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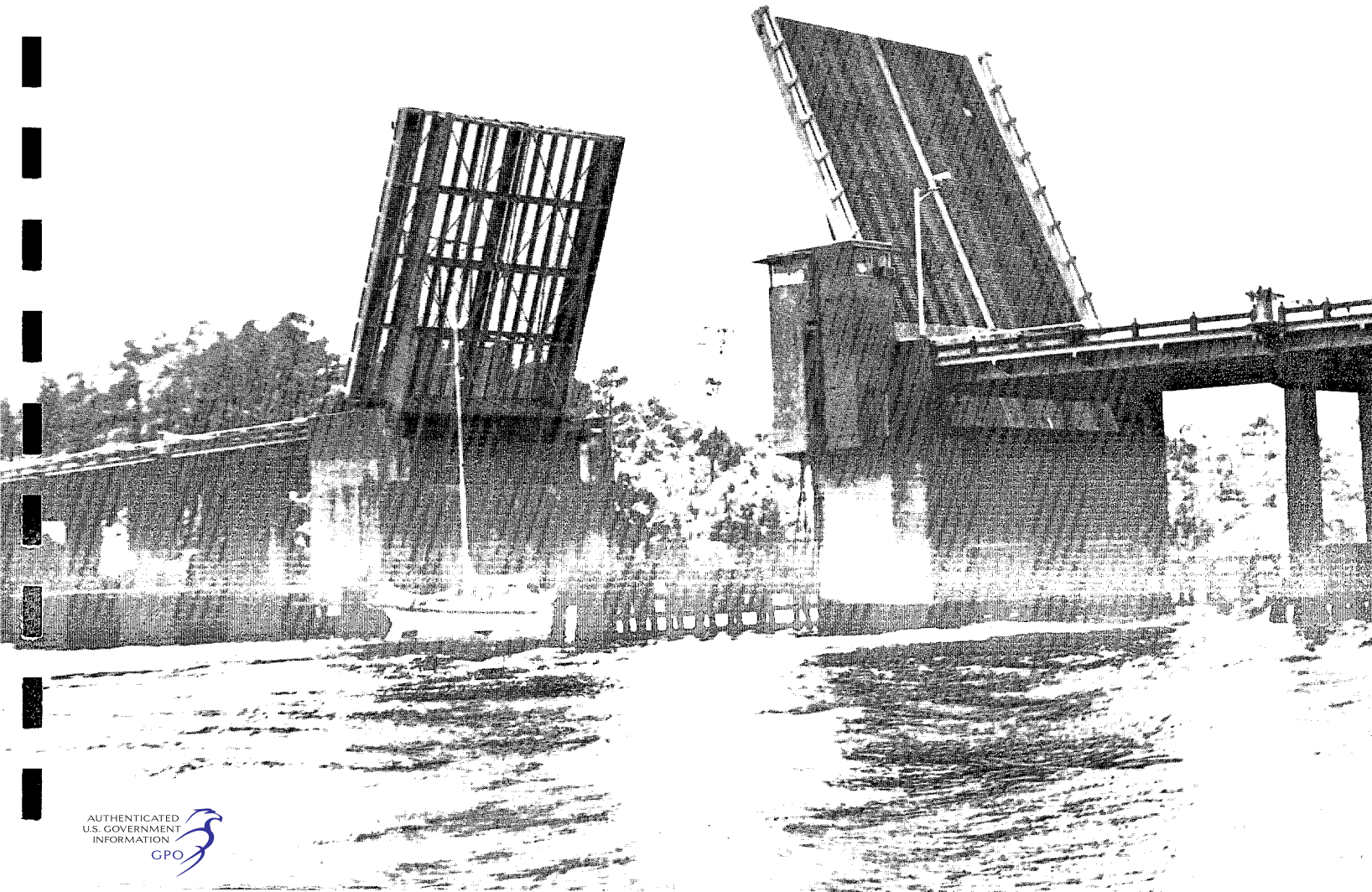

