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WESTERN
LAKE SUPERIOR
RECREATIONAL BOATING
NEEDS AND USE
PATTERNS



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INTRODUCTION: The western end of Lake Superior has been a recreational boating* frontier when compared to the lower Great Lakes. It has been a recreational boating frontier because of a comparatively small number of boaters and boating facilities as a result of the relatively small population living near the lake, the large number of inland lakes available for recreational boating in Wisconsin and Minnesota and the reputation of Lake Superior as a potentially dangerous location for recreational boating. These factors are changing, however, with the result that an increasing number of recreational boaters are being attracted to the western end of Lake Superior.

The change in the attractiveness of western Lake Superior as a recreational boating location is related to changes in the factors that have kept western Lake Superior a recreational boating frontier. Improved highway access to the western Lake Superior area by the growing population from the Twin Cities has served to enlarge the population living close enough to the lake to use it as a recreational resource. Additionally, as a part of a national trend, there is a growing interest in offshore boating that can't be served by smaller inland lakes but is ideally met by the expanse of Lake Superior. Concerns for boating safety have been largely overcome in recent years by boat design and construction advances that have made safe boating accessible to more boaters.

As increasing numbers of boaters use western Lake Superior as a recreational boating location it is ceasing to be a recreational boating frontier but is instead taking on the appearance of a developing area for recreational boating. New and improved marina facilities at the Apostle Islands, Duluth and

*For the present purposes, recreational boating refers to power and sail craft that are not trailered and launched with each use but instead are kept at a mooring or a marina slip for the duration of the boating season.

Knife River are reporting full occupancy and in some cases have waiting lists for slips that exceed the number of slips available in the marina. For the purpose of the survey reported here, 787 boaters were identified in western Lake Superior and it is quite possible that this number is a slight under-count of the actual number of recreational boaters situated at the western end of the lake. Thirty-nine percent of the boaters responding to the survey report that they have owned their boat two years or less which may be interpreted as an annual growth rate of nearly twenty percent although in all likelihood probably the annual growth is less than this because the thirty-nine percent figure includes boaters who are changing boats as well as new boaters. A conservative estimate of the growth in recreational boating in western Lake Superior is between 10% and 15% with a base of about 800 boaters in the 1976 boating season which translates to between 80 and 120 new boaters per year.

It is apparent that planning must be done by both the private and public sectors serving recreational boaters in order to accommodate the large number of new boaters. The purpose of the survey of recreational boaters carried out during the summer of 1976 and reported here is to provide a data base that will assist this planning process. The survey results are presented with limited interpretation. Both the tables and narrative that follow are arranged with the anticipation that further detailed analysis will be provided to those directly involved in providing and planning for marina facilities in the western end of Lake Superior by request to the Minnesota Marine Advisory Service. It is hoped that this report will prove to be a useful preliminary aid to the recreational boating planning process and that the additional resources of the Minnesota Marine Advisory Service will also be employed by both the private and public planners concerned with questions of recreational boating.

METHODOLOGY: The survey of western Lake Superior boating needs and patterns was sponsored by the Minnesota Marine Advisory Service. That office made contact with the marina operators and the boat club presidents from the western end of Lake Superior during the early part of the summer of 1976. Marina operators were asked both to supply names of their customers for the mailing of the survey and to indicate the information that would be useful to ask in such a survey. All of the marina operators were very generous in their cooperation with the project.

Similarly, boat club presidents were asked to provide membership lists to identify boaters for the survey and to suggest questions that might be included in the survey. Again the cooperation was good with some club presidents providing specific suggestions and all clubs supplying their membership lists for use in the project. Once all the lists of marina customers and boat club members had been gathered, a master mailing file was developed with one entry for every boater that had been identified. This resulted in a master mailing file of 787 boaters all of whom were sent questionnaires.

The basic format for the questionnaire was adapted from the questionnaire used by Hedlin Menzies & Associates in their study of the Canadian north shore of Lake Superior commissioned by Ministry of Natural Resources Ontario. In using a similar questionnaire format it was felt that it would be easier to interface the two surveys for comparative purposes. Also, the Canadian questionnaire was well worked out containing many of the questions of interest to western Lake Superior. Modification of the Canadian questionnaire was done with the input from the marina operators, boat club presidents and others interested in recreational boating at the western end of the lake. Once developed, the questionnaire was circulated to as many of this group as could be reached with some valuable suggestions resulting which were, in turn, incorporated into the final version of the questionnaire.

Questionnaires were mailed to all 787 boaters whose names were in the master mailing file during the week of July 26th. A post card follow-up was mailed to those who had not returned their questionnaires three weeks later and then a final follow-up mailing of the questionnaire and another letter of request was sent to the non-respondents six weeks after the original mailing of the questionnaire. This procedure yielded a 57% return of usable questionnaires or 447 boater questionnaires.

All questionnaires were then processed by coding and punching the coded information onto computer cards. Preliminary computer runs were done during the fall of 1976 after which time table building and preliminary analysis was begun. "Recreational Boating on western Lake Superior: A Survey" was published in March of 1977. The present more detailed report is intended to communicate all of the findings from the recreational boating survey rather than to present the findings in a summary fashion as was done in the fact sheet referred to above. Other boating studies that might be of interest to the reader listed in the bibliography - footnote section of this report.

Much of the information presented in this report is separated by port using the port reporting categories of the Apostle Islands, Cornucopia, Duluth, Knife River and Other. Small ports such as Port Wing and Schroeder are included in the "Other" category while the Apostle Island Marina at Bayfield, Madeline Island Marina and Port Superior are all grouped under the heading Apostle Islands. Figure 1 shows the location of the survey respondents by port. The largest number of respondents identify the Apostle Islands as their home port (36.5%) while Duluth ranked second (20.6%), Knife River third (9.5%), Other fourth (7.2%) and Cornucopia fifth (3.1%). 23.1% of the respondents failed to identify their home port and are reported in the non-location category of NA which indicates "not available".

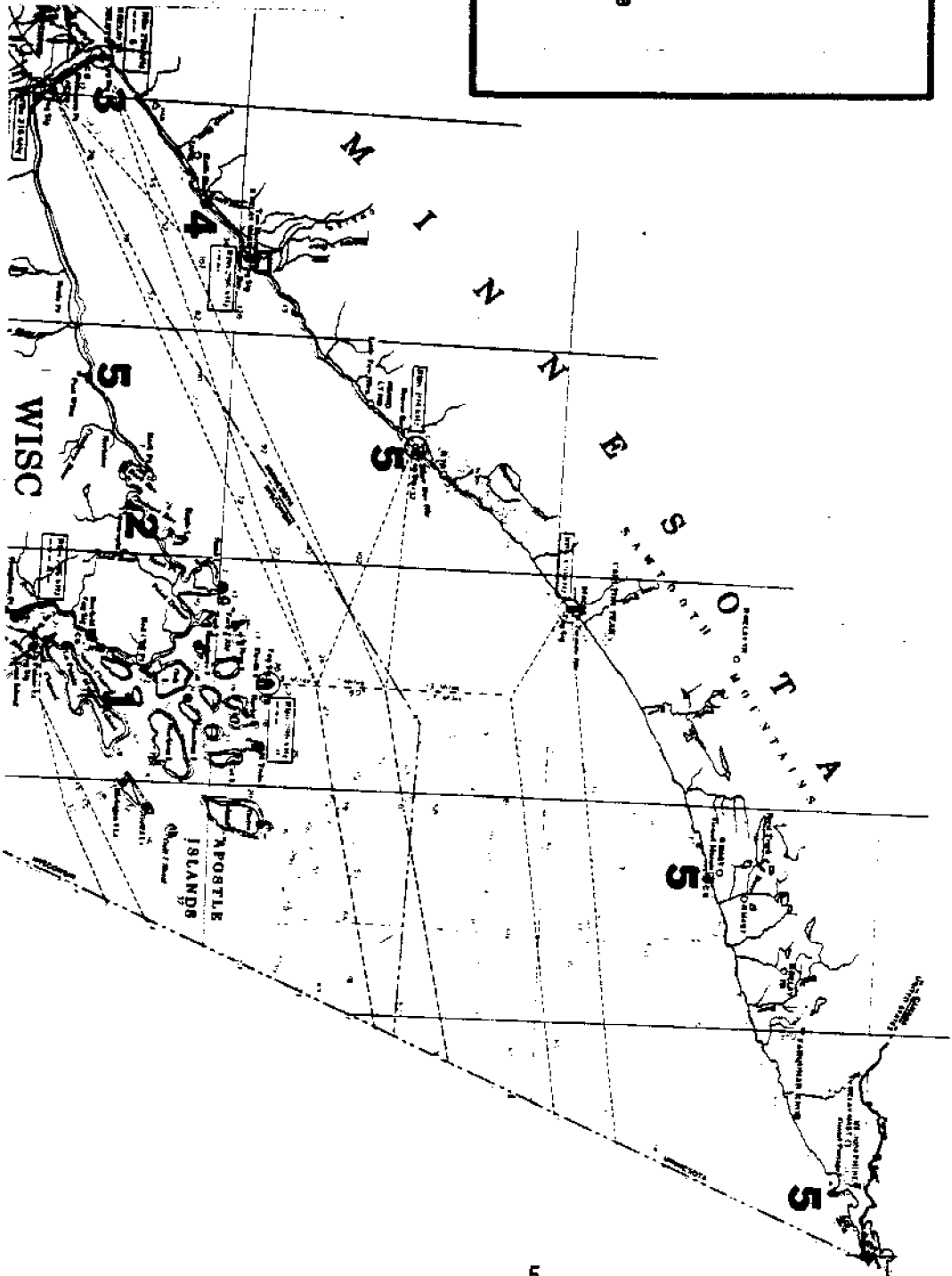
FIGURE 1

Home Ports of Western Lake Superior Boaters

KEY

1. Apostle Islands
2. Cornucopia
3. Duluth
4. Knife River
5. Other

Grand Portage
Grand Marais
Beaver Bay
Port Wing



BACKGROUND CHARACTERISTICS OF BOATERS AND BOATS: The questionnaires were filled out predominately by males (95.7%) with a mean age of 44.9 years as shown in Table 1. Of the 447 respondents, 383 (85.7%) are married and 5.7% are divorced, separated or widowed as shown in Table 2. The average size of the respondent's household is 3.8 persons with the 2 person household being the most frequently mentioned (31.3%) see Table 3. Boaters from Duluth were most common among the respondents (39%) while the Minneapolis-St. Paul area boaters constitute 14% of the survey respondents.

The level of education for the respondents is quite high with an average of 17.9 years of school. Table 4 shows that 28.7% are college graduates or have an equivalent number of years of schooling. 27.1% of the respondents are professionals, 23.5% are skilled workers, semi-skilled or sales workers, 18.1% are administrators and managers and 9.8% are technical and semi-professional workers (see Table 5).

Annual family income information summarized in Table 6 is provided by 92% of the respondents. The mean family income is \$27,768 with 23.9% of the respondents reporting incomes in the \$40,000 and over category. Only 14.3% of the boaters report family income of \$15,000 or less per year.

Table 7 shows the average number of years that the boaters have been boating on Lake Superior. On an average, the boaters have boated on Lake Superior for 12.3 years with 41.1% reporting that they have boated from 0 to 5 years and 14.7% reporting that they have boated from 22 to 56 years. 39% have owned their boats two years or less while 72.6% have owned their boats five years or less (Table 8).

The interpretation that may be drawn from these data is that a number of new participants have become involved in recreational boating in western Lake Superior in recent years with the growth in this activity between 10% and 15% as suggested earlier.

55.7% of the boaters are members of boating clubs. As shown in Table 9, the U.S. Power Squadron is the most frequently mentioned boating club among the respondents with 91 members while the Apostle Islands Yacht Club is ranked second with 71 members and the Duluth Keel Club third with 66 members. It must be remembered that respondents might be members of more than one boating club and the information presented in Table 9 reflects the number of mentions each boating club received.

The average sailboat on western Lake Superior is 27.2 feet long and the average power boat is 24.9 feet long as shown in Table 10. There is considerable variation in the type of sail and power boats with boaters owning 1.4 boats on an average. The indication is that some boaters have second boats, most of which are small motor outboards or sailboats without power. Boaters were asked to report on their largest boat used in all the questions dealing with boat use and facilities needed included in the survey. In a separate section at the end of the questionnaire boaters having boats of the type normally transported on the top of a car or towed on a trailer were asked to report their use of these boats on western Lake Superior. 117 boaters reported using their small boats on western Lake Superior with pleasure boating and fishing the most common use indicated and over half (53.0%) responding that they use their small boat at least weekly (see Tables 11 and 12).

Owning a boat in partnership is not predominate with only 60 boaters indicating such ownership. 87.7% of the boaters have boats with accommodations for sleeping with an average of five berths per boat resulting from high responses for four berths (21.5%) and six berths (33.6%) Tables 13 and 14. 82.3% of the boats are reported to have a head (toilet) on board with 2.9% not reporting.

Characteristics of boaters and boating may be summarized as follows:

1. 96% of the respondents are male, 86% are married and they have an average household size of 3.8 persons.
2. The average educational level is 17.9 years for the respondents with professional occupations most common among them and skilled, semi-skilled and sales work being second most common while the average income is \$27,768.
3. Membership in a boating club is reported by over half of the respondents while 41% have boated on Lake Superior five years or less and 73% have owned their present boats five years or less.
4. Sailboats with inboard auxiliary engines averaging 33.3 feet are most frequently mentioned while motor inboards averaging 38.2 feet are second in their frequency of mention.
5. Smaller boats are also common with an average of 1.4 boats owned per boater and 117 boaters indicating that they use their car topped or trailered boats on Lake Superior with half using their boat once per week or more.
6. For most of the questions in the survey the boaters were asked to report on their largest boat most of which are owned by a single owner and have sleeping accommodations and toilet facilities.

Table 1. Age of Western Lake Superior Recreational Boaters

<u>Ages</u>	<u>f</u>	<u>%</u>
19 - 24	8	1.8
25 - 29	29	6.5
30 - 34	63	14.1
35 - 39	62	13.9
40 - 44	45	10.1
45 - 49	71	15.9
50 - 54	58	13.0
55 - 59	50	11.2
60 - 64	36	8.0
65 - 69	10	2.2
70 - 74	7	1.5
No Information	<u>8</u>	<u>1.8</u>
TOTAL	447	100.0

Mean \bar{X} = 44.9

Table 2. Marital Status for Western Lake Superior Recreational Boaters

	<u>f</u>	<u>%</u>
Single	34	7.6
Married	383	85.7
Separated	3	.7
Widowed	3	.7
Divorced	19	4.3
N/A	<u>5</u>	<u>1.1</u>
TOTAL	447	100.1

Table 3. Size of Household of Western Lake Superior Recreational Boaters

	f	%
1 person	40	8.9
2 persons	140	31.3
3 persons	69	15.4
4 persons	85	19.0
5 persons	58	13.0
6 persons	28	6.3
7 persons	17	3.8
8 persons	4	.9
9 persons	4	.9
N/A	2	.4

Table 4. Years of School Completed By Boaters in Western Lake Superior

	f	%
1 - 5	1	.2
6 - 10	12	2.7
11 - 15	168	37.6
16 - 20	243	54.4
21 - 25	7	1.6
26 - 30	3	.7
N/A	13	2.9
Total	447	100.1
Average	15.5	

Table 5. Occupations of Western Lake Superior Recreational Boaters

	f	%
Professional	121	27.1
Administrators, Managers	81	18.1
Technical, Semi Professional	44	9.8
Business Owners	30	6.7
Clerical & Kindred Workers	5	1.1
Skilled & Semi Skilled	54	12.1
Sales & Kindred Workers	51	11.4
Farmers	3	.7
Service Workers	5	1.1
Unskilled	2	.4
Housewife	1	.2
Retired	26	5.8
Student	3	.7
No Information	<u>21</u>	<u>4.7</u>
TOTAL	447	100.0

Table 6. Annual Family Income of Western Lake Superior Recreational Boaters

	f	%
0 - \$5,000	3	.7
\$5,000 to \$10,000	13	2.9
\$10,000 to \$15,000	48	10.7
\$15,000 to \$20,000	58	13.0
\$20,000 to \$25,000	65	14.5
\$25,000 to \$30,000	47	10.5
\$30,000 to \$35,000	45	10.1
\$35,000 to \$40,000	24	5.4
\$40,000 to \$45,000	107	23.9
N/A	<u>37</u>	<u>8.3</u>
TOTAL	447	100.0

Mean = \$27,768

Table 7. No. Of Years Boating On Lake Superior For Western Lake Superior Recreational Boaters

	f	%
0 - 2 Years	63	14.0
3 - 5 Years	121	27.1
6 - 8 Years	68	15.2
9 - 11 Years	47	10.1
12 - 14 Years	25	5.6
15 - 17 Years	24	5.4
18 - 21 Years	26	5.8
22 - 24 Years	6	1.3
25 - 28 Years	18	3.9
29 - 43 Years	31	6.8
44 - 56 Years	13	2.7
N/A	5	1.1
TOTAL	447	99.0

Table 8. Length of Boat Ownership for Western Lake Superior Recreational Boaters

	f	%
0 - 2 Years	174	39.0
3 - 5 Years	150	33.6
6 - 8 Years	51	11.4
9 - 11 Years	26	5.8
12 - 14 Years	9	2.0
15 - 17 Years	5	1.1
19 - 21 Years	7	1.6
22 - 24 Years	1	.2
25 - 27 Years	0	-
28 - 30 Years	0	-
31 - 33 Years	0	-
34 - 36 Years	2	.4
37 - 39 Years	1	.2
40 - 42 Years	1	.2
N/A	20	4.5
TOTAL	447	100.0

Table 9. Membership In Boating Clubs* For Western Lake Superior Recreational Boaters

	1st mentioned f	2nd mentioned f	3rd mentioned f	Total f
U.S. Power Squadron:	74	15	2	91
Apostle Islands Yacht Club:	60	9	2	71
Duluth Keel Club:	54	12	0	66
U. S. Coast Guard Auxiliary:	18	9	4	31
Great Lakes Cruising Club:	10	4	1	15
Wayzata Yacht Club:	6	2	2	10
Thunder Bay Yacht Club:	0	1	1	2
Other:	31	13	6	50

* 249 or 55.7% of the boaters belong to boating clubs

Table 10. Type and Length of Recreational Boats on Western Lake Superior

Type	f	Average Length	
Sail	72		18.9'
Sail with outboard auxiliary engine	89		23.7'
Sail with inboard auxiliary engine	<u>151</u>		33.3'
TOTAL Sail	312	Avg. Sail	27.2'
Motor outboard	108		14.3'
Motor inboard/outboard	109		21.2'
Motor inboard	<u>114</u>		38.2'
TOTAL Power	331	Avg. Power	24.9'
TOTAL	643	Avg. Boat	26.0'

Table 11: Use of Small Boats on Western Lake Superior

	f	%*
Pleasure Boating	83	70.9
Fishing	69	59.0
Travel	14	12.0
Waterskiing	17	14.5
Other	12	10.3

*percents based on 117 cases in each category

Table 12: Frequency of Small Boat Use on Western Lake Superior

	f	%
Daily	24	20.5
Weekly	38	32.5
Monthly	13	11.1
Occasionally	<u>42</u>	<u>35.9</u>
TOTAL	117	100.0

Table 13: Number of Boats Having Sleeping Accomodations for Western Lake Superior Recreational Boaters

	f	%
Yes	392	87.7
No	42	9.4
N/A	13	2.9

Table 14: Number of Berths On Boats With Sleeping Accomodations For Western Lake Superior Recreational Boaters

	f	%
1 Berth	2	.4
2 Berths	30	6.7
3 Berths	10	2.2
4 Berths	96	21.5
5 Berths	70	15.7
6 Berths	150	33.6
7 Berths	15	3.4
8 Berths	21	4.7
N/A	<u>53</u>	<u>11.9</u>
TOTAL	447	100.1

BOAT USE AND EVALUATION OF HOME PORT: Boaters were asked to indicate the frequency of their boat use for the months of May through October by checking the following responses: high use, medium use, low use and not used. Over half of the boaters reported a high or medium use of their boats from early June until late September suggesting a frequent use of boats over a four month season. Recreational boat use on western Lake Superior lasts for a full six months from May to October although the frequency of use is low at the beginning and end of the season as shown in Figure 2 and Table 15.

Boaters used their boats for an average of 44.6 days during the boating season with a mode of 30 to 35 days and the other high frequencies in the 36 to 41, 48 to 53 and 60 to 65 day categories. Table 16 shows that some of the boaters use their boats for over 100 days in a season although this use pattern is not common (2.2%).

