. General Development Waters - are those capable of multiple use development or those partially within an incorporated area.

D. Local Government Role

1. Should review preliminary classification to insure compatibility with local land use objectives.
2. Request reclassification whenever and wherever appropriate.
3. Establish land use zoning districts consistent with the shoreland management classification.

Table I. Classification Criteria

RANK OF CRITERIA	NATURAL ENVIRONMENT		RECREATIONAL DEVELOPMENT		GENERAL DEVELOPMENT	
	1	2	3	4	5	6
Development Density	under two dwellings per mile	under three dwellings per mile	between 3 and 25 dwellings per mile of shoreline	under three dwellings per mile	over 25 dwellings per mile of shoreline	between 3 and 25 dwellings per mile of shoreline
Crowding Potential	less than 60 acres of water area per mile			between 60 and 225 acres of water per mile		greater than 225 acres of water per mile
Ecological Classification		winterkill-roughfish or bullhead-panfish		NOT winterkill-roughfish or bullhead-panfish		NOT winterkill-roughfish or bullhead-panfish
Lake Depth		under 15 feet deep		over 15 feet deep		over 15 feet deep
Shore Soil & Vegetation		few trees shrub vegetation, clay or wet soil, flat slopes		sand or loam soil, decidious or coniferous veg., moderate to steep slopes		sand or loam soil, decidious or coniferous veg., moderate to steep slopes
Others	a. small lakes (under 150 acres) b. Trout Streams and Wild Rivers				a. partially within an incorporated area b. Rivers and Streams	

APPENDIX

COUNTY SHORELAND MANAGEMENT PROGRAM

PRELIMINARY LAKE CLASSIFICATION

DISTRIBUTION

County	NE Lakes less than 150 acres	NE Lakes greater than 150 acres	RD Lakes	GD Lakes	C Lakes	Total Lakes
Aitkin	109	22	45	2	0	178
Anoka	46	5	4	5	0	60
Becker	350	57	58	9	0	474
Beltrami	151	26	38	6	0	221
Benton	10	0	2	0	0	12
Big Stone	124	17	0	3	0	144
Blue Earth	82	24	5	3	0	114
Brown	67	12	0	3	0	82
Carlton	35	6	16	3	0	60
Carver	92	23	10	3	0	128
Cass	265	30	87	6	0	388
Chippewa	56	6	0	0	0	62
Chisago	40	6	11	10	0	67
Clay	59	1	0	1	0	61
Clearwater	99	14	8	3	0	124
Cook	139	49	19	0	0	207
Cottonwood	39	15	1	3	0	58
Crow Wing	148	25	89	32	0	294
Dakota	13	3	1	2	0	19
Dodge	8	3	0	0	0	11
Douglas	211	34	36	8	0	289
Faribault	59	14	2	0	0	75
Fillmore	0	0	0	0	0	0
Freeborn	24	14	5	2	0	45
Goodhue	13	1	0	3	0	17
Grant	182	17	8	5	0	212
Hennepin	4	1	1	1	0	7
Houston	2	7	0	2	0	11
Hubbard	118	33	47	5	0	203
Isanti	88	13	9	2	2	114