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
Purpose	1
Permitting Requirements	1
CHAPTER I: HOW ARE MARINAS BEING PERMITTED ELSEWHERE?	3
Jacksonville, Florida	3
St. Petersburg, Florida	3
Clearwater, Florida	4
Largo, Florida	5
Stuart, Florida	5
Boca Raton, Florida	5
Pensacola, Florida	7
Sarasota, Florida	7
Manatee County, Florida	9
Indian River County, Florida	11
Sarasota County, Florida	12
Sanibel, Florida	12
Palm Beach County, Florida	12
Martin County, Florida	12
Summary Analysis of Findings and Conclusions	12
CHAPTER II: THE NEED FOR MARINAS IN CHARLESTON COUNTY	14
Growth of the Boating Industry	14
The Demand For Marina Space in Charleston County	19
Capacity of Existing Marinas to Meet the Demand for Dock Space	20
CHAPTER III: CONSTRAINTS TO MARINA DEVELOPMENT IN CHARLESTON COUNTY	27
Water Quality	27
Dredging	32
Land Use and Zoning	33
Marshes and Wetlands	37
Bridges	38
Shellfish Areas	45
CHAPTER IV: CHARLESTON COUNTY SUB-AREA ANALYSIS	46
Methodology	46
Sub-Area #1: McClellanville/Awendaw	47
Sub-Area #2: Mount Pleasant	48
Sub-Area #3: Sullivan's Island/Isle of Palms	49
Sub-Areas #4, #5 and #6: Charleston and North Charleston	50
Sub-Area #7: St. Andrews/Bear Swamp	51
Sub-Area #8, #9 and #10: Folly Island, James Island and Rural John's Island	52
Sub-Area #11: Johns Island/Bohicket/Kiawah/Seabrook	53
Sub-Area #12: Wadmalaw Island	54
Sub-Area #13: Ravenel/Hollywood/Meggett/St. Paul Area	55
Sub-Area #14: Edisto Island	56

Table of Contents (continued)

	Page
CHAPTER V: RECOMMENDED CRITERIA FOR EVALUATING AND PERMITTING MARINAS IN CHARLESTON COUNTY	58
What is a Marina?	59
Recommended Definitions	60
Recommended Objectives	61
Recommended Siting Standards	62
Recommended Use of Siting Standards Matrix	62
Recommended Steps To Implementation	63
MARINA SITING STANDARDS (IMPACT MATRIX)	64
APPENDICES	67
APPENDIX A: Martin County, Florida, Dock Standards and Regulations	
APPENDIX B: Use Conditions For Siting Recreational Marinas in Charleston County	
APPENDIX C: Population Distribution and Projections, Charleston County, 1980-2000	
APPENDIX D: Population Projection Methodology	

LIST OF TABLES

		Page
Table I	Population, Boats, Income	15
Table II	Trends in Boat Ownership in S. C.	16
Table III	Number and Ratio of Out-of-County Boat Berths (Long-term) at Selected Charleston County Marinas, 1984	17
Table IV	Correlation of Population to Boat Registration, S. C. and Charleston County, 1970-2000	18
Table V	Number and Ratio of Boats Berthed at Selected Marinas, By Place of Residence of Boat Owners	21
Table VI	Geographic Distribution of Big Boat Owners and Marina Slips, 1983	22
Table VII	Geographic Distribution of "Planned" Enlargements and New Facilities	23
Table VIII	Marina Inventory	25
Table IX	Water Quality Standards for All Streams, Rivers and Water Bodies in Charleston County	28
Table X	Water Quality Classifications and Definitions of all Streams, Rivers and Water Bodies in Charleston County	30
Table XI	Marina Zoning in Charleston County	35
Table XII	Charleston County Bridge Opening Schedule	40
Table XIII	Bascule and Swing Bridges, Charleston County	42
Table XIV	Impact of Bridge Openings, Travel-Time Delays	44

INTRODUCTION

PURPOSE

Marinas, unlike most other development, have the potential for impacting water use as well as land use. And, depending on size, function and location the impact could be detrimental to the use of both land and water, destructive of natural resources, and disruptive of transportation movement, among other negative consequences.

For these reasons, the permitting of marinas generally is contingent upon special review, not just in Charleston County, but elsewhere as well. The problem with this approach, however, is that the criteria used for measuring potential impact of a marina on all the factors that stand to be impacted is too broad and vague to produce quantitative results. It is not enough to require special review and approval of marinas, if the criteria calls for subjective conclusions and is inadequate to measure the potential impact of the use.

Therefore, it is the purpose of this study, among other things, to develop a criteria or matrix that will provide a true measure of the impact of a marina in any given area of Charleston County.