The report of the usual duration of boat use is arranged in a bimodal distribution. The bimodal distribution may be explained in that the usual day voyage is 5.4 hours while the usual boat use by boaters residing on their boats for the weekend last 48.8 hours. Day sailing and longer voyages will be discussed in greater detail in the next section of the report.

Over three quarters (79.7%) of the boaters do not use their boats on a body of water other than Lake Superior. Of the boaters who do use their boats on other bodies of water (20.3%), St. Louis Bay and River and Lake Michigan are the most frequently identified locations as shown in Table 17.

Boaters were asked to list the first four priorities of their boat use. Table 18 shows four priority columns and columns with the total of the priority mentions and a rank ordering of these totals. 206 boaters stated that cruising was their most important boat use while 70 favored fishing and 64 used their boats for family outings. Cruising remains the first most important boat use in the second priority listing but fishing drops to fourth place behind family outing and entertainment. Cruising is the most common total boat use with family outing second and fishing third just slightly ahead of entertainment. It appears that fishing is less likely to be a secondary use of a boat whereas family outing and entertainment are stronger secondary boat uses. Racing is a primary and secondary boat use for 5.6% of the boaters.

Boaters were asked how they felt about the quality of shore-based facilities in their home ports. The categories supplied in the questionnaire for this question were "excellent", "good", "fair", "poor" and "no opinion". Data are presented by these categories for the items rated for the home port in Table 19A through 19c. The first item that the boaters were asked to rate was the season docking facilities. Nearly three quarters of the Knife River boaters judged their season docking facilities to be excellent (73.8%) and over half the Apostle Island boaters reported an excellent rating (55.8%). The lowest rating is for Duluth where over half of the boaters rated their season docking facilities as "fair" or "poor" (57.6%) and only 12% judged these facilities as excellent (Table 19 A).

Some explanation of this rating for Duluth is needed because during the 1976 boating season the two largest Duluth marinas (Lakehead and Industrial Welders) were engaged in major marina construction projects. These efforts to upgrade both marinas presented some inconveniences for customers during the boating season and the construction was not completed by the end of the 1976 season. To some extent the Duluth rating reflects the developing situation of the marina

facilities in Duluth, however, the Duluth marina facilities differ from other larger ports in western Lake Superior in that there has not been a large public or private investment in marina development in the past. Recent construction represents a change in marina development in Duluth.

Over 40% of the Apostle Island (41.3%) and Knife River (40.5%) boaters rate their ports as "excellent" or "good" in daily docking rentals. In contrast, 42.4% of the Duluth boaters rate daily docking rental as "poor" (Table 19 B). For boaters reporting an opinion, the Apostle Islands appear to provide the best anchorage facilities and Knife River the worst as shown in Table 19 C.

The Apostle Islands is rated by nearly three quarters of the boaters from that port (74.8%) as "excellent" or "good" in response to the boating supplies item (gas, oil, equipment, etc.). Generally boaters rated boating supplies favorably with the largest "poor" rating proportionately by Duluth boaters (29.3%). Of the ports providing pumpout and waste disposal facilities the Apostle Islands is rated the highest and Duluth is rated the lowest (Table 19 E). 78.6% of the Apostle Island boaters judge pumpout as "excellent" or "good" with 56.5% of the Duluth boaters rating the pumpout facilities in Duluth as "poor". Cornucopia and the other small ports included in the category "other" don't provide pump-out service although a small number of boaters gave a high rating to their home ports on this question.

Knife River and Duluth are both rated "poor" by nearly two thirds of the boaters from those locations on the item of food availability (Table 19 F). In contrast, 51.5% of the Apostle Island boaters rate food availability as "excellent" and 30.7% rate it as "good". A similar rating pattern is given for overnight accommodations although the ratings are neither as positive nor as negative on this item (Table 19 G).

Hose and water facilities are rated most favorably by Knife River boaters (59.5%) excellent and generally positive by Apostle Island boaters while Duluth boaters rate this facility somewhat lower for their home port as shown in Table 19 H. Again Knife River boaters are proportionately more positive about electrical hookups in their home port (57.1% excellent) and Apostle Island boaters rate this facility positively (78.5% "excellent" and "good"). Electrical hookups appear to be the greatest problem in the smaller ports and to some extent in Duluth as shown in Table 19 I.

Laundry facilities are generally rated "poor" by boaters with the Apostle Island boaters being the most positive (Table 19 J). In contrast there is a generally good to fair rating of weather information by the boaters with the Apostle Island boaters being most positive and Cornucopia boaters being second most positive as shown in Table 19 K.

Knife River has the highest rating by its boaters for haul-out facilities with 59.5% judging haul-out as "excellent" and 33.3% rating this facility as "good" (Table 19 L). The Apostle Islands received a 35.6% "excellent" rating and 49.1% "good" rating on haul-out and 58.7% of the Duluth boaters evaluated haul-out in their port as "excellent" or "good". The small ports rated haul-out lower than the larger ports. The same rating pattern is found for storage facilities as shown in Table 19 M. Repair facilities are judged generally "good" to "fair" by the majority of boaters in the larger ports with boaters from the smaller ports rating repair facilities as "poor" (Table 19 N).

Boaters rate their ports well as harbors of refuge with approximately 70% placing their ports in the "excellent" or "good" categories for all ports excluding the "other" category (Table 19 O).

Table 20 shows the shore-based facilities that boaters indicate are needed in their home port. Duluth boaters express the greatest overall need for shore-based facilities which corresponds to their rating of the same list of facilities for their port. 42.4% of the Duluth boaters indicate that season docking facilities are needed in the port of Duluth, well above the need reported for the other ports. The lowest level of need expressed for the port of Duluth is 24.1% for laundry facilities. In contrast Apostle Island boaters have need of electrical hookups (34.2%), laundry facilities (30.4%), daily docking rental (27.7%) and repair facilities (27.5%). The highest needs expressed by the Knife River boaters are for disposal facilities (15.2%), repair facilities (12.8%) and harbor of refuge (12.5%) but these needs are of slight magnitude compared to Duluth and selected items for the Apostle Islands.

In summary, boat use and home port ratings show the following:

1. Cruising is the most frequently mentioned use of boats reported by recreational boaters in western Lake Superior.
2. Duluth recreational shore-based boaters rate facilities in their home ports lower than the boaters from other western Lake Superior ports and indicate that most of the facilities are needed in the Duluth port.
3. Of the larger ports in western Lake Superior, Knife River recreational boaters appear to be most satisfied with their shore-based facilities and Apostle Island recreational boaters are generally satisfied with their shore-based facilities.
4. Small ports have shore-based facility problems that are, in part, size related such as the lack of haulout and disposal facilities.

FIGURE 2

High and Medium Boat Use by Month

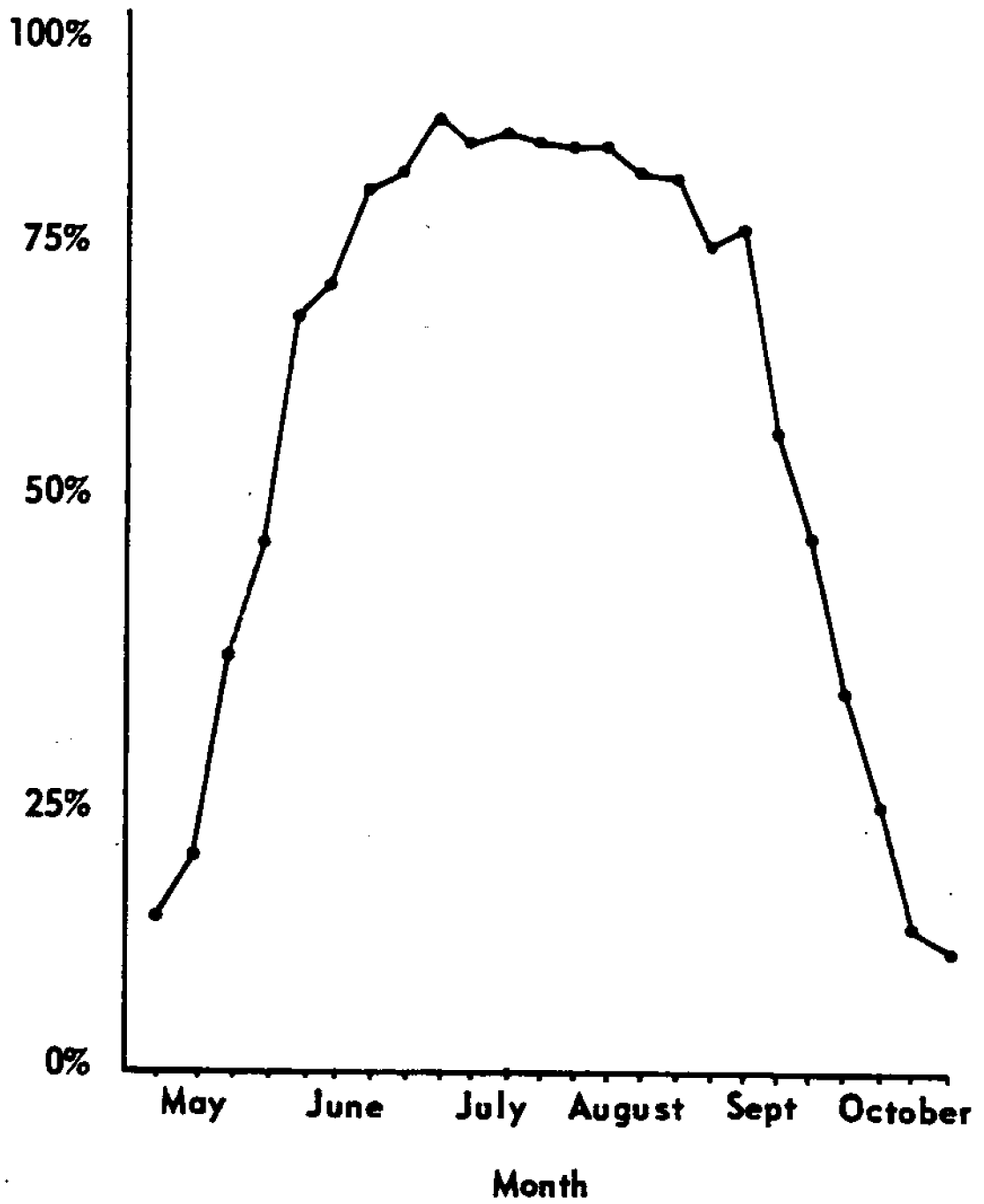


Table 15: Recreational Boat Use by Month for Western Lake Superior

	MAY				JUNE				JULY			
	1	2	3	4	1	2	3	4	1	2	3	4
	%	%	%	%	%	%	%	%	%	%	%	%
High	6.0	7.6	12.3	19.7	32.4	35.3	40.7	46.3	62.4	58.4	61.1	61.1
Medium	8.3	12.3	26.0	28.4	36.7	39.4	40.3	36.2	25.1	26.8	24.4	24.4
Low	19.2	25.3	27.1	29.8	15.4	4.6	8.3	6.3	3.8	4.9	6.3	4.5
Not Used	42.1	33.1	18.6	10.5	6.0	4.3	1.8	2.0	1.3	2.0	1.7	1.8
NA	24.4	21.7	16.1	11.6	9.4	9.4	8.9	9.2	7.4	7.8	6.5	8.3

	AUGUST				SEPTEMBER				OCTOBER			
	1	2	3	4	1	2	3	4	1	2	3	4
	%	%	%	%	%	%	%	%	%	%	%	%
High	62.2	60.9	55.3	52.6	38.0	26.0	18.3	15.9	12.5	9.4	6.7	6.0
Medium	22.8	24.2	27.2	29.5	37.4	41.6	40.3	34.7	22.1	15.2	6.5	5.4
Low	5.8	5.1	6.7	6.3	13.2	19.5	24.8	28.6	34.7	31.5	19.7	13.2
Not Used	1.3	2.2	2.0	2.9	2.2	2.9	5.6	8.5	17.4	27.1	40.9	46.3
NA	7.8	7.6	7.8	8.7	9.2	10.1	11.0	12.3	13.2	16.8	26.2	29.1

Table 16: No. of Days Boat is Used on western Lake Superior in a Season

	N	%		N	%
0-5 Days Used	2	.4	148-153 Days Used	2	.5
6-11 Days Used	12	2.7	154-159 Days Used	0	-
12-17 Days Used	19	4.3	160-165 Days Used	0	-
18-23 Days Used	45	10.1	166-171 Days Used	0	-
24-29 Days Used	35	7.8	172-177 Days Used	0	-
30-35 Days Used	64	14.3	178-183 Days Used	1	.2
36-41 Days Used	47	10.5	184-189 Days Used	0	-
42-47 Days Used	18	4.0	190-195 Days Used	0	-
48-53 Days Used	48	10.7	196-201 Days Used	1	.2
54-59 Days Used	14	3.1	N/A	38	8.5
60-65 Days Used	43	9.6	TOTAL	447	99.9
66-71 Days Used	7	1.6			
72-77 Days Used	16	3.6			
78-83 Days Used	8	1.8			
84-89 Days Used	0	-			
90-95 Days Used	6	1.3			
96-101 Days Used	15	3.4			
102-107 Days Used	0	-			
108-111 Days Used	0	-			
112-117 Days Used	0	-			
118-123 Days Used	5	1.1			
124-129 Days Used	0	-			
130-135 Days Used	1	.2			
136-141 Days Used	0	-			
142-147 Days Used	0	-			

Table 17: Name of Place Other Than Lake Superior Boat was used by Western Lake Superior Recreational Boaters

	f	%
St. Louis Bay and River:	22	4.9
Lake Michigan:	16	3.6
Lake Huron:	6	1.3
Leech Lake:	5	1.1
Lake of the Woods:	4	.9
White Bear Lake:	2	.4
St. Mary's River:	0	-
Other	36	8.1
N/A	356	79.6

Table 18: Priority and Total Rank Order of Recreational Boat Use for Western Lake Superior

	List #1		List #2		List #3		List #4		Rank Order	
	f	%	f	%	f	%	f	%	f	
Cruising	206	46.1	96	21.5	28	6.3	1	.2	331	1
Fishing	70	15.7	34	7.6	33	7.4	20	4.5	157	3
Family Outing	64	14.3	82	18.3	48	10.7	5	1.1	199	2
Entertainment	37	8.3	68	15.2	35	7.8	14	3.1	154	4
Racing	25	5.6	25	5.6	19	4.3	7	1.6	76	5
Charter	10	2.2	3	.7	1	.2	0	-	14	7
Business	3	.7	0	-	2	.4	0	-	5	9
Transportation	1	.2	1	.2	0	-	0	-	2	10
Island Camping	0	-	1	.2	4	.9	0	-	5	9
Other	11	2.5	14	3.1	6	1.3	3	.7	34	6
N/A	20	4.5	123	27.5	271	60.6	397	88.8	811	
Total	447	100.1	447	99.9	447	99.9	447	100.0	1788	

Table 19A: Rating of Season Docking Facilities by Home Port for Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	91	55.8	55	33.7	13	8.0	2	1.2	0	-	2	1.2	163	99.9
Cornucopia	3	21.4	5	35.7	6	42.9	0	-	0	-	0	-	14	100.0
Duluth	11	12.0	25	27.2	31	33.7	22	23.9	0	-	3	3.3	92	100.1
Knife River	31	73.8	7	16.7	2	4.8	2	4.8	0	-	0	-	42	100.1
Other	5	15.6	4	12.5	8	25.0	11	34.4	0	-	4	12.5	32	100.0
NA	49	47.1	29	27.9	7	6.7	7	6.7	0	-	12	11.5	104	100.0

Table 19 B: Rating of Daily Docking Rental Facilities by Home Port for Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	26	15.6	43	25.7	26	15.6	4	2.4	43	25.7	25	15.0	167	100.0
Cornucopia	1	7.1	4	28.6	1	7.1	2	14.3	4	28.6	2	14.3	14	100.0
Duluth	1	1.1	14	15.2	16	17.4	39	42.4	15	16.3	7	7.6	92	100.0
Knife River	9	21.4	8	19.1	3	7.1	9	21.4	5	11.9	8	19.1	42	100.0
Other	3	9.4	5	15.6	2	6.3	13	40.6	2	6.3	7	21.9	32	100.1
NA	11	10.6	23	22.1	7	6.7	12	11.5	17	16.3	34	32.7	104	100.0

Table 19c: Rating of Anchorage Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	24	14.7	27	16.6	13	8.0	29	17.8	49	30.1	21	12.9	163	100.1
Cornucopia	1	7.1	3	21.4	3	21.4	5	35.7	2	14.3	0	-	14	99.9
Duluth	5	5.4	15	16.3	22	23.9	34	37.0	11	12.0	5	5.4	92	100.0
Knife River	5	11.9	2	4.8	1	2.4	18	42.9	10	23.8	6	14.3	42	100.1
Other	2	6.3	3	9.4	5	15.6	11	34.4	1	3.1	10	31.3	32	100.1
NA	13	12.5	13	12.5	8	7.7	19	18.3	18	17.3	33	31.7	104	100.0

Table 19d: Rating of Boating Supplies By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	47	28.8	75	46.0	33	20.2	7	4.3	0	-	1	.6	163	99.9
Cornucopia	2	14.3	5	35.7	5	35.7	2	14.3	0	-	0	-	14	100.0
Duluth	4	4.3	32	34.8	26	28.3	27	29.3	1	1.1	2	2.2	92	100.0
Knife River	13	31.0	18	42.9	7	16.7	3	7.1	0	-	1	2.4	42	100.1
Other	2	6.3	6	18.8	9	28.1	9	28.1	1	3.1	5	15.6	32	100.0
NA	22	21.2	35	33.7	22	21.2	11	10.6	0	-	14	13.5	104	100.1

Table 19e: Ratings of Pumpout Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	57	35.0	71	43.6	15	9.2	9	5.5	7	4.3	4	2.5	163	100.1
Cornucopia	1	7.1	1	7.1	1	7.1	9	64.3	1	7.1	1	7.1	14	99.8
Duluth	2	2.2	15	16.3	17	18.5	52	56.5	2	2.2	4	4.3	92	100.0
Knife River	21	50.0	9	21.4	4	9.5	3	7.1	3	7.1	2	4.8	42	99.9
Other	2	6.3	3	9.4	3	9.4	14	43.8	2	6.3	8	25.0	32	100.1
N/A	26	25.0	28	26.9	15	14.4	7	6.7	9	8.7	19	18.3	104	100.0

Table 19f: Rating of Food Availability By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	84	51.5	50	30.7	15	9.2	9	5.5	2	1.2	3	1.8	163	99.9
Cornucopia	2	14.3	4	28.6	3	21.4	5	35.7	0	-	0	-	14	100.0
Duluth	5	5.4	6	6.5	12	13.0	59	64.1	5	5.4	5	5.4	92	99.8
Knife River	2	4.8	2	4.8	6	14.3	27	64.3	4	9.5	1	2.4	42	100.1
Other	4	2.5	2	6.3	4	12.5	14	43.8	1	3.1	7	21.9	32	100.1
N/A	31	29.8	15	14.4	11	10.6	30	28.8	4	3.8	13	12.5	104	99.9

Table 19g: Rating of Overnight Accom. By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	43	26.4	47	28.8	31	19.0	19	11.7	18	11.0	5	3.1	163	100.0
Cornucopia	2	14.3	4	28.6	5	35.7	3	21.4	0	-	0	-	14	100.0
Duluth	3	3.3	10	10.9	14	15.2	49	53.3	10	10.9	6	6.5	92	100.1
Knife River	6	14.3	2	4.8	5	11.9	18	42.9	5	11.9	6	14.3	42	100.1
Other	5	15.6	2	6.3	6	18.8	10	31.3	2	6.3	7	21.9	32	100.2
N/A	22	21.2	18	17.3	13	12.5	23	22.1	10	9.6	18	17.3	104	100.0

Table 19h: Rating of Hose and Water Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	60	36.8	57	35.0	29	17.8	11	6.7	3	1.8	3	1.8	163	99.9
Cornucopia	2	14.3	6	42.9	2	14.3	4	28.6	0	-	0	-	14	100.1
Duluth	11	12.0	25	27.2	30	32.6	22	23.9	2	2.2	2	2.2	92	100.1
Knife River	25	59.5	11	26.2	5	11.9	1	2.4	0	-	0	-	42	100.0
Other	3	9.4	6	18.8	3	9.4	11	34.4	2	6.3	7	21.9	32	100.2
N/A	34	32.7	33	31.7	10	9.6	7	6.7	5	4.8	15	14.4	104	99.9