County	NE Lakes less than 150 acres	NE Lakes greater than 150 acres	RD Lakes	GD Lakes	C Lakes	Total Lakes
Itasca	415	66	116	10	0	607
Jackson	54	12	5	1	0	72
Kanabec	22	1	9	0	0	32
Kandiyohi	219	44	20	8	0	291
Kittson	1	3	0	0	0	4
Koochiching	11	4	0	1	0	16
Lac Qui Parle	142	8	0	0	0	150
Lake	162	25	24	2	0	213
Lake of the Woods	1	1	0	1	0	3
Le Sueur	53	20	11	0	2	86
Lincoln	72	19	3	2	0	96
Lyon	54	16	0	4	0	74
McLeod	80	26	6	3	0	115
Mahnomen	141	17	9	0	0	167
Marshall	2	3	0	0	0	5
Martin	80	28	3	5	0	116
Meeker	104	48	17	6	0	175
Mille Lacs	5	5	1	1	0	12
Morrison	61	7	11	5	0	84
Mower	1	0	0	0	0	1
Murray	54	23	2	4	0	83
Nicollet	17	10	0	0	0	27
Nobles	19	13	0	2	0	34
Norman	4	0	0	0	0	4
Olmsted	1	0	1	2	0	4
Otter Tail	534	72	65	14	1	686
Pennington	1	1	0	0	0	2
Pine	51	0	19	3	0	73
Pipestone	1	0	0	0	0	1
Polk	170	11	3	3	0	187
Pope	116	30	8	3	0	157
Ramsey	Out - Completely Incorporated					
Red Lake	2	0	0	0	0	2
Redwood	77	10	0	3	0	90
Renville	81	12	1	0	0	94
Rice	36	13	6	2	0	57
Rock	0	0	0	0	0	0
Roseau	1	2	0	0	0	3
St. Louis	310	49	135	9	1	504
Scott	102	21	2	3	0	128

County	NE Lakes less than 150 acres	NE Lakes greater than 150 acres	RD Lakes	GD Lakes	C Lakes	Total Lakes
Sherburne	90	5	5	8	3	111
Sibley	61	22	2	2	0	87
Stearns	158	21	44	4	0	227
Steele	23	10	1	0	0	34
Stevens	150	22	3	5	0	180
Swift	83	16	2	3	0	104
Todd	108	19	20	4	0	151
Traverse	36	3	0	1	0	40
Wabasha	3	0	1	2	0	6
Wadena	25	2	3	1	0	31
Waseca	67	7	4	2	0	80
Washington	62	3	6	9	0	80
Watonwan	29	9	2	0	0	40
Wilkin	7	0	1	0	0	8
Winona	2	0	0	5	0	7
Wright	130	42	35	14	0	221
Yellow Medicine	58	10	0	0	0	68
Total	6982	1289	1108	279	9	9667
Percent Total	72.2	13.3	11.5	2.9	.01	100
Percent Adjusted Total[5]		48.2	41.4	10.1	0.3	100

[5]NE Lakes under 150 acres are excluded.

MUNICIPAL SHORELAND MANAGEMENT PROGRAM

PRELIMINARY LAKE CLASSIFICATION

DISTRIBUTION

County	Municipal Lakes Classified Under County Shoreland Program			Municipal Lakes Classified Under Municipal Shoreland Program			Total Lakes
	NE Lakes	RD Lakes	GD Lakes	NE Lakes	RD Lakes	GD Lakes	
Aitkin	0	0	1	0	0	0	1
Anoka	13	3	2	43	16	5	82
Becker	0	0	6	0	0	0	6
Beltrami	2	2	2	3	0	0	9
Benton	0	0	9	0	0	0	9
Big Stone	0	0	3	1	0	0	4
Blue Earth	1	1	2	0	0	0	4
Brown	0	0	1	1	0	0	2
Carlton	0	1	3	0	0	0	4
Carver	2	2	3	7	7	1	22
Cass	14	3	9	0	0	0	26
Chippewa	0	0	0	0	0	0	0
Chisago	2	0	9	4	1	0	16
Clay	0	0	1	0	1	0	2
Clearwater	1	0	1	0	0	0	2
Cook	0	0	1	0	0	0	1
Cottonwood	0	1	2	0	0	0	3
Crow Wing	21	13	30	35	16	6	121
Dakota	2	1	2	40	28	1	74
Dodge	0	0	0	0	0	0	0
Douglas	2	0	6	0	1	0	9
Faribault	0	1	1	0	0	0	2
Fillmore	0	0	0	0	0	0	0
Freeborn	2	2	1	0	1	0	6
Goodhue	0	0	0	0	0	0	0