PERMITTING REQUIREMENTS

Permitting of marinas in South Carolina is the subject of three recently released documents by the South Carolina Coastal Council, entitled:

(1) Manual For Preparation of Coastal Marina Report
(2) Guidelines For Development of Marina Operations. and Maintenance Plans
(3) Coastal Marina Permit Application Information

One purpose of these documents is to clarify and synthesize permitting requirements. Another is to better define the environmental design criteria and performance standards necessary to secure a permit for coastal marinas.

In explaining the process, the "Manual" states that:

"In addition to the South Carolina Coastal Council program, marina development in South Carolina must also receive Section 404 permits from the U. S. Army Corps of Engineers (COE) and 401 certification from the South Carolina Department of Health and Environmental Control (DHEC). Although these three separate approvals are required, the procedure has been coordinated by the use of a joint permit process by COE and SCCC. The starting point is the submission of a joint permit to SCCC which then forwards a copy to COE. A request for 401 water quality certification then goes out from COE to DHEC. Should DHEC deny 401 certification, COE will, pursuant to their 404 regulations, deny a dredge and fill permit. Should the 401 certification be granted, it will pertain to both project construction and subsequent facility operation.

The joint program results in only one permit application being required. A joint public notice is given and a joint public hearing can be held when necessary. In all other respects, however, there are really two separate permitting actions plus the 401 certification review. Both state and federal agencies receive and review comments and in the end, the process involves two separate approvals (the SCCC and COE).

The South Carolina State Ports Authority also has regulatory authority over marinas proposed in one or more of the state's harbors or in a waterway used for commercial navigation and shipping or in an area set aside for port development in an approved management plan. A certificate from the South Carolina State Ports Authority declaring the proposed project would not unreasonably interfere with commercial navigation and shipping must be obtained by SCCC prior to issuing a permit."

In reviewing the above requirements, one is struck by the absence of a role by local government when, in fact, the procedure is incomplete without a <u>local</u> building and zoning permit. And it is local governmental involvement in the permitting process that is the thrust of this study.

CHAPTER I

HOW ARE MARINAS BEING PERMITTED ELSEWHERE?

To help answer this question, we turned our attention to Florida, with its accelerated growth, sensitive environment, and water orientation. How is marina permitting being handled there? Is it receiving special attention, if so, what is involved? If not, why not?

Certainly, we have the opportunity to learn from the experience of others. And what better place than Florida, a state with much in common to South Carolina, including development pressure on its "critical areas" and waterways.

In our search for answers, we contacted 27 coastal cities and counties from the east and west coast of Florida. Fourteen responded.

The experience, regulations and permitting requirements of each are summarized by the following paragraphs.

Jacksonville, Florida

The City of Jacksonville has appointed a citizen's advisory group known as the Jacksonville Waterways Advisory Association to review and advise on all marina and waterfront development proposals. Additionally, the city specifies in its Comprehensive Plan proposed locations for public marinas. The Plan also includes policies relating to suitable waterfront land uses.

The city's zoning code allows marinas in certain zoning districts, and as a use by right in two of its commercial districts, provided no major boat overhaul or repair is involved.

Dredge and fill permits are required by the Corps of Engineers and the Florida Department of Environmental Regulation.

The city imposes no other special regulations or review procedures.

St. Petersburg, Florida

St. Petersburg regulates marina siting primarily through zoning. Commercial marinas are allowed in four zoning districts as Special Exceptions and must meet the specific requirements of each district.

Private docks also are permitted as accessory uses to residential structures on a waterfront lot.

The City of St. Petersburg has the ability and authority to develop Municipal Marinas anywhere along its coast so long as it owns or can lease the submerged lands and can provide public access to the facility. The city also has the authority to lease its submerged lands for five-year periods to individuals for private commercial marina development.

All marina facilities are subject to State of Florida review as well as review by the County Water Navigation Board.

Clearwater, Florida

Marinas are regulated in Clearwater as special exceptions, subject to approval by the Board of Adjustment. The Board may "prescribe appropriate conditions and safeguards in conformity with the ordinance."