Table 19i: Ratings of Electrical Hookups By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	70	42.9	58	35.6	23	14.1	7	4.3	3	1.8	2	1.2	163	99.9
Cornucopia	2	14.3	4	28.6	2	14.3	4	28.6	0	-	2	14.3	14	100.1
Duluth	11	12.0	25	27.2	30	32.6	22	23.9	2	2.2	2	2.2	92	100.0
Knife River	24	57.1	6	14.3	5	11.9	4	9.5	1	2.4	2	4.8	42	100.0
Other	1	3.1	3	9.4	3	9.4	14	43.8	2	6.3	9	28.1	32	100.1
N/A	33	31.7	29	27.9	11	10.6	7	6.7	8	7.7	16	15.4	104	100.0

Table 19j: Ratings of Laundry Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	10	6.1	27	16.6	25	15.3	70	42.9	21	12.9	10	6.1	163	99.9
Cornucopia	0	-	1	7.1	0	-	10	71.4	2	14.3	1	7.1	14	99.9
Duluth	2	2.2	7	7.6	12	13.0	57	62.0	10	10.9	4	4.3	92	100.0
Knife River	1	2.4	0	-	6	14.3	26	61.9	9	21.4	0	-	42	100.0
Other	0	-	2	6.3	1	3.1	18	56.3	2	6.3	9	28.1	32	100.1
NA	3	2.9	10	9.6	7	6.7	42	40.4	15	14.4	27	26.0	104	100.0

Table 19k: Ratings of Weather Information By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	36	22.1	50	30.7	20	12.3	29	17.8	6	3.7	2	1.2	163	100.0
Cornucopia	1	7.1	7	50.0	4	28.6	1	7.1	0	-	1	7.1	14	99.9
Duluth	13	14.1	34	37.0	14	20.7	20	21.7	2	2.2	4	4.3	92	100.0
Knife River	6	14.3	16	38.1	9	21.4	8	19.0	3	7.1	0	-	42	99.9
Other	3	9.4	9	28.1	5	15.6	6	18.8	1	3.1	8	25.0	32	100.0
N/A	13	12.5	29	27.9	21	20.2	20	19.2	4	3.8	17	16.3	104	99.9

Table 19L: Ratings of Haulout Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	58	35.6	80	49.1	11	6.7	3	1.8	8	4.9	3	1.8	163	99.9
Cornucopia	0	-	5	35.7	2	14.3	5	35.7	1	7.1	1	7.1	14	99.9
Duluth	16	17.4	38	41.3	22	23.9	14	15.2	1	1.1	1	1.1	92	100.0
Knife River	28	59.5	14	33.3	0	-	3	7.1	0	-	0	-	42	99.9
Other	1	3.1	9	28.1	6	18.8	9	28.1	0	-	7	21.9	32	100.0
N/A	31	29.8	38	36.5	9	8.7	7	6.7	5	4.8	14	13.5	104	100.0

Table 19m: Ratings of Storage Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	43	26.4	74	45.4	23	14.1	3	1.8	12	7.4	8	4.9	163	100.0
Cornucopia	0	-	5	35.7	4	28.6	4	28.6	1	7.1	0	-	14	100.1
Duluth	11	12.0	38	41.3	18	19.6	21	22.8	2	2.2	2	2.2	92	100.1
Knife River	18	42.9	13	31.0	4	9.5	6	14.3	1	2.4	0	-	42	100.1
Other	1	3.1	5	15.6	6	18.8	11	34.4	1	3.1	8	25.6	32	100.0
N/A	27	26.0	26	25.0	15	14.4	12	11.5	9	8.7	15	14.4	104	100.0

Table 19n: Ratings of Repair Facilities By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	19	11.7	52	31.9	45	27.6	31	19.0	9	5.5	7	4.3	163	100.0
Cornucopia	0	-	1	7.1	3	21.4	8	57.1	1	7.1	1	7.1	14	99.8
Duluth	8	8.7	26	28.3	25	27.2	29	31.5	3	3.3	1	1.1	92	100.1
Knife River	4	9.5	11	26.2	15	35.7	9	21.4	3	7.1	0	-	42	99.9
Other	0	-	5	15.6	5	15.6	13	40.6	1	3.1	8	25.0	32	99.9
N/A	8	7.7	24	23.1	24	23.1	23	22.1	8	7.7	17	16.3	104	100.0

Table 19.0: Ratings of Harbor of Refuge By Home Port For Western Lake Superior Recreational Boaters

	Excellent		Good		Fair		Poor		No Opinion		NA		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Apostle Islands	85	52.1	35	21.5	21	12.9	10	6.1	3	1.8	9	5.5	163	99.9
Cornucopia	7	50.1	4	28.6	0	-	1	7.1	0	-	2	14.3	14	100.1
Duluth	17	18.5	39	42.4	13	14.1	17	18.5	1	1.1	5	5.4	92	99.8
Knife River	22	52.4	7	16.7	3	7.1	8	19.0	0	-	2	4.8	42	100.0
Other	6	18.8	8	25.0	4	2.5	6	18.8	2	6.3	6	18.8	32	100.1
N/A	29	27.9	36	34.6	12	11.5	3	2.9	2	1.9	22	21.2	104	100.0

Table 20: Shore Based Facilities Needed In Home Port As Indicated By Western Lake Superior Recreational Boaters

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		NA	
	N	%	N	%	N	%	N	%	N	%	N	%
Docking Facilities:	22	16.7	3	2.3	56	42.4	15	11.4	14	10.6	22	16.7
Docking Rental Daily:	33	27.7	2	1.7	37	31.1	11	9.2	13	10.9	23	19.3
Anchorage Facilities:	30	21.6	2	1.4	47	33.8	11	7.9	15	10.8	34	24.5
Boating Supplies:	27	18.8	8	5.6	54	37.5	9	6.3	18	12.5	28	19.4
Disposal Facilities:	18	12.4	4	2.8	55	37.9	22	15.2	10	6.9	36	24.8
Food Availability:	27	21.6	3	2.4	45	36.0	10	8.0	13	10.4	27	21.6
Overnight Accom:	26	24.1	2	1.9	38	35.2	6	5.6	12	11.1	24	22.2
Hose and Water:	17	15.9	4	3.7	42	39.3	6	5.6	13	12.2	25	23.4
Electrical Hookups:	51	34.2	4	2.7	44	29.5	10	6.7	11	7.4	29	19.5
Boat & Laundry Facilities:	34	30.4	2	1.8	27	24.1	9	8.0	11	9.9	29	25.9
Weather Information:	11	12.2	5	5.6	32	35.6	8	8.9	12	13.3	22	24.4
Haul Out:	16	15.5	3	2.9	38	36.9	10	9.7	11	10.7	25	24.3
Winter Storage:	35	25.4	5	3.6	41	29.7	10	7.2	13	9.4	34	24.6
Repair Facilities:	30	27.5	2	1.8	31	28.4	14	12.8	12	11.1	20	18.3
Harbor of Refuge:	11	19.6	0	0	22	39.3	7	12.5	2	3.6	14	25.0
Other:	138	35.0	11	2.8	87	22.1	40	10.2	29	7.4	89	22.6

VOYAGES AND RATINGS OF FACILITIES: To what extent do the boaters use their vessels for overnight voyages? Western Lake Superior boaters were asked to report the number of overnight voyages they took in 1975. The Apostle Islands has the largest number of overnight voyages with 119, while Duluth has the highest percentage (85.9%) of overnight voyages reported in 1975 for a single port. (Table 21) Boaters in Western Lake Superior average 3.7 overnight voyages for all of the ports in 1975, with the Apostle Islands averaging the highest number with 4.0, while Duluth boaters are close to this average with 3.6 overnight voyages. (Table 22)

The number of people on board during 1975 overnight voyages is reported in Table 23. An average of four people were on board for all 1975 overnight voyages. Only eight respondents indicated that seven or more people were on board for an overnight voyage.

Boaters were asked if they had any overnight voyages planned for 1976. 325 boaters from all ports combined said that they have overnight voyages planned for 1976, whereas 92 boaters reported they had no plans for overnight voyages in 1976. The distribution of responses is shown in Table 24. The average number of overnight voyages planned by the Western Lake Superior boaters in 1976 is 3.7 (Table 25), the same average frequency as in 1975. The average number of passengers anticipated to be on board for these planned overnight voyages is 3.8 (Table 26), slightly less than the 4.0 reported for 1975.

Boaters were asked to report the number of voyages taken in relation to the duration of each voyage. Table 27 shows the number of voyages taken with a duration time of one day (not overnight). The average number of one day voyages for all ports is 26.2 (Table 27). Cornucopia reported an average of 35.0 voyages, while the Apostle Islands reported 16.8 one day voyages. Table 28 shows the average number of one day and overnight voyages. The average number

of voyages for this time span is 4.7 with Cornucopia reporting the lowest number of voyages in contrast to the highest reported frequency of one-day-only voyages indicated above. Duluth boaters reported an average of 7.7 one day and overnight voyages.

The average number of two-three day voyages for all ports is 4.0 with Duluth, Knife River, and the Apostle Islands averaging slightly under 4.5 voyages from a two-three day duration, while Cornucopia averaged only 2.9 voyages for this time duration (Table 29). Voyages from four-seven days have an all port average of 2.5 as shown in Table 30. Duluth boaters report an average of 2.8 voyages from four-seven days long, while Apostle Islands boaters average 2.7 voyages and Knife River boaters take 2.4 voyages of this duration. A 2.2 voyage average is found for voyages having a duration of eight days or longer in Table 31. Duluth reported 3.1 voyages with the Apostle Islands and Knife River having averages of 2.6 and 2.0 voyages for trips of eight days or longer.

Over half (58.2%) of the boaters from the Western Lake Superior ports report that there is a need for an updated cruising directory for Western Lake Superior. (Table 32) Boaters from the port of Duluth indicate the greatest need for an updated cruising directory (76.1%), while boaters from all other ports expressed a strong favorable response with the Apostle Islands having the greatest negative reaction to a cruising directory for the Western end of the lake (20.3%).

The number of day or weekend voyages of less than 25 miles is shown in Table 33. Day or weekend voyages of 25 miles or less are the most frequently responded to trip distance category by the Western Lake Superior boaters. Although Apostle Islands boaters report the most day or weekend voyages of less than 25 miles, Duluth boaters take voyages of this distance proportionately most frequently. One of the questions that must be raised relative to the

The shore-based facilities used on a day outing, 2-3 day outings, and 3 days or longer outings are shown in Table 46. Docking (197) and Weather Information (181) facilities are the most widely used on a day outing. Docking and Weather Information facilities have an increased use from the day outing use level but still remain the most widely used facilities, with the exception of Repair facilities. Facility use increased from the day outing use level for 2-3 day and 3 day or longer outings. Outings of 3 days or longer show an increase of use in Waste Disposal, Laundry facilities, and boating supplies where as docking and weather information facilities, although there is a reported decline in their use over the 2-3 day outing, are still the most widely used shore-based facilities.

Boaters were asked to indicate the boating facilities they feel are needed in the Western Lake Superior Area and the locations where they are needed the most. Tables 47-59 show these facilities and the areas in which they are needed the most by boater's home port. The Apostle Islands boaters indicated that docking, anchorage, and repair facilities are needed most in their own area. Boaters from the Apostle Islands also indicated areas in their home waters and the Knife River to Grand Marais shore as a location for harbor of refuge, pumpout waste disposal, and boating supplies. With the exception of anchorage, electrical hookups, navigation/weather, and harbor of refuge, boaters from Cornucopia reported a need for facilities on the south shore from Duluth to and including the Apostle Islands.

Locations in Duluth and on the North Shore between Knife River and Grand Marais were designated by the Duluth boaters as needing docking facilities, anchorage facilities, boating supplies, harbor of refuge, pump out, food service, overnight accommodations, hose and water and electrical hookups. Boaters from Duluth also identified a strong need for boat and laundry, navigation/weather, winter storage, and repair facilities in the Duluth port.

voyages by round trip distance questions is, where can the boaters from Western Lake Superior ports sail for a day or weekend? The Apostle Islands and Duluth appear to offer the best range of alternatives for short distance destinations whereas boaters from other ports have few if any destinations other than anchorages in near proximity.

The number of voyages taken between 25-50 miles are the second most frequently responded to sailing distance category (Table 34). Again the Apostle Islands and Duluth boaters are most active at this distance and remain dominant through day or weekend voyages of over 100 miles (Tables 35-37). Table 38 shows the number of voyages of less than 50 miles taken during a time period longer than a weekend. The frequency of voyages of this distance is proportionately greatest for Duluth with Duluth having the dominance in frequency of longer than weekend voyages, but with Knife River boaters reporting proportionately the highest frequency of longer than weekend voyages taken over 250 miles (Tables 39-43). Tables 44 and 45 indicate the frequency of day or weekend and longer than weekend voyages by destination by home port. These same data are collectively illustrated by maps in figures 44 and 45. The places most commonly traveled on day or weekend voyages are to the Apostle Islands (1631 voyages), St. Louis Bay (698 voyages), and North Shore, Knife River to Duluth (670 voyages). The areas least traveled to on a day or weekend voyage were to the Eastern Canadian Shore area (57 voyages) and to the Eastern Michigan Shore area (59 voyages).

The most frequently traveled areas for voyages longer than weekends are, the Apostle Islands (560 voyages) and Isle Royale area (447 voyages). The areas least traveled to on voyages longer than weekends are, Eastern Canadian Shore area (39 voyages) and the Eastern Michigan Shore area (54 voyages).

Knife River boaters are in agreement with the Duluth boaters in identifying the facilities needed in Duluth and between Knife River and Grand Marais. Repair storage and harbor of refuge are also needed between Knife River and Grand Marais and winter storage is needed between Duluth and Knife River.

The need for boating facilities is summarized for all ports combined in figures 44 to 59 using the map of Lake Superior and reporting the total frequency of need. The Apostle Islands appears in need of additional boating facilities as does Duluth-Superior with the North Shore between Knife River and Grand Marais identified as an area where boating facilities are largely absent but needed.

Voyages and Ratings of facilities can be summarized as follows:

1) Western Lake Superior boaters averaged 3.7 voyages in 1975 with Apostle Islands boaters having the largest number of overnight voyages with 119, while boaters from Duluth have the highest percentage (85.9%) of overnight voyages in 1975. There was an average of 4 people on board during all 1975 overnight voyages.

2) When asked if they had any overnight voyages planned for 1976, 325 boaters from all ports combined said they have overnight voyages planned for 1976, while only 92 boaters reported they had no plans for overnight voyages in 1976. The average number of overnight voyages planned for 1976 is 3.7, the same average as in 1975, with an average of 3.8 persons to be on board.

3) The average number of one day voyages for all ports is 26.2 with Cornucopia and Duluth reporting the highest averages (35.0 and 16.8). Duluth boaters remain the highest reporting port for voyages of one day and overnight to trips of eight days or longer. Over half (58.2%) of all boaters report a need of an updated cruising directory for Western Lake Superior, while Duluth boaters indicated the greatest need for an updated cruising directory (76.1%).

4) Day or Weekend Voyages of 25 miles or less are the most frequently responded to trip distance category, while voyages of 25-50 is the most frequently responded to trip distance category, with the Apostle Islands and Duluth boaters responded the highest in both distance categories, and stay dominate through day or weekend voyages of over 100 miles.

5) Voyages of less than 50 miles taken during a time period longer than weekends is proportionately greatest for Duluth, with Duluth remaining in dominance for frequency of longer than weekend voyages, while Knife River boaters are dominant for voyages taken over 250 miles.

6) The place most traveled on day or weekend voyages is Apostle Islands (1631 voyages), with the same area being most frequently traveled area for voyages longer than weekends with 560 voyages.

7) Docking and Weather Information facilities are the most frequently mentioned shore-based facilities that are needed in Western Lake Superior for outings of one day, 2-3 days, and 3 days or more.

8) Apostle Islands boaters indicated that docking, anchorage, and repair facilities are needed in their area. Knife River and Duluth boaters report that docking, anchorage, boating supplies, harbor of refuge, pump out, food service, overnight accommodations, hose and water, and electrical hookup facilities are needed widely in Duluth and between Knife River and Grand Marais.

Table 21: Overnight Voyages Taken in 1975 by Port in Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	N	%		N	%		N	%		N	%		N	%		N	%	
Yes	119	73.0		9	64.3		79	85.9		32	76.2		17	53.1		64	61.5	
No	39	23.9		5	35.7		12	13.0		9	21.4		12	37.5		30	28.8	
N/A	5	3.1		0	-		1	1.1		1	2.4		3	9.4		10	9.6	

Table 22: Number of Trips Taken in 1975 by Port in Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	N	%		N	%		N	%		N	%		N	%		N	%	
1 Voyage	6	3.7		3	21.4		10	10.9		5	11.9		2	6.3		1	6.7	
2 Voyages	18	11.0		1	7.1		10	10.9		7	16.7		4	12.5		15	14.4	
3 Voyages	16	9.8		1	7.1		13	14.1		5	11.9		1	3.1		8	7.7	
4 Voyages	7	5.5		2	14.3		11	12.0		4	9.5		3	9.4		6	5.8	
5 Voyages	66	40.5		2	14.3		35	38.0		11	26.2		6	18.8		26	25.0	
6 Voyages	5	3.1		0	-		1	1.1		0	-		0	-		2	1.9	
N/A	43	26.4		5	35.7		12	13.0		10	23.8		16	50.0		40	35.5	
Average	X	4.0			3.1			3.6			3.3			3.3			3.8	

Overall 3.7

Table 23: Average Number of People on Board During Voyage in 1975 on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%	N	%
1 person	0	-	0	-	1	1.1	0	-	0	-	1	1.0
2 people	16	9.8	2	14.3	15	16.3	7	16.7	3	9.4	14	13.5
3 people	11	6.8	0	-	9	9.8	6	14.3	2	6.3	5	4.8
4 people	61	37.4	6	42.9	27	29.3	12	28.6	7	21.9	30	28.8
5 people	15	9.2	1	7.1	12	13.0	6	14.3	2	6.3	3	2.9
6 people	17	10.4	0	-	16	17.4	3	7.1	3	9.4	11	10.6
7 people	2	1.2	0	-	0	-	0	-	0	-	0	-
8 people	2	1.2	0	-	2	2.2	0	-	0	-	2	1.9
N/A	39	23.9	5	35.7	10	10.9	8	19.0	15	46.9	38	36.5

Table 24: Plan to Take Voyages in 1976 by Port in Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%	N	%
Yes	124	76.1	9	60.3	77	83.7	32	76.2	19	59.4	64	61.5
No	30	18.4	5	35.7	14	15.2	9	21.4	10	31.3	24	23.1
N/A	9	5.5	0	-	1	1.1	1	2.4	3	9.4	16	15.4

Table 25: Number of Voyages Planned for 1976 by Port in Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%		
1 voyage	8	4.9	1	7.1	7	7.6	6	14.3	4	12.5	8	7.7
2 voyages	17	10.4	4	28.6	16	17.4	7	16.7	4	12.5	13	12.5
3 voyages	17	10.4	0	-	10	10.9	7	16.7	0	-	12	11.5
4 voyages	13	8.0	3	21.4	11	12.0	2	4.4	2	6.3	4	3.8
5 voyages	67	41.1	1	7.1	32	34.8	11	26.2	8	25.0	24	23.1
6 voyages	4	2.5	0	-	2	2.2	0	-	1	3.1	4	3.8
N/A	37	22.7	5	35.7	14	15.2	9	21.4	13	40.6	39	37.5

Table 26: Average Number of People on Board During Voyages in 1976 by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%		
1 person	0	-	0	-	1	1.1	0	-	0	-	1	1.0
2 people	21	12.9	4	28.6	15	16.3	5	11.9	2	6.3	11	10.6
3 people	10	6.1	0	-	9	9.8	6	14.3	3	9.4	3	2.9
4 people	57	35.0	4	28.6	25	27.2	12	28.6	8	25.0	31	29.8
5 people	17	10.4	1	7.1	10	10.9	6	14.3	4	12.5	7	6.7
6 people	16	9.8	0	-	15	16.3	5	11.9	2	6.3	9	8.7
7 people	2	1.2	0	-	2	2.2	0	-	0	-	1	1.0
8 people	3	1.8	0	-	2	2.2	0	-	0	-	2	1.9
N/A	37	22.7	5	35.7	13	14.1	8	19.0	13	40.6	39	37.5