County	Municipal Lakes Classified Under County Shoreland Program			Municipal Lakes Classified Under Municipal Shoreland Program			
	NE Lakes	RD Lakes	GD Lakes	NE Lakes	RD Lakes	GD Lakes	Total Lakes
Grant	0	0	5	0	0	0	5
Hennepin	2	0	0	55	68	25	150
Houston	0	0	1	0	0	0	1
Hubbard	2	3	0	0	0	0	5
Isanti	1	0	0	0	0	0	1
Itasca	3	6	5	5	4	0	23
Jackson	0	1	0	0	0	0	1
Kanabec	0	1	0	0	1	0	2
Kandiyohi	4	1	4	1	0	0	10
Kittson	0	0	0	1	0	0	1
Koochiching	0	1	1	0	0	0	2
Lac Qui Parle	0	0	0	0	0	0	0
Lake	2	0	0	0	0	0	2
Lake of the Woods	0	0	0	0	0	0	0
Le Sueur	1	4	0	0	0	0	5
Lincoln	0	2	2	0	0	0	4
Lyon	0	0	4	1	0	0	5
McLeod	1	1	3	0	0	0	5
Mahnomen	0	0	0	0	0	0	0
Marshall	0	0	0	0	0	0	0
Martin	0	1	5	1	0	0	7
Meeker	3	0	2	0	0	0	5
Mille Lacs	0	0	2	1	0	0	3
Morrison	0	0	2	1	0	0	3
Mower	0	0	0	1	1	0	2
Murray	0	0	4	1	0	0	5
Nicollet	0	0	0	0	0	0	0
Nobles	0	0	2	1	0	0	3
Norman	0	0	0	0	0	0	0
Olmsted	0	0	1	2	0	0	3

County	Municipal Lakes Classified Under County Shoreland Program			Municipal Lakes Classified Under Municipal Shoreland Program			Total Lakes
	NE Lakes	RD Lakes	GD Lakes	NE Lakes	RD Lakes	GD Lakes	
Otter Tail	3	5	12	2	0	0	22
Pennington	0	0	0	0	0	0	0
Pine	1	1	2	7	3	0	14
Pipestone	0	0	0	0	0	0	0
Polk	0	0	3	0	0	0	3
Pope	0	3	1	0	0	0	4
Ramsey	0	0	0	30	14	11	55
Red Lake	0	0	0	0	0	0	0
Redwood	1	0	0	0	0	0	1
Renville	0	0	0	0	0	0	0
Rice	0	0	0	1	0	0	1
Rock	0	0	0	0	0	0	0
Roseau	0	0	0	0	0	0	0
St. Louis	1	3	5	18	1	2	30
Scott	5	0	2	2	2	0	11
Sherburne	0	0	3	1	0	0	4
Sibley	0	1	1	0	0	0	2
Stearns	0	3	3	0	2	0	8
Steele	0	0	0	1	0	0	1
Stevens	1	0	4	0	0	0	5
Swift	1	0	1	0	0	0	2
Todd	0	0	2	0	0	0	2
Traverse	0	0	0	0	0	0	0
Wabasha	0	0	1	0	0	0	1
Wadena	0	0	0	0	0	1	1

County	Municipal Lakes Classified Under County Shoreland Program			Municipal Lakes Classified Under Municipal Shoreland Program			
	NE Lakes	RD Lakes	GD Lakes	NE Lakes	RD Lakes	GD Lakes	Total Lakes
Waseca	0	0	2	0	0	0	2
Washington	12	4	3	43	11	3	76
Watonwan	0	1	0	0	0	0	1
Wilkin	0	0	0	0	0	0	0
Winona	0	0	2	3	2	0	7
Wright	1	0	6	4	1	0	12
Yellow Medicine	0	0	0	0	0	0	0
Total	107	72	191	317	181	55	923
Percent Total	11.4	7.7	20.8	34.2	19.8	6.1	100

SHORELAND MANAGEMENT CLASSIFICATION SYSTEM FOR PUBLIC WATERS