Table 27: Average Number of 1 Day Voyages By Port on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%		
1 - 3 voyages	10	6.1	1	7.1	5	5.4	5	11.9	1	3.1	3	2.9
4 - 6 voyages	8	4.9	0	-	4	4.3	1	2.4	1	3.1	3	2.9
7 - 9 voyages	0	-	0	-	0	-	1	2.4	1	3.1	1	1.0
10-12 voyages	12	7.4	1	7.1	4	4.3	2	4.8	1	3.1	3	2.9
13-15 voyages	4	2.5	0	-	4	4.3	0	-	2	6.2	3	2.9
16-18 voyages	1	.6	0	-	0	-	0	-	1	3.1	1	1.0
19-21 voyages	4	2.5	0	-	4	4.3	1	2.4	0	-	3	2.9
22-24 voyages	0	-	0	-	0	-	0	-	0	-	0	-
25 and over	12	7.4	2	14.3	21	22.8	9	21.4	3	9.4	8	7.7
N/A	111	68.1	10	71.4	50	54.3	23	54.8	22	68.8	79	76.0

Table 28: Average Number of 1 Day and Overnight Voyages By Port on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%	N	%
1 - 3 voyages	40	24.5	4	28.6	22	23.9	4	9.5	5	15.6	18	17.3
4 - 6 voyages	23	14.1	0	-	15	16.3	6	14.3	3	9.4	6	5.8
7 - 9 voyages	2	1.2	0	-	3	3.3	0	-	1	3.1	1	1.0
10-12 voyages	5	3.1	0	-	5	5.4	2	4.8	1	3.1	3	2.9
13-15 voyages	5	3.1	0	-	1	1.1	0	-	0	-	2	1.9
16-18 voyages	0	-	0	-	0	-	0	-	0	-	0	-
19 and over	2	1.2	0	-	5	5.4	0	-	0	-	0	-
N/A	86	52.8	10	71.4	40	43.5	30	71.4	22	68.8	74	71.2

Table 29: Average Number of 2 - 3 Day Voyages by Port on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	N	%	N	%	N	%	N	%	N	%	N	%
1 - 3 voyages	22	13.5	6	42.9	36	39.1	11	26.2	6	18.8	32	30.8
4 - 6 voyages	26	16.0	0	-	7	7.6	2	4.8	4	12.5	11	10.6
7 - 9 voyages	3	1.8	1	7.1	3	3.3	1	2.4	0	-	3	2.9
10-12 voyages	4	2.5	0	-	5	5.4	1	2.4	2	6.2	2	1.9
12-15 voyages	3	1.8	0	-	0	-	0	-	0	-	0	-
16-18 voyages	0	-	0	-	0	-	1	2.4	0	-	0	-
19-21 voyages	6	3.7	0	-	1	1.1	0	-	0	-	2	1.9
22-24 voyages	0	-	0	-	1	1.1	0	-	0	-	1	1.0
25-27 voyages	3	1.8	0	-	0	-	0	-	0	-	0	-
28-30 voyages	0	-	0	-	0	-	0	-	0	-	0	-
31-60 voyages	1	.6	0	-	0	-	0	-	0	-	0	-
N/A	78	47.9	7	50.0	39	42.4	26	61.9	20	62.5	52	50.0

Table 30: Average Number of 4 - 7 Day Voyages by Port on Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	N	%		N	%		N	%		N	%		N	%		N	%	
1 - 3 Voyages	39	23.9		4	28.5		31	33.7		14	33.3		4	12.5		16	15.4	
4 - 6 Voyages	5	3.1		0	-		0	-		0	-		1	3.1		2	2.0	
7 - 9 Voyages	0	-		0	-		0	-		1	2.4		0	-		0	-	
10 and Over	1	.6		0	-		2	2.2		0	-		1	3.1		1	1.0	
N/A	118	72.4		10	71.4		59	64.1		27	64.3		26	81.3		85	81.7	
Average	2.7			2.0			2.8			2.4								

Table 31: Average number of 8 days or longer Voyages by Port on Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	N	%		N	%		N	%		N	%		N	%		N	%	
1 - 3 Voyages	34	20.9		1	7.1		27	29.4		7	16.7		7	21.9		14	13.5	
4 - 6 Voyages	2	1.2		0	-		0	-		0	-		0	-		0	-	
7 - 9 Voyages	0	-		0	-		0	-		0	-		0	-		0	-	
10 and Over	1	.6		0	-		1	1.1		0	-		1	3.1		0	-	
N/A	125	76.7		13	92.9		64	69.6		35	83.3		24	75.0		89	85.6	
Average	2.6			1.0			3.1			2.0								

Table 32: Need for Updated Cruising Directory for Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	N	%		N	%		N	%		N	%		N	%		N	%	
Yes	89	58.2		8	57.1		70	76.1		25	59.5		16	50.0		52	50.0	
No	33	16.3		2	14.3		12	13.0		8	19.0		4	12.5		14	12.5	
N/A	41	25.2		4	28.6		10	10.9		9	21.4		12	37.5		38	36.5	

Table 33: No. of Day or Weekend Voyages Less Than 25 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%	f	%
1 - 5 voyages	21	12.9	0	-	13	14.1	2	4.8	4	12.5	12	11.5
6 -10 voyages	22	13.5	2	14.3	8	8.7	2	4.8	4	12.5	6	5.8
11-15 voyages	10	6.1	1	7.1	1	1.1	2	4.8	2	6.3	7	6.7
16-20 voyages	12	7.4	0	-	9	9.8	1	2.4	2	6.3	7	6.7
21-25 voyages	3	1.8	2	14.3	3	3.3	1	2.4	0	-	5	4.8
26-30 voyages	4	2.5	0	-	4	4.4	4	9.5	1	3.1	4	3.9
31-35 voyages	3	1.8	1	7.1	3	3.3	2	4.8	1	3.1	1	1.0
36-40 voyages	4	2.5	0	-	8	8.7	2	4.8	2	6.3	2	1.9
41-45 voyages	1	.6	0	-	1	1.1	0	-	0	-	0	-
46 and over	6	3.7	2	14.2	7	7.6	5	11.9	1	3.1	6	5.8
N/A	77	47.2	6	42.9	35	38.0	21	50.0	15	46.9	52	50.0
Total:	1,829		275		1,426		670		346		1,230	

Table 34: Number of Day or Weekend Voyages of 25 - 50 Miles on Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	f	%		f	%		f	%		f	%		f	%		f	%	
1 - 5 voyages	46	28.2		1	7.1		26	28.3		15	35.7		4	12.5		24	23.1	
6 - 10 voyages	22	13.5		2	14.3		11	12.0		3	7.1		6	18.8		12	11.5	
11-15 voyages	13	8.0		0	-		2	2.2		2	4.8		0	-		4	3.9	
16-20 voyages	9	5.5		1	7.1		3	3.3		1	2.4		0	-		3	2.9	
21-25 voyages	1	.6		0	-		2	2.2		2	4.8		0	-		0	-	
26-30 voyages	3	1.8		0	-		0	-		1	2.4		0	-		2	1.9	
31-35 voyages	0	-		0	-		0	-		0	-		0	-		0	-	
35 and over	3	1.8		0	-		2	2.2		2	4.8		0	-		1	1.0	
N/A	66	40.5		10	71.4		46	50.0		16	38.1		22	68.8		58	55.8	
Total	957			53			413			331			63			386		

Table 35: Number of Day or Weekend Voyages of 50 - 75 Miles on Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	f	%		f	%		f	%		f	%		f	%		f	%	
1 - 5 voyages	28	17.2		4	28.6	17	18.5	5	11.9	6	18.8	25	24.0					
6 -10 voyages	9	5.5		0	-	3	3.3	4	9.5	1	3.1	2	1.9					
11-15 voyages	1	.6		0	-	3	3.3	1	2.4	1	3.1	2	1.9					
16-20 voyages	0	-		0	-	1	1.1	1	2.4	0	-	1	1.0					
21 and over	0	-		0	-	0	-	0	-	0	-	0	-					
N/A	125	76.7		10	71.4	68	73.9	81	73.8	24	75.0	74	71.2					
Total:	169			13		118		81		36		120						

Table 36: Number of Day or Weekend Voyages of 75 - 100 Miles on Western Lake Superior

	Apostle Islands			Cornucopia			Duluth			Knife River			Other			N/A		
	f	%		f	%		f	%		f	%		f	%		f	%	
1 - 5 voyages	14	8.6		3	21.4	16	17.4	5	11.9	5	15.6	12	11.5					
6 -10 voyages	2	1.2		0	-	0	-	1	2.4	0	-	1	1.0					
11-15 voyages	1	.6		0	-	0	-	0	-	1	3.1	1	1.0					
16-20 voyages	0	-		0	-	1	1.1	0	-	0	-	0	-					
21 and over	1	.6		0	-	0	-	0	-	0	-	0	-					
N/A	145	89.0		11	78.6	75	81.5	36	85.7	26	81.3	90						
Total:	106			11		41		20		23		104						

Table 37: Number of Day or Weekend Voyages over 100 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%		
1 - 5 voyages	17	10.4	0	-	12	13.0	4	9.5	1	3.1	12	11.5
6 -10 voyages	2	1.2	0	-	1	1.1	0	-	2	6.3	1	1.1
11-15 voyages	0	-	1	7.1	0	-	0	-	0	-	1	1.1
16-20 voyages	3	1.8	0	-	0	-	0	-	0	-	3	2.9
21 and over	0	-	0	-	0	-	0	-	0	-	1	1.1
N/A	141	86.5	13	92.9	79	85.9	37	88.1	29	90.6	86	82.7
Total:	108		15		27		34		17		184	

Table 38: Number of Voyages Longer Than Weekends, Less Than 50 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%		
1 - 5 voyages	8	4.9	2	14.3	9	9.8	4	9.5	1	3.1	7	6.7
6 -10 voyages	3	1.8	0	-	2	2.2	0	-	0	-	0	-
11-15 voyages	0	-	0	-	0	-	0	-	0	-	0	-
16-20 voyages	2	1.2	0	-	0	-	0	-	0	-	1	1.1
21 and over	2	1.2	1	7.1	0	-	0	-	0	-	0	-
N/A	148	90.8	11	78.6	81	88.0	38	90.5	31	96.9	96	92.3
Total:	178		31		41		10		1		30	

Table 39: Number of Voyages Longer Than Weekends of 50 - 100 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%	f	%
1 - 5 voyages	28	17.2	1	7.1	15	16.3	5	11.9	4	12.5	6	5.8
6 -10 voyages	2	1.2	0	-	1	1.1	0	-	0	-	0	-
11-15 voyages	1	.6	0	-	0	-	0	-	0	-	0	-
16-20 voyages	0	-	0	-	0	-	0	-	0	-	1	1.1
21 and over	1	.6	0	-	0	-	0	-	0	-	0	-
N/A	131	80.4	13	92.9	76	82.6	37	88.1	28	87.5	97	93.3
Total:	107		1		38		15		7		32	

Table 40: Number of Voyages Longer Than Weekends of 100 - 150 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%	f	%
1 - 5 voyages	21	12.9	1	7.1	15	16.3	9	21.4	1	3.1	11	10.6
6 -10 voyages	0	-	0	-	0	-	0	-	0	-	1	1.0
11 and over	0	-	0	-	0	-	0	-	0	-	0	-
N/A	142	87.1	13	92.9	77	83.7	33	78.6	31	96.9	92	88.5
Total:	30		1		29		17		1		25	

Table 41: Number of Voyages Longer Than Weekends of 150 - 200 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%	f	%
1 - 5 voyages	10	6.1	4	28.6	15	16.3	7	16.7	1	3.1	5	4.8
6 -10 voyages	0	-	0	-	0	-	0	-	0	-	1	1.1
11 and over	1	.6	0	-	0	-	0	-	0	-	0	-
N/A	152	93.3	10	71.4	77	83.7	35	83.5	31	96.9	98	94.2
Total:	26		7		25		13		1		16	

Table 42: Number of Voyages Longer Than Weekends of 200 - 250 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%	f	%
1 - 5 voyages	11	6.8	0	-	11	12.0	2	4.8	2	6.3	2	1.9
6 -10 voyages	2	1.2	0	-	0	-	0	-	0	--	1	1.1
11 and over	0	-	0	-	0	-	0	-	0	-	0	-
N/A	150	92.0	14	100.0	81	88.0	40	95.2	30	93.7	101	97.1
Total:	26		0		14		2		2		12	

Table 43: Number of Voyages Longer Than. Weekends Over 250 Miles on Western Lake Superior

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	
	f	%	f	%	f	%	f	%	f	%		
1 - 5 voyages	35	21.5	3	21.4	19	19.6	13	51.0	3	9.4	20	19.2
6 -10 voyages	0	-	0	-	0	-	0	-	0	-	0	-
11 and over	0	-	0	-	0	-	0	-	0	-	0	-
N/A	128	78.5	11	78.6	74	80.4	29	69.0	29	90.6	84	80.8
Total:	49		6		31		20		4		30	

Table 44: Number of Day or Weekend Voyages by Western Lake Superior Boaters by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f		f		f		f		f		f		
Lower St. Louis River	53		0		155		10		12		16		228
St. Louis Bay	29		0		565		80		34		17		698
North Shore, Knife River to Duluth	52		0		286		283		49		31		670
North Shore, Grand Marais to Knife River	38		4		39		95		-21		12		197
South Shore, Port Wing to Duluth	22		4		114		82		11		13		233
South Shore, Bayfield to Duluth	139		45		102		52		16		24		354
Apostle Islands Area	1,368		49		62		71		61		60		1,631
Isle Royale Area	181		57		19		15		72		12		344
Western Michigan Shore Area	49		51		4		4		0		4		108
Eastern Michigan Shore Area	5		57		0		0		0		1		59
Western Canadian Shore Area	106		55		12		0		12		4		185
Eastern Canadian Shore Area	1		55		0		0		1		2		57

Figure 44

NUMBER OF DAY OR WEEKEND VOYAGES BY WESTERN LAKE SUPERIOR BOATERS

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Ashtic Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

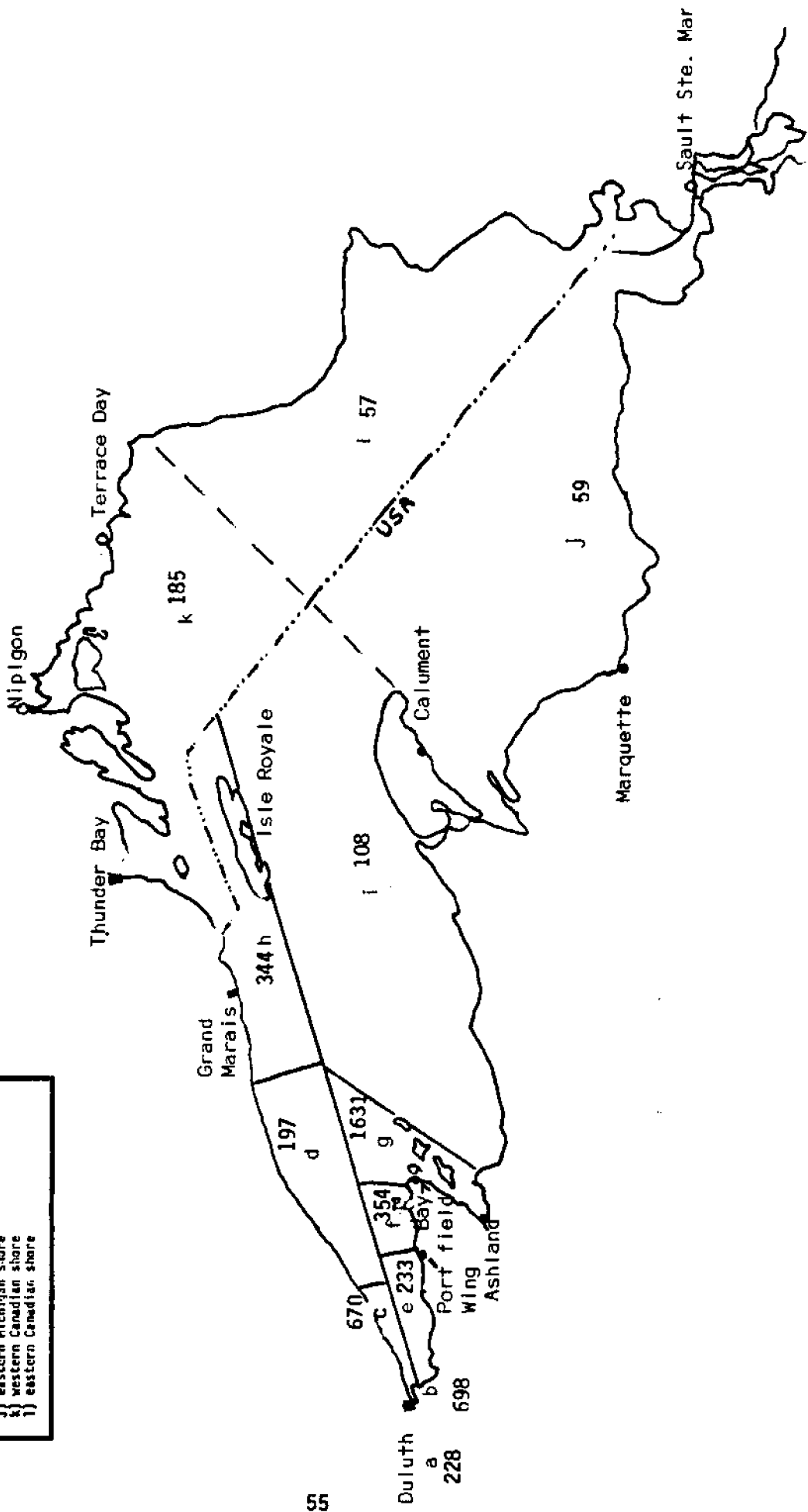


Table 45: Number of Voyages Longer Than Weekends by Western Lake Superior Roaters by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Louis River	3	53	6	0	3	1	65						
St. Louis Bay	6	53	9	0	3	1	71						
North Shore, Knife River to Duluth	18	53	124	10	3	4	208						
North Shore, Grand Marais to Knife River	42	57	74	21	3	3	196						
South Shore, Port Wing to Duluth	18	56	141	12	3	8	230						
South Shore, Bayfield to Port Wing	125	53	74	36	9	5	297						
Apostle Islands Area	158	59	190	116	18	25	560						
Isle Royale Area	183	96	126	27	15	24	447						
Western Michigan Shore Area	117	6	27	64	3	10	217						
Eastern Michigan Shore Area	24	0	21	6	3	5	54						
Western Canadian Shore Area	57	3	24	0	6	4	90						
Eastern Canadian Shore Area	12	0	15	9	3	2	59						

**NUMBER OF VOYAGES LONGER THAN WEEKENDS
BY WESTERN LAKE SUPERIOR BOATERS**

Figure 45

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

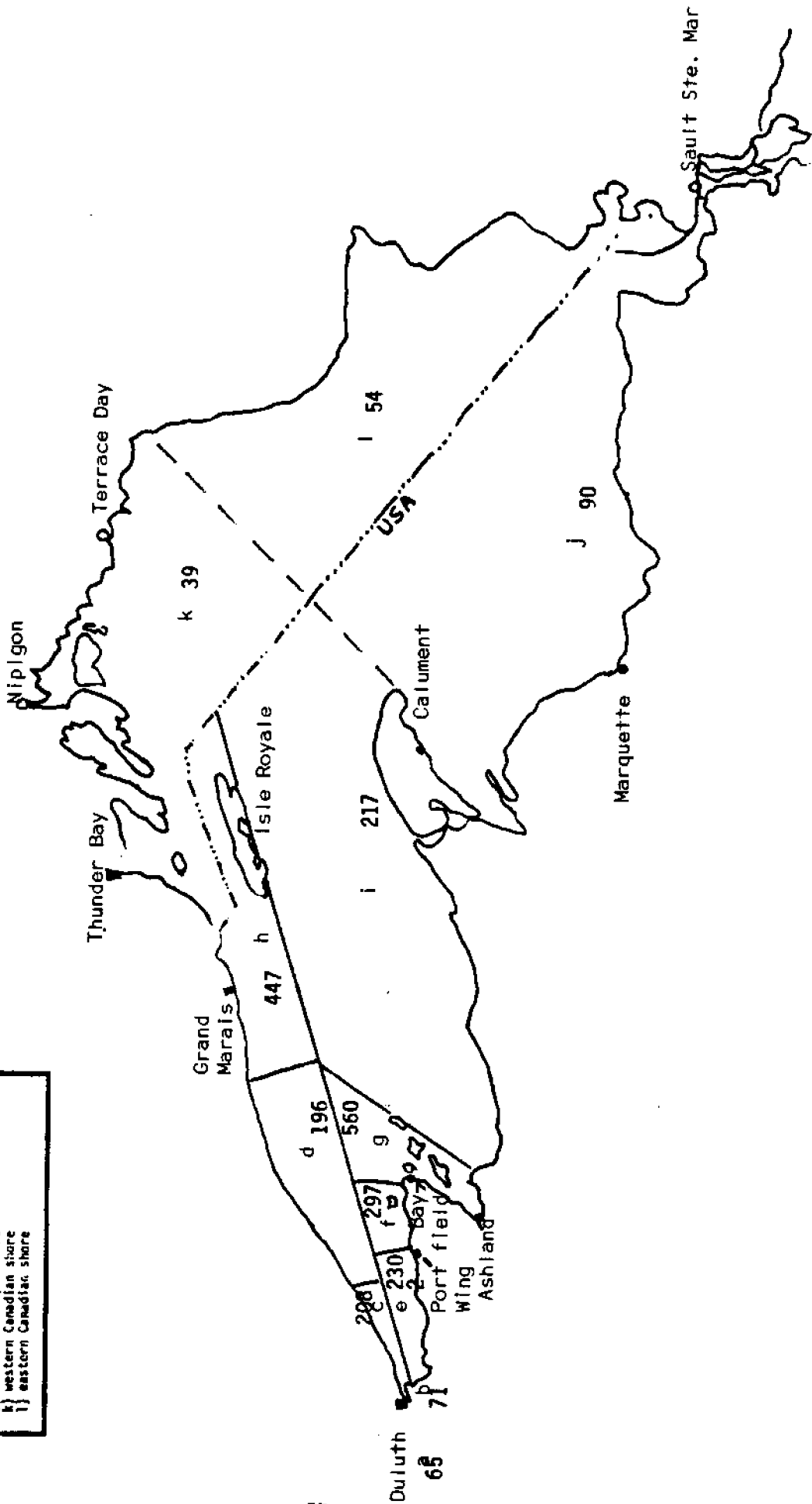


Table 46. Shore Based Facilities Used By Western Lake Superior Boaters

	Day Outing	2-3 Day Outing	3 Day or Longer Outing
	f	f	f
Docking Facilities	197	235	210
Anchorage Facilities	93	132	117
Boating Supplies	125	165	189
Waste Disposal	55	121	173
Food Availability	112	160	183
Overnight Accomodations	28	64	71
Hose and Water	69	138	160
Electrical Hookups	61	135	127
Laundry Facilities	14	39	91
Weather Information	181	204	195
Repair Facilities	29	28	48
Harbor of Refuge	82	128	140
Other	8	12	14

Table 47: Needed Locations for Docking Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Louis River	3	0	27	4	4	10	38						
St. Louis Bay	5	1	4	0	4	10							
North Shore, Knife River to Duluth	2	0	8	5	1	6	16						
North Shore, Grand Marais to Knife River	12	3	23	11	6	14	55						
South Shore, Port Wing to Duluth	4	1	9	3	1	4	18						
South Shore, Port Wing to Bayfield	3	0	1	0	0	2	4						
Apostle Islands Area	48	2	1	0	4	15	51						
Isle Royale Area	8	0	3	5	3	2	19						
Western Michigan Shore Area	2	0	0	0	0	3	2						
Eastern Michigan Shore Area	0	0	0	0	0	0	0						
Western Canadian Shore Area	0	0	1	0	0	0	1						
Eastern Canadian Shore Area	1	0	0	0	0	0	1						
N/A	85	7	15	14	13	44							

**NEEDED LOCATIONS FOR DOCKING FACILITIES IN
WESTERN LAKE SUPERIOR**

Figure 47

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore

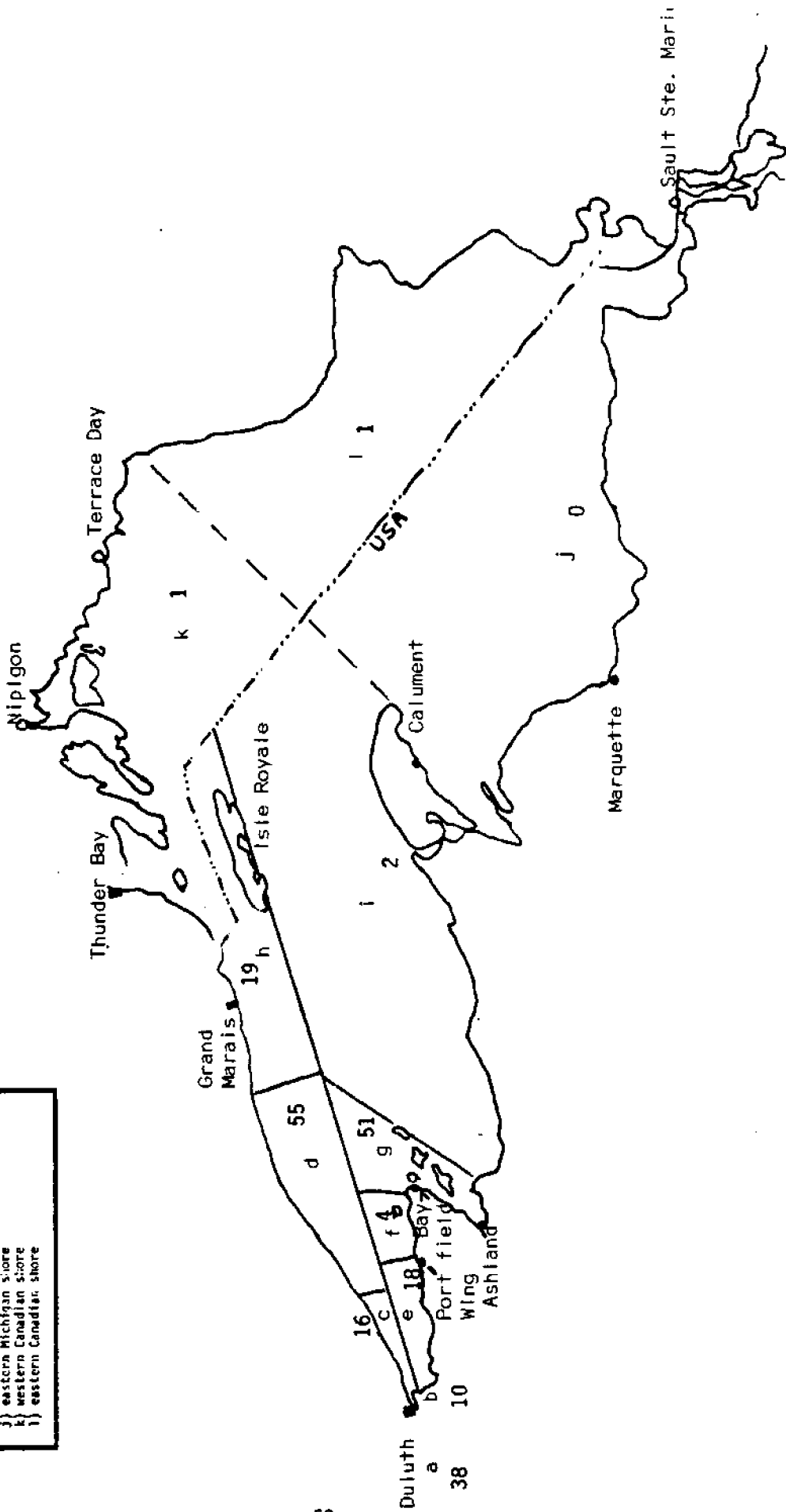


Figure 48

NEEDED LOCATIONS FOR ANCHORAGE FACILITIES IN
WESTERN LAKE SUPERIOR

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

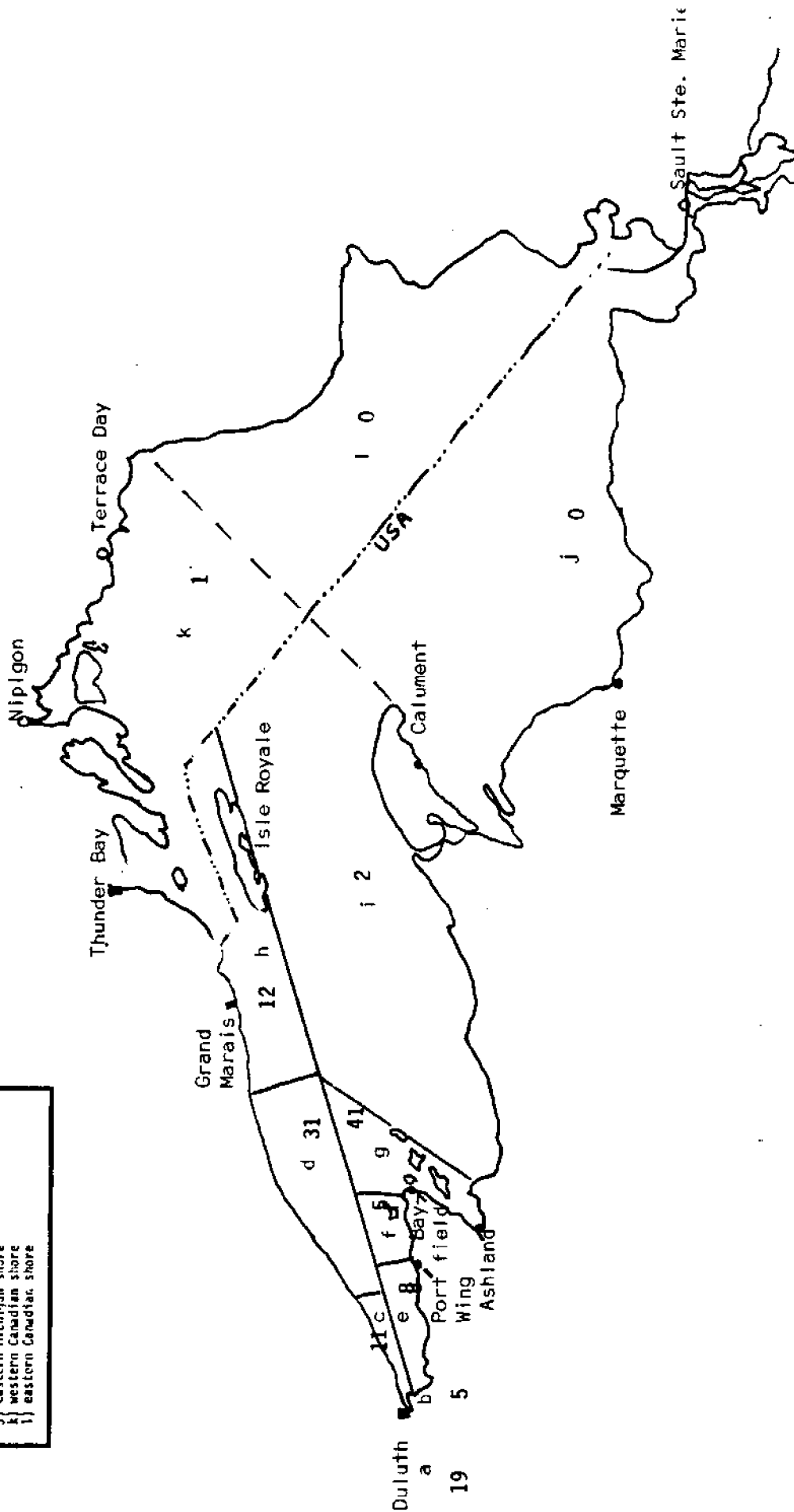


Table 49: Needed Locations for Boating Supplies in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		Total
	f		f		f		f		f		
Lower St. Louis River	2		0		14		2		3		21
St. Louis Bay	1		1		6		0		1		9
North Shore, Knife River to Duluth	1		0		4		3		1		8
North Shore, Grand Marais to Knife River	6		1		18		9		6		40
South Shore, Port Wing to Duluth	6		2		8		2		2		20
South Shore, Port Wing to Bayfield	1		0		0		0		0		1
Apostle Islands Area	17		1		2		0		2		22
Isle Royale Area	11		1		5		5		4		26
Western Michigan Shore Area	1		0		0		0		0		1
Eastern Michigan Shore Area	0		0		0		0		0		0
Western Canadian Shore Area	1		0		2		0		0		3
Eastern Canadian Shore Area	0		0		0		0		0		0

NEEDED LOCATIONS FOR BOATING SUPPLIES IN WESTERN LAKE SUPERIOR

Figure 49

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore

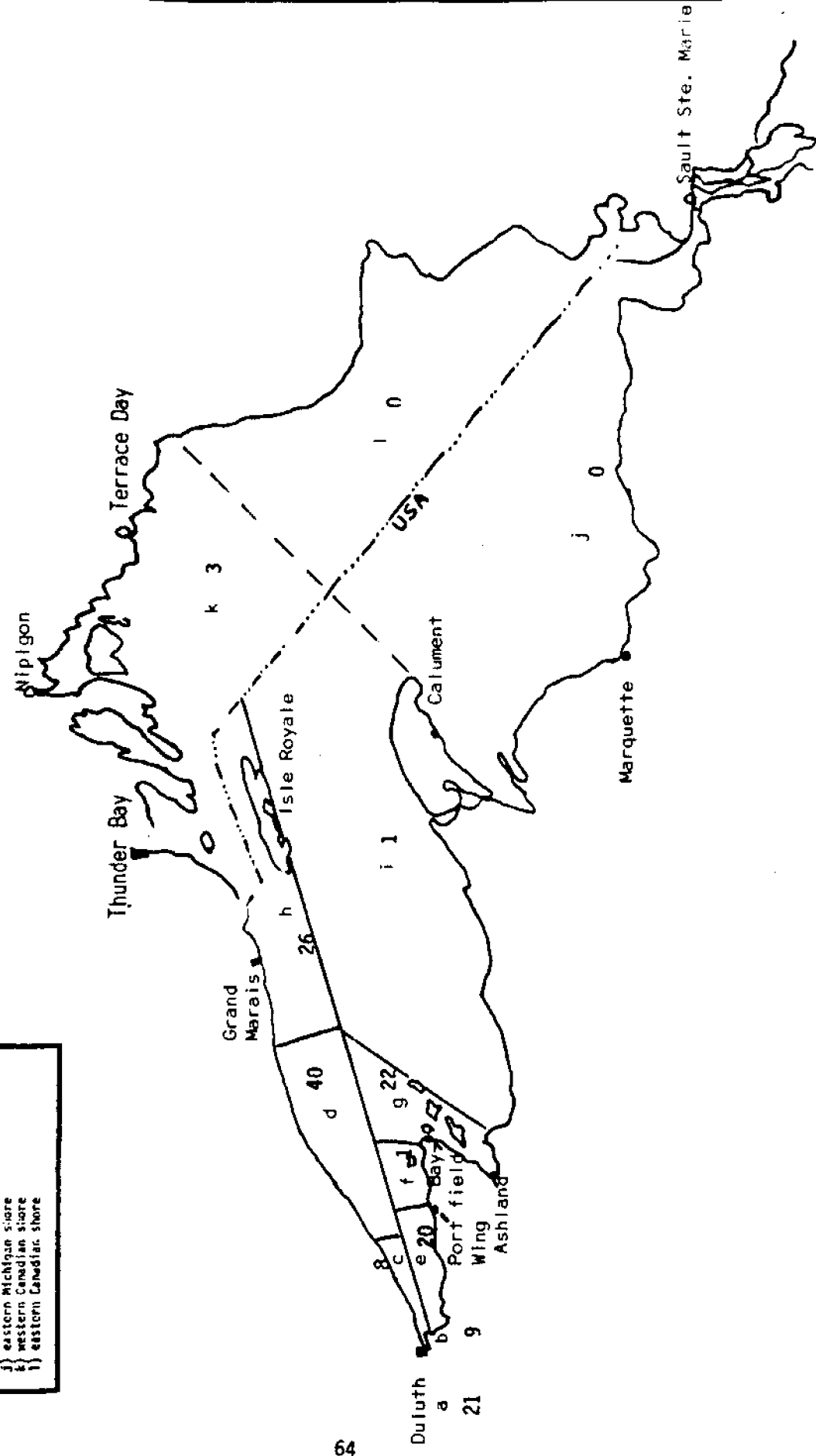


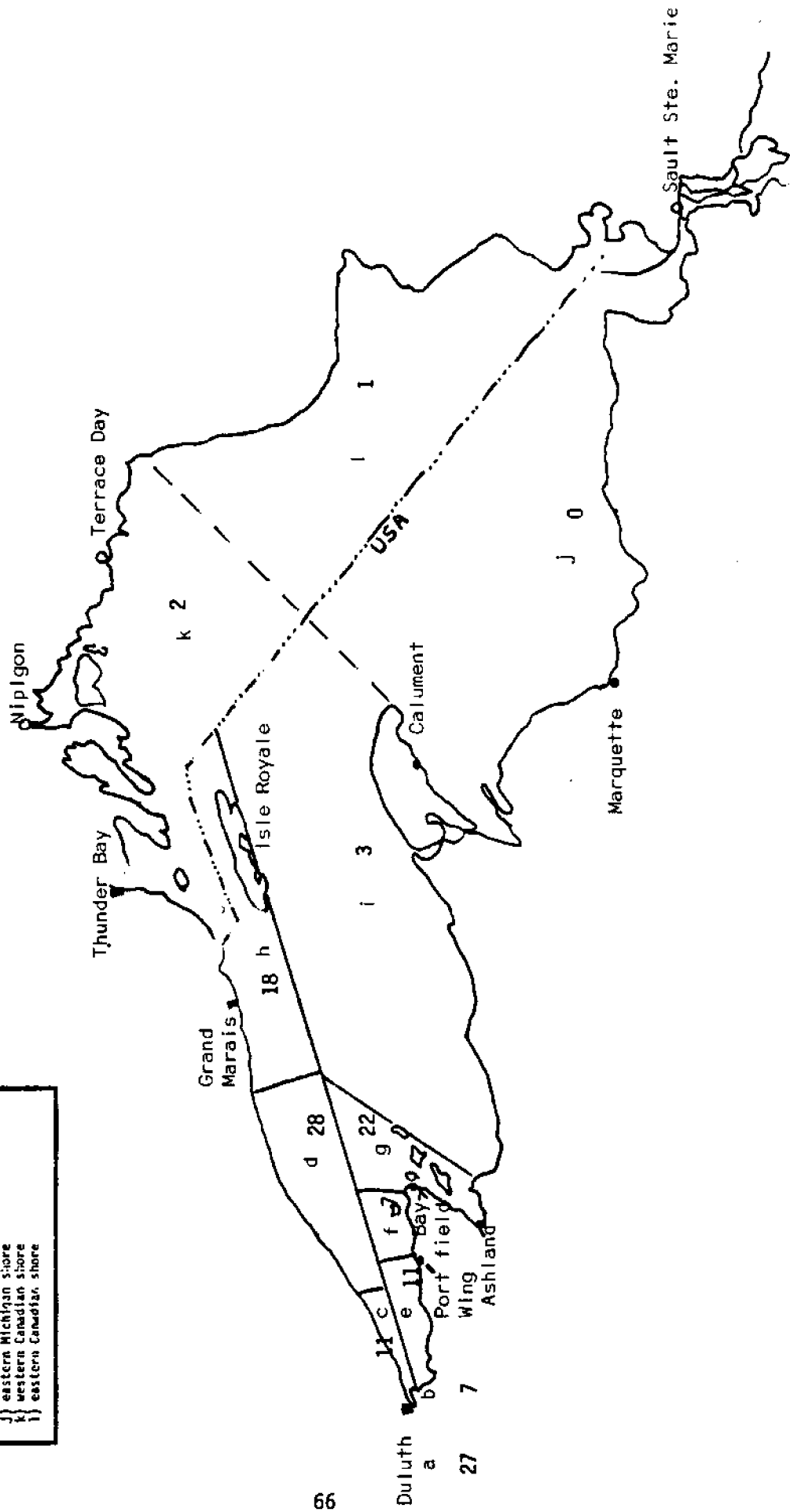
Table 50: Needed Locations for Waste Disposal Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f		f		f		f		f		f		
Lower St. Louis River	0		0		22		3		2		7		27
St. Louis Bay	1		1		4		0		1		2		7
North Shore, Knife River to Duluth	1		0		7		2		1		2		11
North Shore, Grand Marais to Knife River	6		0		10		8		4		9		28
South Shore, Port Wing to Duluth	2		1		6		1		1		2		11
South Shore, Port Wing to Bayfield	4		2		0		0		1		1		7
Apostle Islands Area	14		3		3		1		1		6		22
Isle Royale Area	10		0		3		2		3		3		18
Western Michigan Shore Area	2		0		1		0		0		0		3
Eastern Michigan Shore Area	0		0		0		0		0		0		0
Western Canadian Shore Area	1		0		1		0		0		0		2
Eastern Canadian Shore Area	0		0		0		0		0		0		0

NEEDED LOCATIONS FOR WASTE DISPOSAL FACILITIES IN WESTERN LAKE SUPERIOR

Figure 50

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore



**NEEDED LOCATIONS FOR FOOD AVAILABILITY IN
WESTERN LAKE SUPERIOR**

Figure 51

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

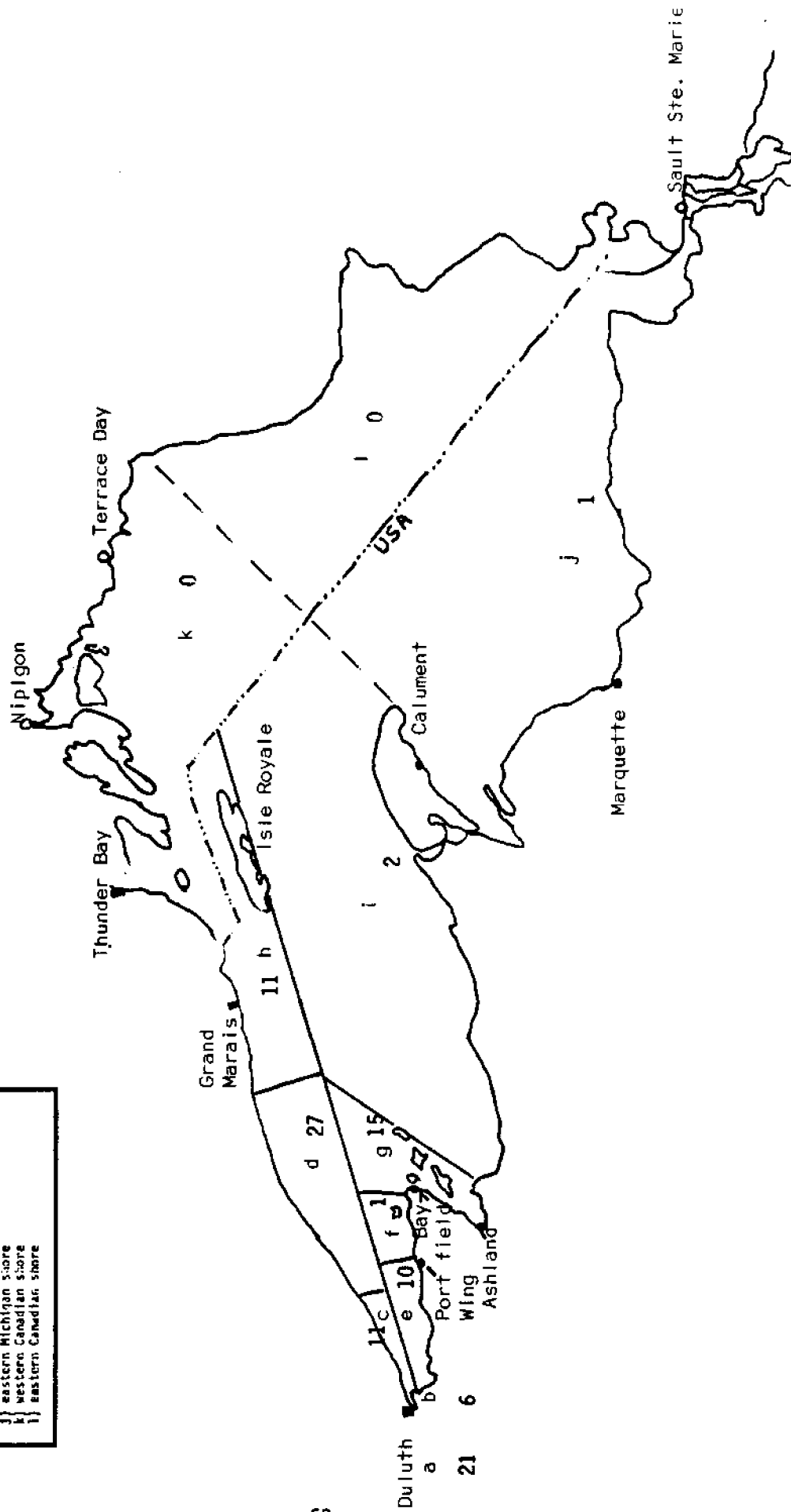


Table 52: Needed Locations for Overnight Accommodations On Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Louis River	1	0	12	1	3	5	17						
St. Louis Bay	0	1	4	0	0	1	5						
North Shore, Knife River to Duluth	1	0	4	1	0	3	6						
North Shore, Grand Marais to Knife River	3	0	11	5	2	4	21						
South Shore, Port Wing to Duluth	1	2	4	1	1	2	9						
South Shore, Port Wing to Bayfield	2	0	0	0	0	1	2						
Apostle Islands Area	14	1	2	0	1	6	18						
Isle Royale Area	3	0	2	1	2	2	8						
Western Michigan Shore Area	1	0	0	0	0	0	1						
Eastern Michigan Shore Area	0	0	0	0	0	0	0						
Western Canadian Shore Area	0	0	0	0	0	0	0						
Eastern Canadian Shore Area	0	0	0	0	0	0	0						

Figure 52

NEEDED LOCATIONS FOR OVERNIGHT ACCOMODATIONS IN
WESTERN LAKE SUPERIOR

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore

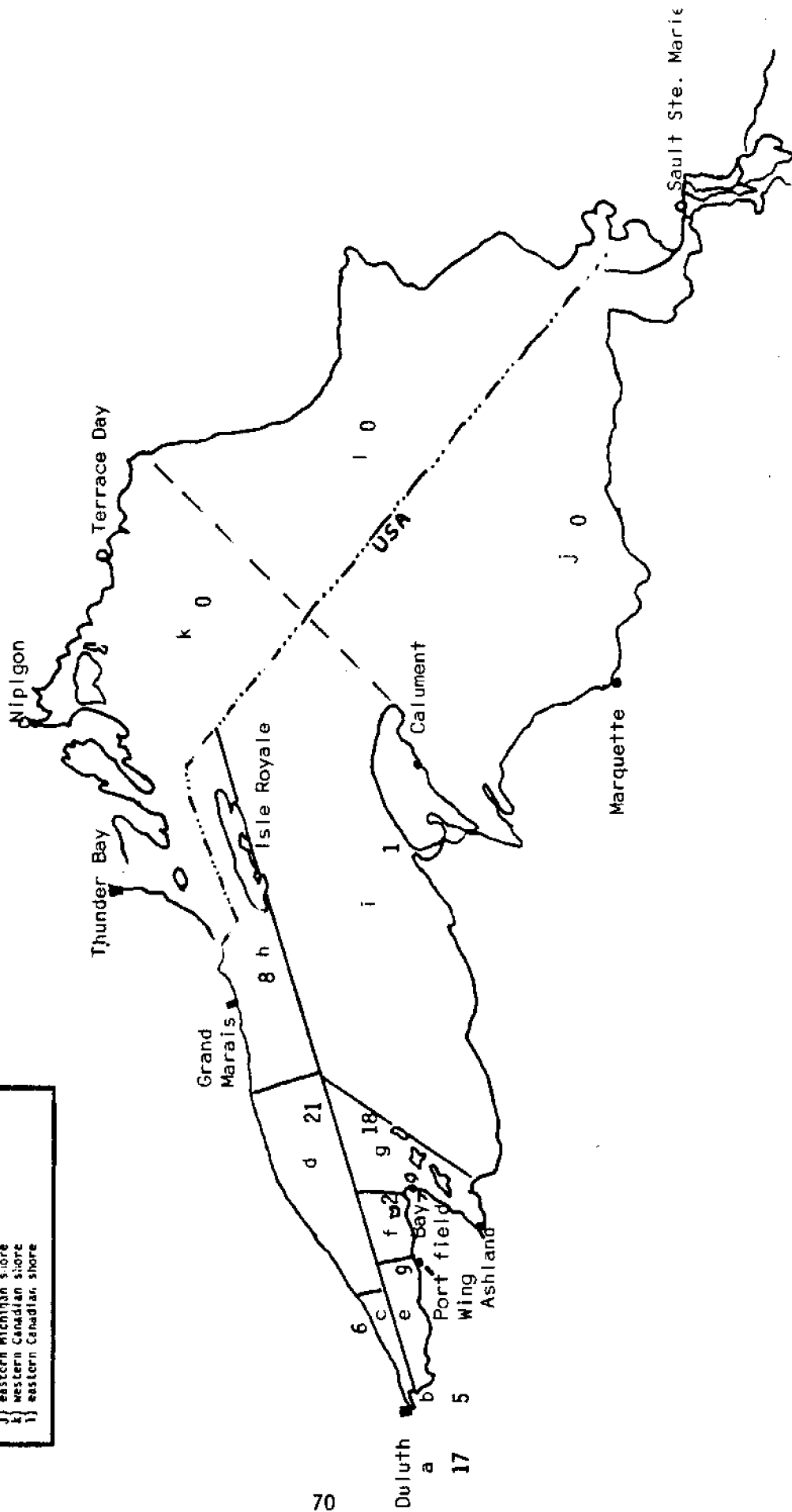


Table 53: Needed Locations for Hose and Water Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Louis River	1	0	19	2	1	1	5	18					
St. Louis Bay	1	1	4	1	0	2	7						
North Shore, Knife River to Duluth	1	0	6	1	0	2	8						
North Shore, Grand Marais to Knife River	3	1	12	5	3	6	24						
South Shore, Port Wing to Duluth	2	2	4	1	2	3	11						
South Shore, Port Wing to Bayfield	2	0	0	0	0	1	2						
Apostle Islands Area	11	0	1	0	1	7	13						
Isle Royale Area	4	0	3	2	3	2	12						
Western Michigan Shore Area	2	0	0	0	0	0	2						
Eastern Michigan Shore Area	0	0	0	0	0	0	0						
Western Canadian Shore Area	1	0	0	0	0	0	1						
Eastern Canadian Shore Area	0	0	0	0	0	0	0						

Figure 53

NEEDED LOCATIONS FOR HOSE AND WATER FACILITIES IN
WESTERN LAKE SUPERIOR

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

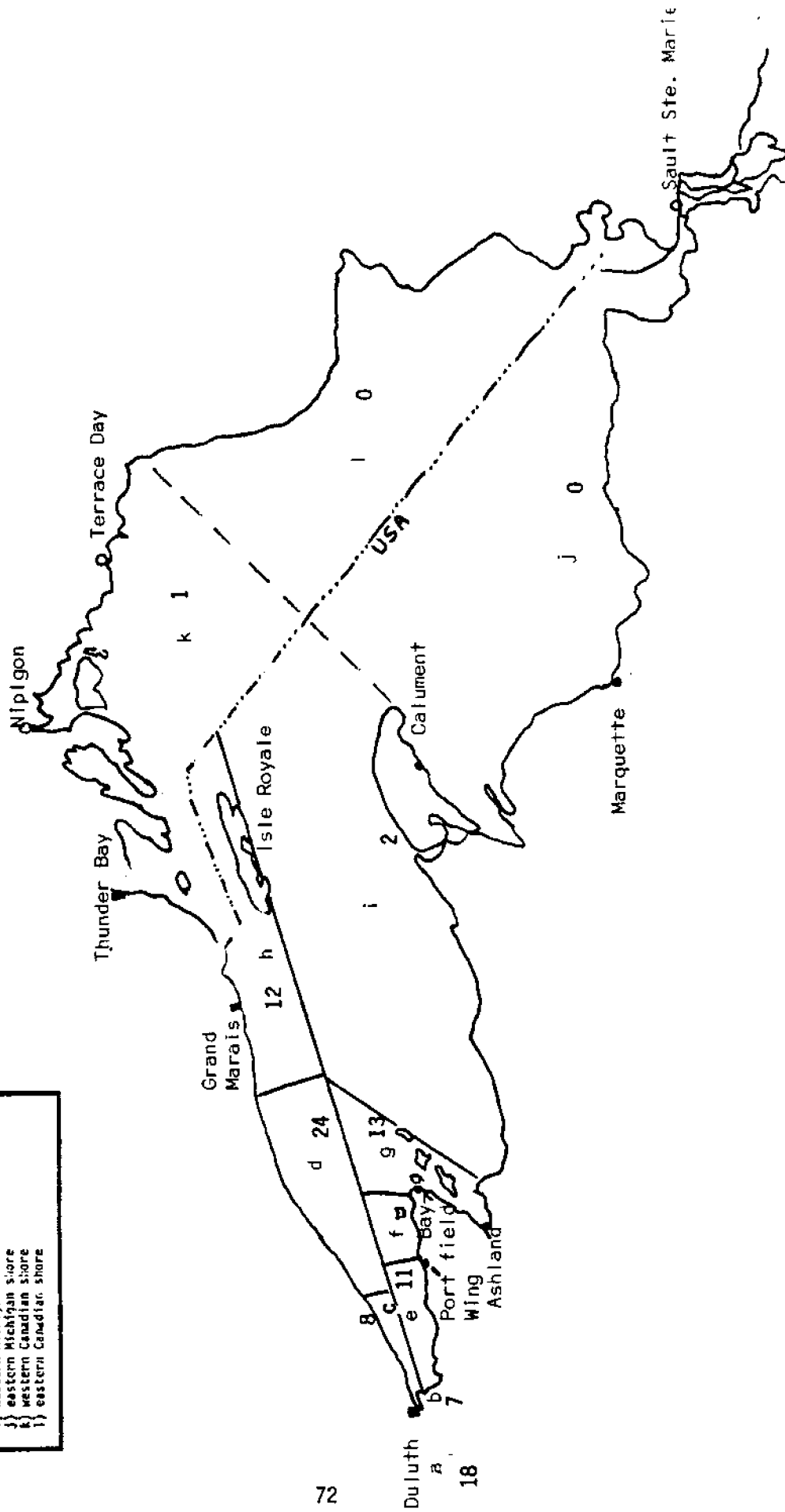


Figure 54

NEEDED LOCATIONS FOR ELECTRICAL HOOKUPS IN WESTERN LAKE SUPERIOR

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Dayfield to Port Wing
g)	Appelle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

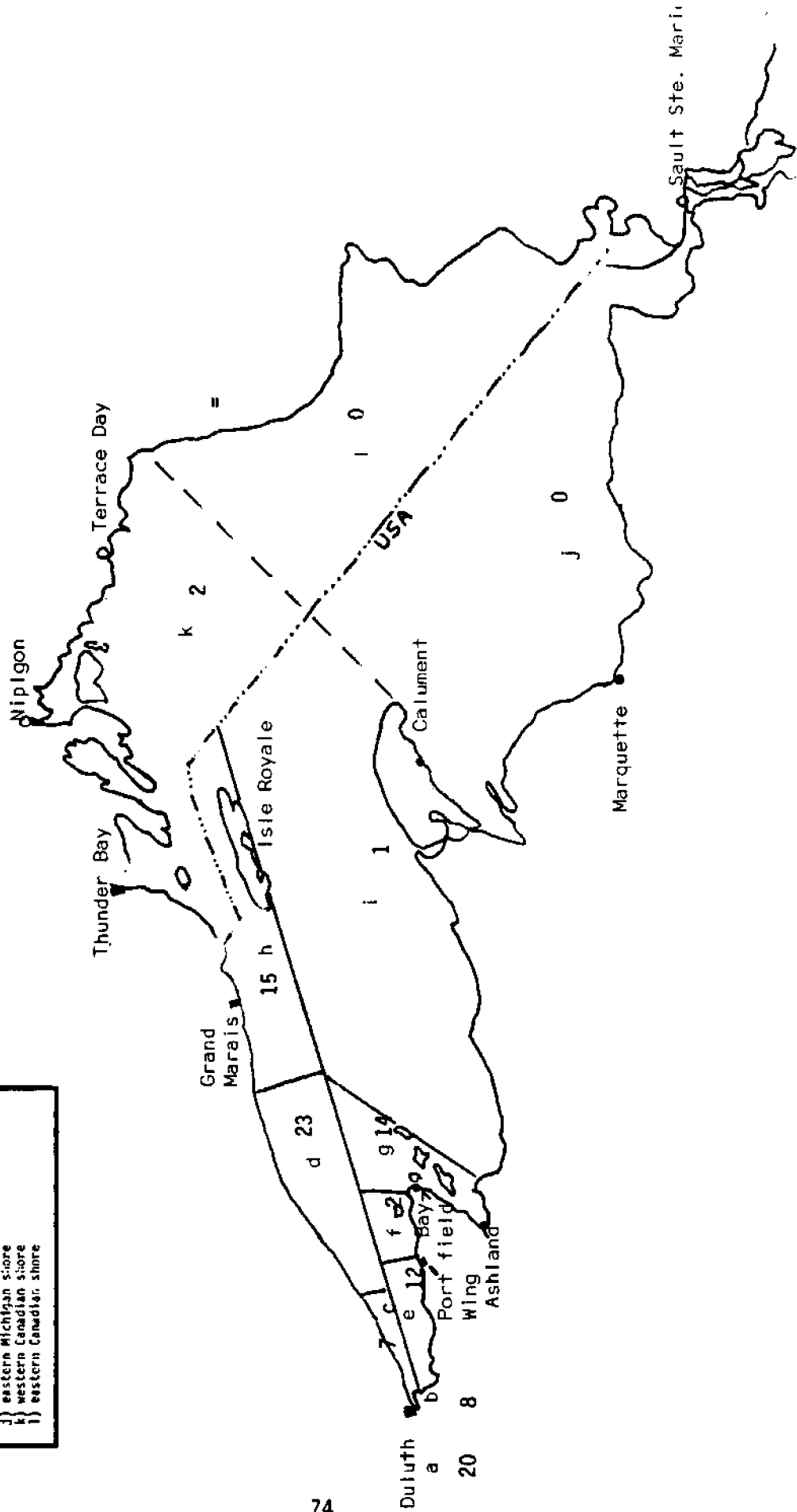


Table 55: Needed Locations for Boat Laundry Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f		f		f		f		f		f		
Lower St. Louis River	2		0		11		2		2		1		17
St. Louis Bay	0		1		4		1		0		0		6
North Shore, Knife River to Duluth	1		0		4		0		1		1		6
North Shore, Grand Marais to Knife River	3		0		4		3		2		3		12
South Shore, Port Wing to Duluth	1		0		3		0		0		2		4
South Shore, Port Wing to Bayfield	1		0		0		0		0		0		1
Apostle Islands Area	14		1		1		0		0		8		16
Isle Royale Area	4		0		3		0		3		2		10
Eastern Michigan Shore Area	2		0		0		0		0		0		2
Western Michigan Shore Area	0		0		0		0		0		0		0
Eastern Canadian Shore Area	0		0		0		0		0		0		0
Western Canadian Shore Area	0		0		0		0		0		0		0

Figure 55

NEEDED LOCATIONS FOR BOAT LAUNDRY FACILITIES IN
WESTERN LAKE SUPERIOR

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore

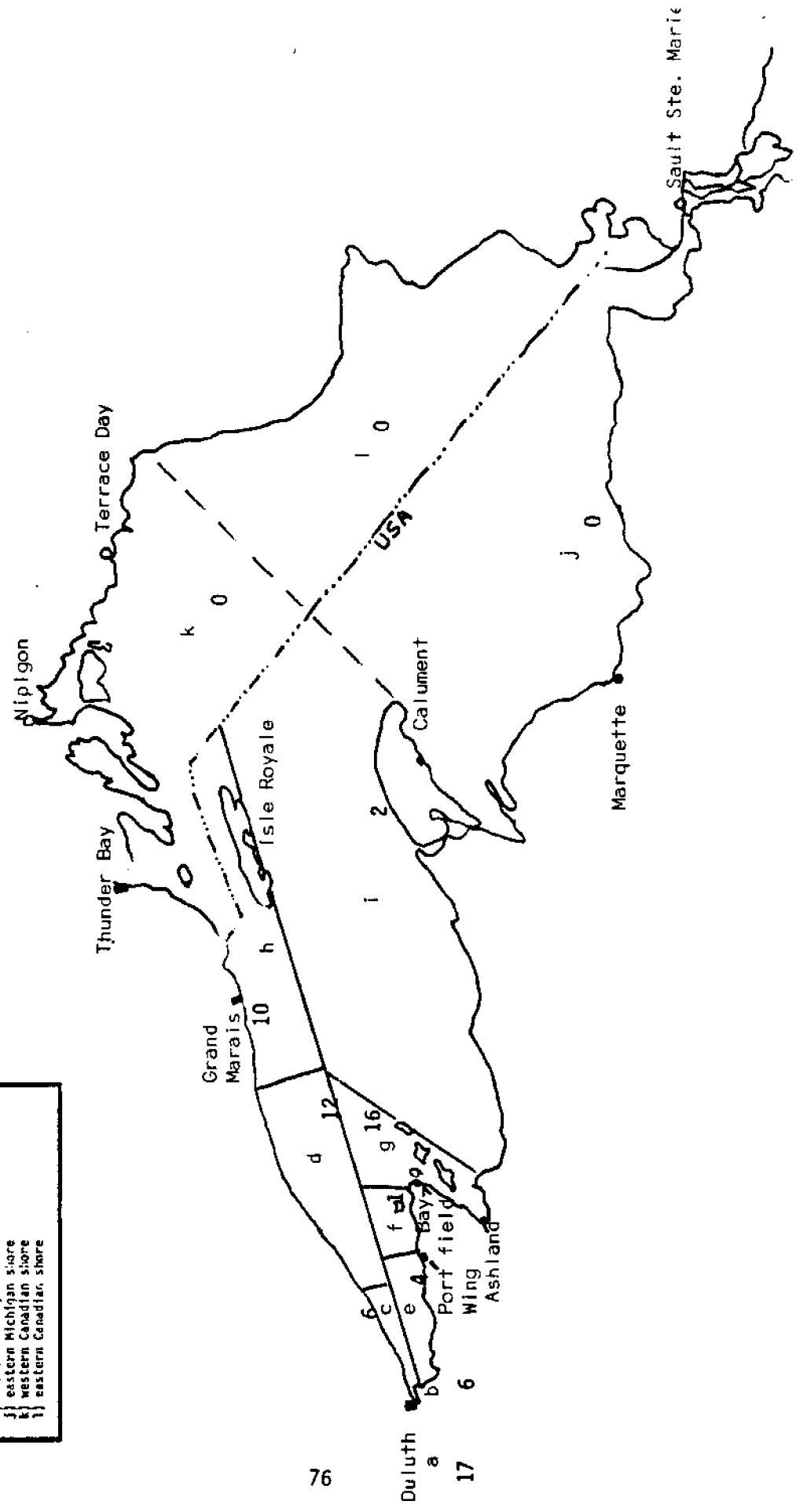


Table 56: Needed Locations for Navigation/Weather Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f	f	
Lower St. Louis River	1	1	10	7	1	20							
St. Louis Bay	0	1	2	0	0	3							
North Shore, Knife River to Duluth	1	0	1	0	0	2							
North Shore, Grand Marais to Knife River	4	0	6	8	1	19							
South Shore, Port Wing to Duluth	1	0	4	1	1	7							
South Shore, Port Wing to Bayfield	1	1	1	0	0	3							
Apostle Islands Area	15	1	4	0	0	20							
Isle Royale Area	6	0	4	1	5	16							
Eastern Michigan Shore Area	2	0	0	0	0	2							
Western Michigan Shore Area	0	0	0	1	0	1							
Eastern Canadian Shore Area	1	0	1	0	0	2							
Western Canadian Shore Area	0	0	0	0	0	0							

Figure 56

NEEDED LOCATIONS FOR NAVIGATION/WEATHER INFORMATION IN WESTERN LAKE SUPERIOR

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Bayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

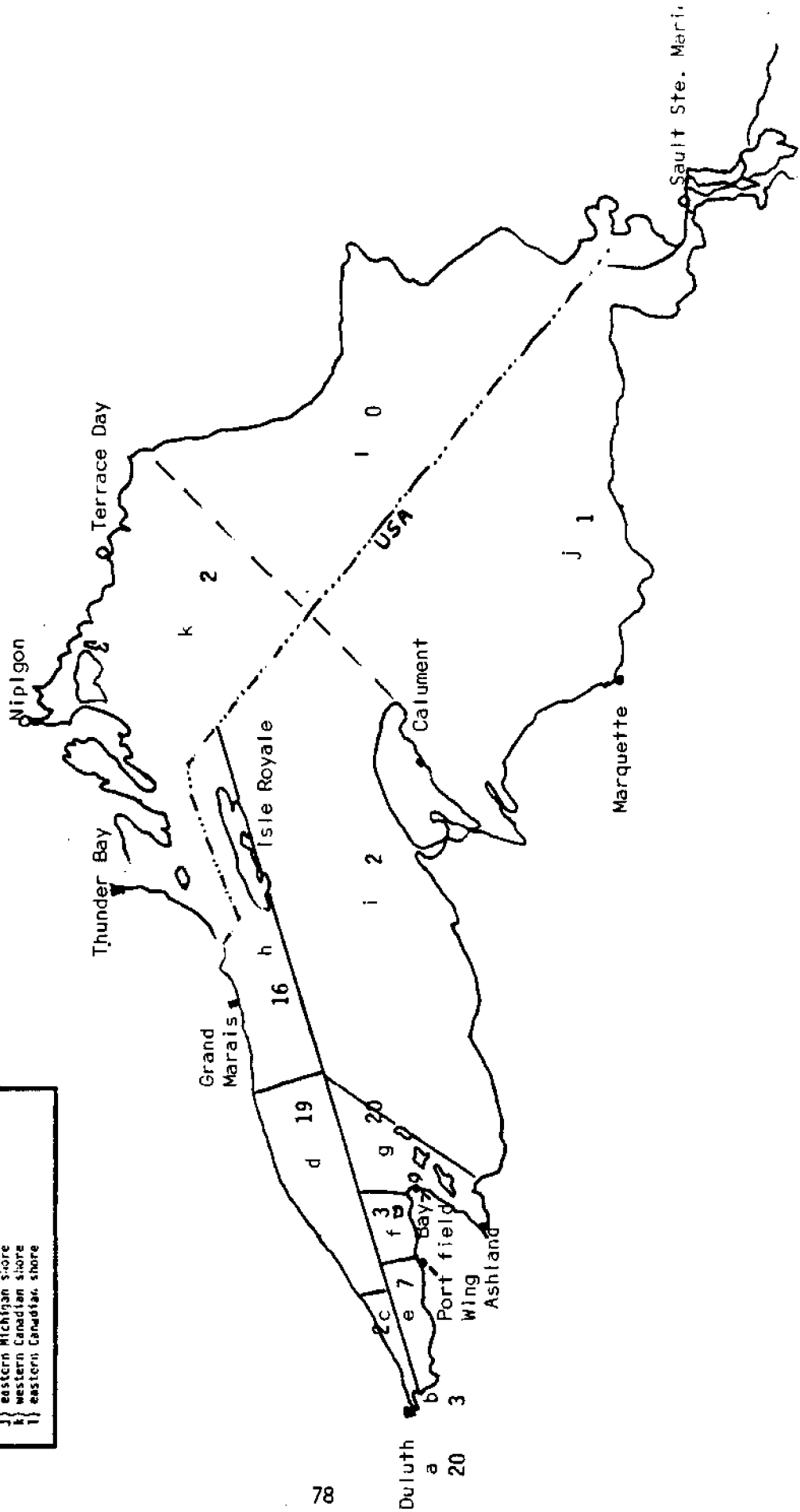


Table 57: Needed Locations for Winter Storage in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Loufs River	1	0	22	1	2	5	26						
St. Louis Bay	1	1	3	1	0	4	6						
North Shore, Knife River to Duluth	2	0	6	3	0	2	11						
North Shore, Grand Marais to Knife River	3	0	0	0	1	1	4						
South Shore, Port Wing to Duluth	1	1	1	0	0	1	3						
South Shore, Port Wing to Bayfield	3	1	0	0	0	1	4						
Apostle Islands Area	11	2	0	0	1	5	14						
Isle Royale Area	2	0	4	0	4	3	10						
Eastern Michigan Shore Area	1	0	0	0	0	1	1						
Western Michigan Shore Area	0	0	0	0	0	1	0						
Eastern Canadian Shore Area	0	0	0	0	0	0	0						
Western Canadian Shore Area	0	0	0	0	0	0	0						

Figure 57

NEEDED LOCATIONS FOR WINTER STORAGE IN WESTERN LAKE SUPERIOR

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Knife River
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) western Canadian shore
 - l) eastern Canadian shore

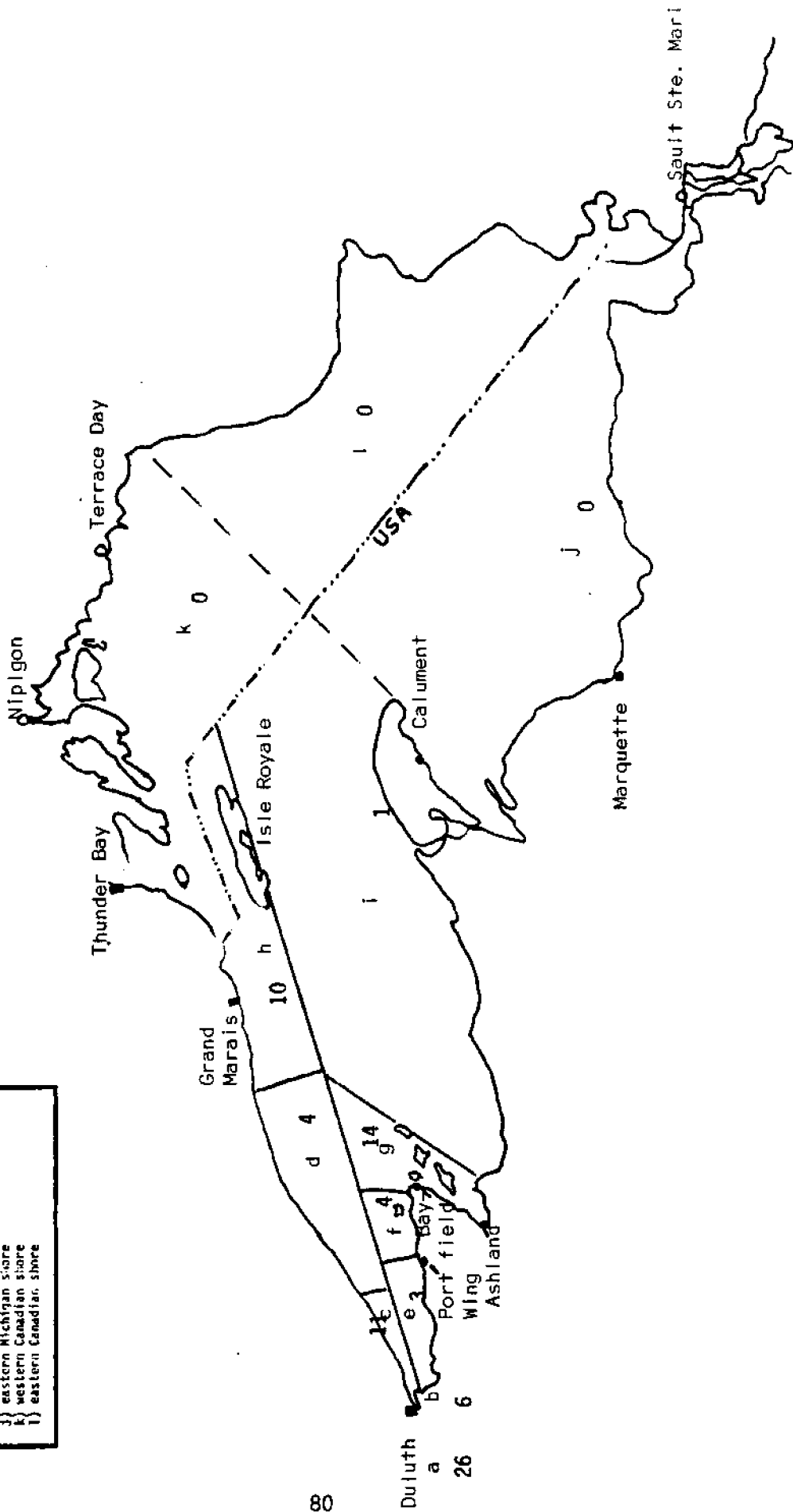


Table 58: Needed Locations for Repair Storage Facilities in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A	Total
	f	f	f	f	f	f	f	f	f			
Lower St. Louis River	1	0	16	1	2	3	20					
St. Louis Bay	0	1	2	1	0	1	4					
North Shore, Knife River to Duluth	2	0	6	2	0	2	10					
North Shore, Grand Marais to Knife River	3	0	0	4	1	4	8					
South Shore, Port Wing to Duluth	1	0	1	0	0	1	2					
South Shore, Port Wing to Bayfield	0	0	0	0	0	0	0					
Apostle Islands Area	20	3	1	0	2	10	26					
Isle Royale Area	1	0	3	0	4	3	8					
Eastern Michigan Shore Area	1	0	0	0	0	1	1					
Western Michigan Shore Area	0	0	0	0	0	1	0					
Eastern Canadian Shore Area	0	0	0	0	0	0	0					
Western Canadian Shore Area	0	0	0	0	0	0	0					

Figure 58

NEEDED LOCATIONS FOR REPAIR STORAGE FACILITIES IN WESTERN LAKE SUPERIOR

Key	
a)	Lower St. Louis River
b)	St. Louis Bay
c)	North Shore, Knife River to Duluth
d)	North Shore, Grand Marais to Knife River
e)	South Shore, Port Wing to Duluth
f)	South Shore, Dayfield to Port Wing
g)	Apostle Islands area
h)	Isle Royale area
i)	western Michigan shore
j)	eastern Michigan shore
k)	western Canadian shore
l)	eastern Canadian shore

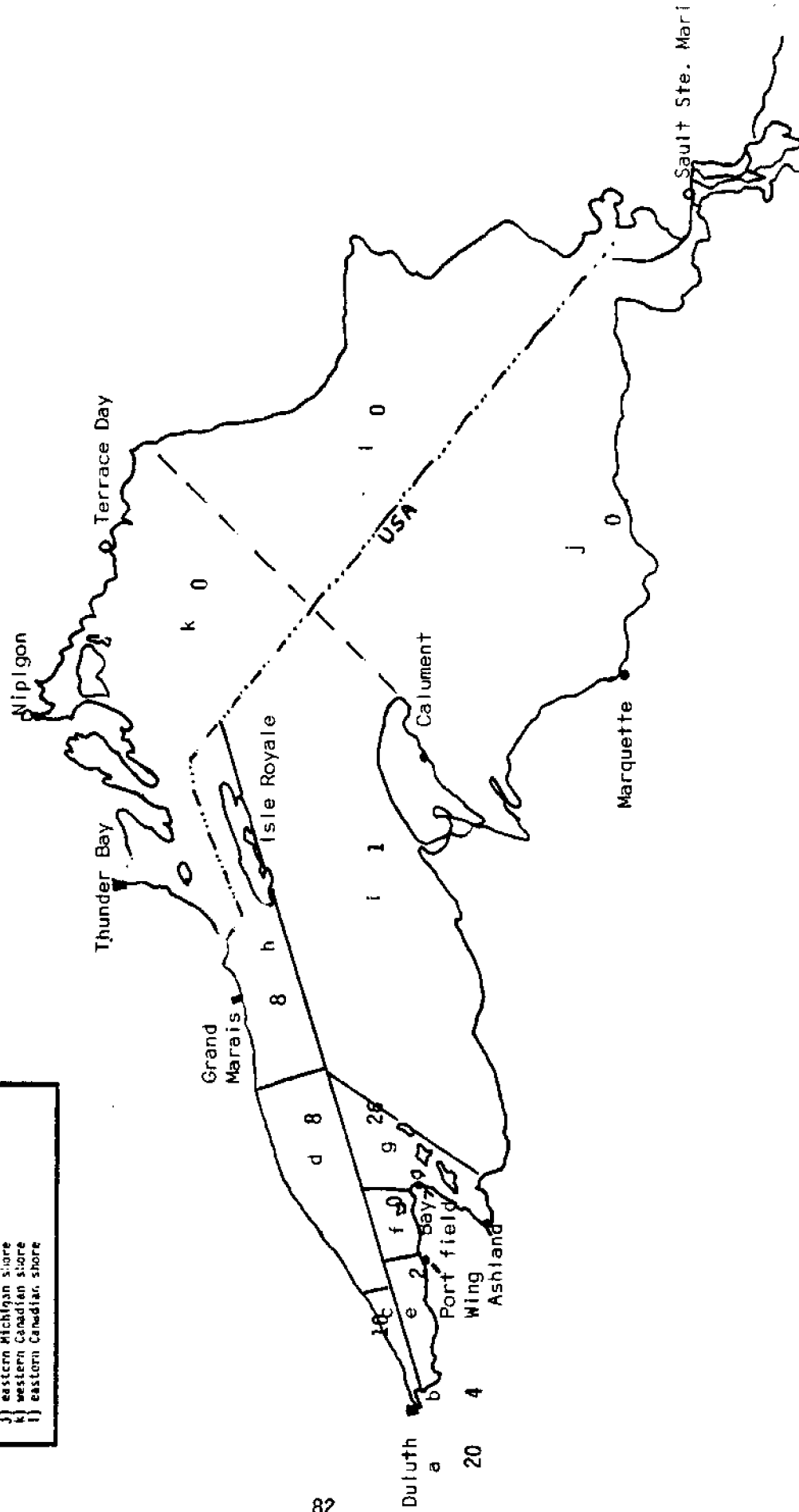


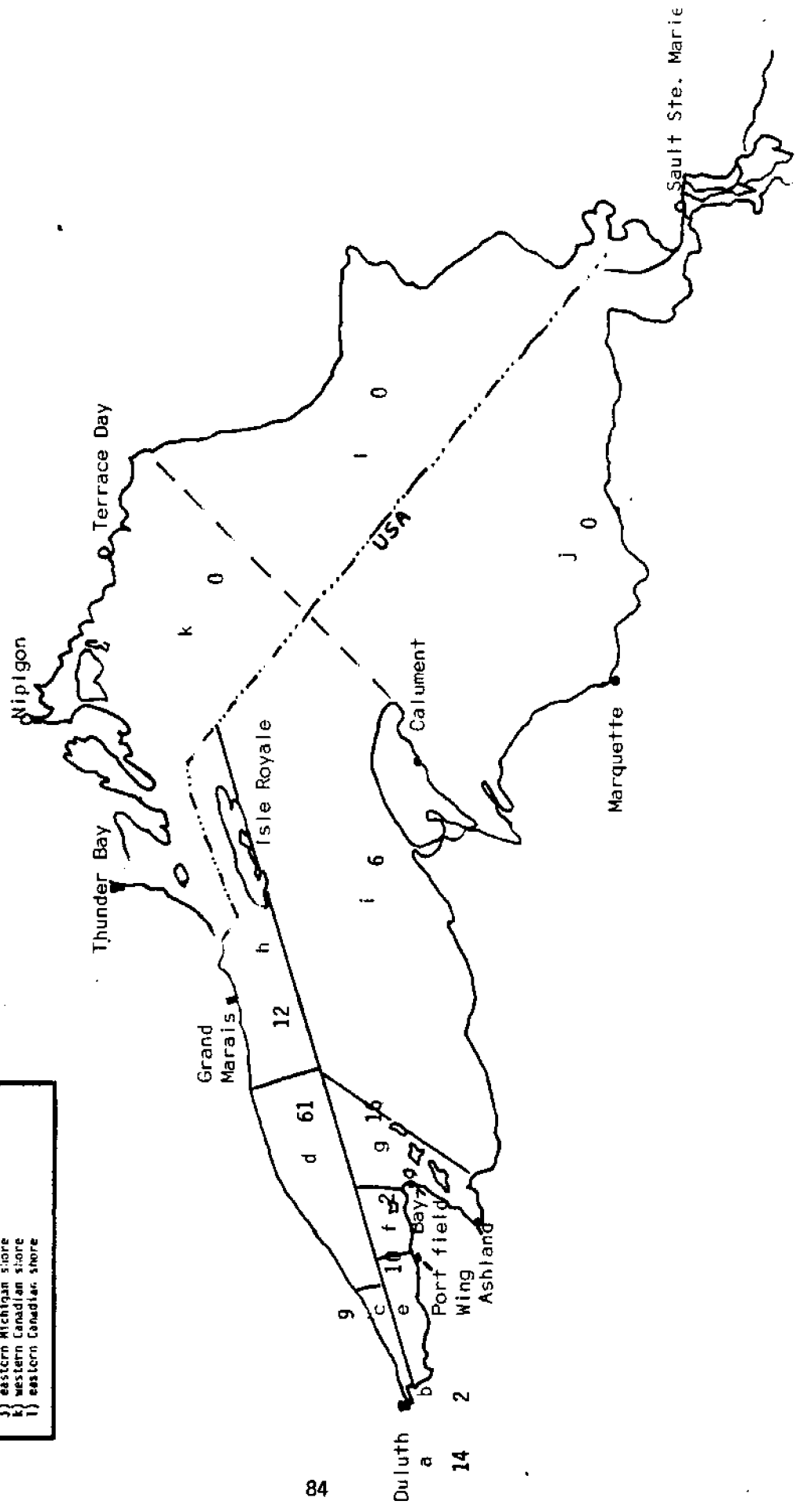
Table 59: Needed Locations for Harbor of Refuge in Western Lake Superior by Port

	Apostle Islands		Cornucopia		Duluth		Knife River		Other		N/A		Total
	f	f	f	f	f	f	f	f	f	f	f		
Lower St. Louis River	1	1	8	1	1	3	14						
St. Louis Bay	0	1	1	0	2	1	2						
North Shore, Knife River to Duluth	1	0	5	2	1	4	9						
North Shore, Grand Marais to Knife River	14	2	27	16	2	18	61						
South Shore, Port Wing to Duluth	0	0	7	0	3	2	10						
South Shore, Port Wing to Bayfield	1	1	0	0	0	0	2						
Apostle Islands Area	13	1	1	0	1	7	16						
Isle Royale Area	4	0	4	2	2	3	12						
Eastern Michigan Shore Area	5	0	1	0	0	0	6						
Western Michigan Shore Area	0	0	0	0	0	0	0						
Eastern Canadian Shore Area	0	0	0	0	0	0	0						
Western Canadian Shore Area	0	0	0	0	0	0	0						

Figure 59

NEEDED LOCATIONS FOR HARBOR OF REFUGE IN WESTERN LAKE SUPERIOR

- Key**
- a) Lower St. Louis River
 - b) St. Louis Bay
 - c) North Shore, Knife River to Duluth
 - d) North Shore, Grand Marais to Knife River
 - e) South Shore, Port Wing to Duluth
 - f) South Shore, Bayfield to Port Wing
 - g) Apostle Islands area
 - h) Isle Royale area
 - i) western Michigan shore
 - j) eastern Michigan shore
 - k) eastern Canadian shore



RECREATIONAL FACILITIES, RATINGS AND CONCLUSIONS: Table 60 shows the boater's preference for recreational facilities that they would like to see developed in Western Lake Superior. The boaters made their responses in categories of Great, Moderate, Little, and No Need. Picnic and beach areas (21.5%) and restaurants (18.8%) are of great need in Western Lake Superior. Picnic and beach areas and restaurants are also reported as strong moderate needs (22.6% and 22.1%) with hiking trails (23.5%), isolated camping (19.2%), and organized camping (18.1%) also given high moderate need support. According to the Western Lake Superior boaters, hotel facilities have little or no need for development (34.4%) and swimming (33.1%) and scenic out look areas (30.9%) are not high priority development objectives.

Boaters making voyages of 2 days or longer were asked if they carry full provisions on board for the entire trip. 60.9% of the boaters reported that they do carry full provisions, while 22.6% reported that they do not carry full provisions (Table 61). Table 62 shows the provisions that are purchased during the voyage if they are not carried on board. Gas-oil (8.1%), Ice (8.1%), and Food (6.3%) are most specifically purchased, while items such as Maps, Mix, Pumpout skewers, and snacks are not purchased at all. (Table 63 shows the average daily expenditures during a voyage of 2 days or longer).

Boaters rated their overall boating experience on Western Lake Superior as high quality (57.3%). Only 25.3% reported their boating experiences as of moderate quality and 7.4% as low quality.

CONCLUSION:

Concern has been expressed at the Federal level over the growing imbalance between demand for recreation experiences and the ability of our nation to supply them. Lake Superior's ability to provide recreational boating opportunities is largely untapped. Because of such factors as the quality of

the boating experience on Western Lake Superior, boating growth has been conservatively estimated at 10 - 15% per year.

Planners from several agencies are studying the possibility of marina expansion on Western Lake Superior. With 39% of the recreational boaters located in the Duluth/Superior metropolitan area, recreational boaters rating facilities the lowest in the home port of Duluth, the study suggests that development of boating facilities in Western Lake Superior is most needed in the Duluth/Superior area. Boaters who cruise the area also indicated that a wide range of facilities are needed in Duluth and on the North Shore between Knife River and Grand Marais, which suggests another location for marina development.

This survey has shown who boats, how, when, and for what purpose, and the type of facilities the boater feels is needed on the western part of the Lake. This information should be looked at as the first step in the planning and development process.

Table 60: Recreational Areas Respondents Would Like Developed in Wisconsin

	Great Need		Moderate Need		Little Need		No Need		N/A			
	N	%	N	%	N	%	N	%	N	%	N	%
Swimming Areas	64	14.3	71	15.9	61	13.6	87	19.5	6	1.3	158	35.3
Camping - Organized	51	11.4	81	18.1	37	8.3	88	19.7	5	1.1	185	41.4
Camping-Isolated	65	14.5	86	19.2	51	11.4	70	15.7	5	1.1	170	38.0
Restaurants	84	18.8	99	22.1	43	9.6	59	13.2	4	.9	158	35.3
Hotels	26	5.8	59	13.2	69	15.4	85	19.0	4	.9	204	45.6
Scenic Lookouts	26	5.8	73	16.3	51	11.4	87	19.5	4	.9	206	46.1
Hiking Trails	48	10.7	105	23.5	45	10.1	58	13.0	3	.7	188	42.1
Picnic & Beach Area	96	21.5	101	22.6	31	6.9	51	11.4	2	.4	166	37.1
Other	29	6.5	10	2.2	1	.2	32	7.2	2	.4	373	83.4

Table 61: Percentage of Respondents That Carry Provisions on Trips 2 Days or Longer

	<u>N</u>	<u>%</u>
Yes, full provisions are carried on board for the entire trip:	272	60.9
No, full provisions are not carried on board for the entire trip:	101	22.6
N/A	74	16.6

Table 62: Provisions Purchased During Voyages

	<u>N</u>	<u>%</u>
Gas - Oil	36	8.1
Ice	36	8.1
Food	28	6.3
Milk	11	2.5
Meat	10	2.2
Beer	4	.9
Fruit	4	.9
Beverages	3	.7
Eggs	1	.2
Maps	0	0
Mix	0	0
Pump Out	0	0
Skewers	0	0
Snacks	0	0
Other	7	1.6
N/A	297	66.4

Table 63: Boater Expenditures on Western Lake Superior when making a voyage of two days or longer

<u>Services & Provisions</u>	<u>Average Daily Expenditures</u>
Lodging	\$ 2.37
Restaurants	\$14.67
Auto Related	\$ 5.44
Amusement	\$ 4.56
Food Stores	\$13.49
Clothing Related	\$ 2.16
Sporting Goods	\$ 2.11
Drugs and Gifts	\$ 3.00
Taverns	\$ 4.51
Liquor	\$ 5.15
Other	\$ 2.83

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WESTERN LAKE SUPERIOR BOATING SURVEY

NO _____

The information requested in this questionnaire should be supplied by the boat owner. All responses will be confidential. Where questions either do not apply, or you do not wish to reply write "NA". Thank you.

1. Year of birth _____
2. Sex _____
3. Years of school completed
(Include vocational, business school, college,
etc., H.S. diploma = 12 years) _____
4. Marital status
single____, married____
separated____, widowed____
divorced____
5. Occupation? _____
6. Approximate annual family income?
Under \$5,000 _____
\$5,000 to 10,000 _____
10,000 to 15,000 _____
15,000 to 20,000 _____
20,000 to 25,000 _____
25,000 to 30,000 _____
30,000 to 35,000 _____
35,000 to 40,000 _____
40,000 and over _____
7. Number of people presently in your
household (yourself included)? _____ people
8. Permanent residence? (city, town, village, etc.) _____
9. How many years have you been boating on Lake
Superior? _____ years
10. Are you a Yacht or Boat Club Member?
_____ Yes _____ No
11. If yes, Name of Club(s) _____

12. Type and length of boats operated
- | | | |
|-------|----------------------------|---------------|
| _____ | sail | _____ (L.O.A) |
| _____ | sail with outboard | _____ |
| _____ | auxiliary engine | _____ |
| _____ | sail with inboard | _____ |
| _____ | auxiliary engine | _____ |
| _____ | Motor inboard | _____ |
| _____ | Motor outboard | _____ |
| _____ | motor inboard/
outboard | _____ |
| _____ | do not own boat | NA |

NOTE: If you have indicated ownership of more than one boat, please report on your larger boat in the following questions. Owners of small boats which are usually transported on top of an automobile or towed on a trailer by an automobile, please complete question number 33.

13. (a) How long have you owned your boat? _____
 (b) Is your boat owned in partnership? yes _____, no _____
14. (a) Does your boat contain sleeping accommodations? yes _____, no _____
 (b) For how many? _____ places
 (c) Does your boat have a head (toilet)? yes _____, no _____
15. When during the boating season do you use your boat and with what frequency? (Each month is divided into quarterly periods. Please check the use level during each quarter using the categories "high" "medium" "low" and "not used".

	May				June				July				August				September				October				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
High																									
Medium																									
Low																									
Not Used																									

16. On an average, how many days do you use your boat on Lake Superior in a season? _____
 What is the usual duration of a regular boat use? _____ hours
 Did you use your boat on a body of water other than Lake Superior? yes _____, no _____
 If so, specify _____

17. Please list the most common purposes of your boat use (eg, fishing, entertainment, cruising, family outing, racing, etc.) in order of frequency.

18. Where is your boat regularly docked or moored? _____ (port)
 _____ (marina)

19. How would you rate the following shore based facilities in your docking port?

	Excellent	Good	Fair	Poor	No Opinion
a. Docking facilities (season)					
b. Docking rental (daily)					
c. Anchorage facilities					
d. Boating supplies (gas, oil, equipment, etc.)					
e. Pump-out waste disposal facilities					
f. Availability of food and refreshments					
g. Overnight accommodations					
h. Hose and water					
i. Electrical Hookups					
j. Boat laundry facilities					
k. Navigation/weather information					
l. Haul Out					
m. Winter storage					
n. Repair facilities					
o. Harbor of refuge					
p. Other (specify)					

20. What shore based facilities do you think are needed in your home port and what locations would be most convenient for you?

	NEED	LOCATION
a. Docking facilities (season)		
b. Docking rental (daily)		
c. Anchorage facilities		
d. Boating supplies (gas, oil, equipment, etc.)		
e. Pump-out waste disposal facilities		
f. Availability of food and refreshments		
g. Overnight accommodations		
h. Hose and water		
i. Electrical Hookups		
j. Boat and laundry facilities		
k. Navigation/weather information		
l. Haul out		
m. Winter storage		
n. Repair facilities		
o. Harbor of refuge		
p. Other (specify)		

21. Are you presently shopping for shore based facilities in your docking port? If so specify.

22. (a) Did you take any overnight voyages in 1975? Yes _____, No _____

(b) How many? (Circle) 1 2 3 4 5 or more

(c) On an average, how many people are on board for an overnight voyage? _____

23. (a) Do you plan to or have you taken any overnight voyages this year (1976)? Yes _____, No _____

(b) How many? (Circle) 1 2 3 4 5 or more

(c) On an average, how many people will be on board for an overnight voyage? _____

(d) Average duration of each voyage: (Please enter number of voyages beside the length of time taken for each.)	<u>Number of Voyages</u>	<u>Duration of Voyages</u>
	_____	1 day (not overnight)
	_____	1 day (overnight)
	_____	2 - 3 days
	_____	4 - 7 days
	_____	8 days and longer

(e) Is there a need for an updated cruising directory? Yes _____, No _____

24. Estimate below the number of miles you traveled or will travel (round trip) on each voyage from your home base this year (1976):

<u>Day or Weekend Voyages</u>		<u>Longer Than Weekend Voyages</u>	
<u>No. of Voyages</u>	<u>Round Trip Distances</u>	<u>No. of Voyages</u>	<u>Round Trip Distances</u>
_____	Less than 25 miles	_____	Less than 50 miles
_____	25 - 50 miles	_____	50 - 100 miles
_____	50 - 75 miles	_____	100 - 150 miles
_____	75 - 100 miles	_____	150 - 200 miles
_____	over 100 miles	_____	200 - 250 miles
		_____	over 250 miles

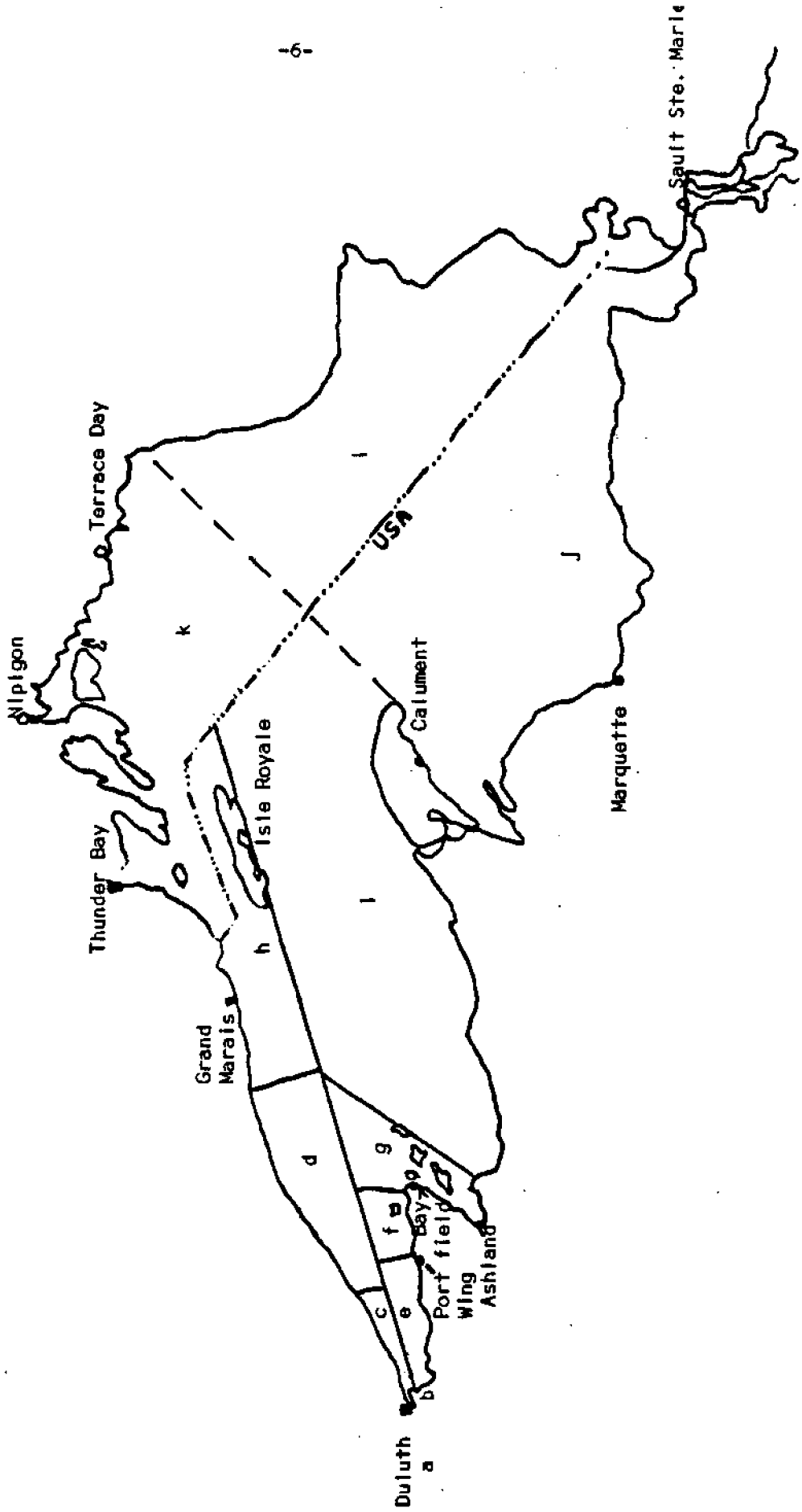
25. To which area did you go on day or weekend voyages and longer than weekend voyages?
(See accompanying map)

<u>Ultimate Destination</u>	<u>Number of Voyages</u>	
	<u>Day or weekend Voyages</u>	<u>Longer than weekend Voyages</u>
a. Lower St. Louis River	_____	_____
b. St. Louis Bay	_____	_____
c. North Shore, Knife River to Duluth	_____	_____
d. North Shore, Grand Marais to Knife River	_____	_____
e. South Shore, Port Wing to Duluth	_____	_____
f. South Shore, Bayfield to Port Wing	_____	_____
g. Apostle Islands area	_____	_____
h. Isle Royale area	_____	_____
i. Western Michigan shore area	_____	_____
j. Eastern Michigan Shore area	_____	_____
k. Western Canadian shore area	_____	_____
l. Eastern Canadian shore area	_____	_____

26. Do you use any of the following shore based facilities on voyages you take? (Please check facility used according to length of voyage.)

	<u>Day Outing</u>	<u>2-3 Day Outing</u>	<u>3 Day or Longer Outing</u>
a. Docking facilities	_____	_____	_____
b. Anchorage facilities	_____	_____	_____
c. Boating supplies, (gas, oil, equipment, etc.)	_____	_____	_____
d. Pump-out waste disposal facilities	_____	_____	_____
e. Availability of food and refreshments	_____	_____	_____
f. Overnight accommodations	_____	_____	_____
g. Hose and water	_____	_____	_____
h. Electrical Hookups	_____	_____	_____
i. Boat laundry facilities	_____	_____	_____
j. Navigation/weather information	_____	_____	_____
k. Repair facilities	_____	_____	_____
l. Harbor of refuge	_____	_____	_____
m. Other (specify)	_____	_____	_____

WESTERN LAKE SUPERIOR BOATING STUDY



27. Indicate the boating facilities you think are needed in Western Lake Superior and the locations where they are most needed. (Please check need and write in locations using the map letter areas as a reference on page 6.)

	<u>Need</u>	<u>First Most Needed Location</u>	<u>Second Most Needed Location</u>
a. Docking facilities	_____	_____	_____
b. Anchorage facilities	_____	_____	_____
c. Boating supplies (gas, oil, equipment, etc.)	_____	_____	_____
d. Pump-out waste disposal facilities	_____	_____	_____
e. Availability of food and refreshments	_____	_____	_____
f. Overnight accommodations	_____	_____	_____
g. Hose and water	_____	_____	_____
h. Electrical Hookups	_____	_____	_____
i. Boat laundry facilities	_____	_____	_____
j. Navigation/weather information	_____	_____	_____
k. Winter storage	_____	_____	_____
l. Repair storage	_____	_____	_____
m. Harbor of refuge	_____	_____	_____
n. Other (specify)	_____	_____	_____

28. Are there specific locations in Western Lake Superior where you would prefer to have complete marina facilities located? (Please name no more than five locations.)

1. _____
2. _____
3. _____
4. _____
5. _____

29. As a boater, what recreation facilities would you like to see developed in Western Lake Superior which you can visit with your boat? (Check)

	Great Need	Moderate Need	Little Need	No Need
a. Swimming areas				
b. Camping - organized area				
c. Camping - isolated area				
d. Restaurants				
e. Hotels				
f. Scenic lookouts				
g. Hiking trails				
h. Picnic and beach area				
i. Other (specify)				

30. (a) When making a voyage over two days or longer do you generally carry full provisions on board for the entire trip? Yes _____, No _____

(b) If no, what provisions do you purchase during the voyage?

31. Please estimate the average amount of money you spend daily during a voyage longer than two days in each of the following categories.

- a. Lodging \$ _____
- b. Restaurants _____
- c. Auto related _____
- d. Amusement _____
- e. Food stores _____
- f. Clothing related _____
- g. Sporting goods _____
- h. Drugs and gifts _____
- i. Taverns _____
- j. Liquor _____
- k. Other _____

32. How would you rate your overall boating experience on Lake Superior relative to other boating areas that you have read about or experienced?

High quality _____

Moderate quality _____

Low quality _____

(Please comment on your rating)

33. Owners of Small Boats

NOTE: If you own or have owned a small boat normally transported on top of an automobile or towed by an automobile on a trailer, please answer the following questions:

(a) Do you or did you use your small boat on Lake Superior? Yes _____, No _____

(b) If you answer yes to question (a) above,

(i) What do you or did you use it for? (Check one or more):

Pleasure boating _____

Fishing _____

Travel _____

Water Skiing _____

Other (specify) _____

Daily _____

Weekly _____

Monthly _____

only occasionally _____

(ii) How often do you or did you use it? (Check one only):

(c) If you answered no to question (a) above, why did you not use it on Lake Superior?

34. Please make any additional comments that you have here. Thank you.