Essentially, marinas are grouped into three classifications and permitted as exceptions in certain defined zones, not all zones. The regulations center around the three classes of marina facilities, as follows:

A. Description of marina facilities, Types A, B, C:

1. Type A - pleasure craft docking
2. Type B - launching ramp site, commercial
3. Type C - private marina

B. Plan to be submitted and recommendation made by the harbormaster prior to submittal to the board of adjustment and appeal on zoning. Where eight (8) or more slips are proposed or where, in the discretion of the planning director, special circumstances exist which warrant additional review, the application shall be forwarded to the planning and zoning board in addition to the harbormaster for their recommendation prior to consideration by the board of adjustment and appeal.

1. Type A - Pleasure craft docking
   i. No commercial fishing, etc.
   ii. No charter boats
   iii. No boat rentals
   iv. Small boat dock or mooring area
   v. Floating docks as approved by appropriate governing agencies
   vi. Provision for docking maneuvering area
   vii. Boat slips (covered boat slips or dry storage may be permitted if specifically requested and approved by both the planning and zoning board of adjustment and appeal on zoning)
   viii. Control of noise and lights

2. Type B - Launching ramp site (commercial)

   i. Access to noncongested traffic point (approval of traffic division)
   ii. Parking with adequate trailer maneuver area (approval of office of city engineer)
   iii. Fishing and boating items, retail sales (sign control) when adjoining a "B" business zoned area

3. Type C - Private marina

   i. Sales and service facilities
   ii. Boat slips (covered boat slips or dry storage may be permitted if specifically requested and approved by both the planning and zoning board and the board of adjustment and appeal on zoning)
   iii. Boat handling equipment (no repair or maintenance shops)
   iv. Boat and gear storage
   v. Launching facilities
   vi. Fuel station
   vii. Lockers and sanitary facilities
   viii. Restaurant facilities (not advertised) operated as part of club
   ix. Club house
   x. Motel or boatel

Largo, Florida

Under Largo development regulations, a marina is classified as a commercial recreational use, allowable in any commercially-designated area, with no special provisions.

Stuart, Florida

Among the 12 respondents, Martin County has under study one of the more direct approaches toward regulating marinas. Although not comprehensive by any means, and not yet adopted, it is noteworthy for its content and, as such is included as an appendix to this report.

Boca Raton, Florida

Boca Raton, too, has adopted a rather detailed set of development regulations, contained in its building code, but has not addressed the problem comprehensively, leaving much of the decision making process to other agencies, not clearly defined.

The areas covered by the city's building code center on dock development on intracoastal waterway, non-intracoastal waters, and selected canals, as follows:

A. Docks other than in Intracoastal Waterway or Boca Raton Inlet

1. A pier located or situated other than in the Intracoastal Waterway or Inlet may be permitted subject to the following conditions:

   a. A pier, exclusive of dock pilings, shall not project more than five (5) feet into a waterway from the property line, seawall or bulkhead, whichever is nearest to the waterway.
   b. When the plot frontage along a body of water is one hundred (100) feet or less, only one (1) pier is permitted. The pier shall not extend closer than ten (10) feet to the property line of adjacent property.
   c. When the plot frontage along a body of water exceeds one hundred (100) feet in length, a pier shall not extend closer than twenty-five (25) feet to the property line of adjacent property.
   d. At least one (1) ladder extending from the dock surface to two (2) feet below the mean low water line shall be provided for each pier.

2. A pier or two or more piers serving the same property and exceeding 50 feet in aggregate length shall be provided with the following facilities:

   a. At least one sewage pumpout connected to the city sanitary sewer system.
   b. One potable water hose bib and one electrical outlet for each 25 feet of pier length or major fraction thereof or for each boat where the design of the pier, finger piers or dolphins clearly indicates a specific number of boats to be moored.
   c. Adequate water supply for fire protection as approved by the city manager, or his or her designee.
   d. At least one ladder for each 50 feet of dock length or major fraction thereof extending from the dock surface to 2 feet below the mean low water line. Where two or more docks serve the same property, at least one ladder shall be provided for each dock.

3. A dock located or situated other than in the Intracoastal Waterway or Inlet shall be prohibited if any of the following conditions are present:

   a. The location or design is such that it creates hazard to navigation.
   b. The location abuts a marsh, swamp, or mangrove area.
   c. The location or design creates a safety hazard.

B. Docks in the Hillsboro Canal and the C-15 Canal

1. Docks shall be permitted in the Hillsboro Canal and the C-15 Canal subject to the review and approval of the city engineer and the chief code administrator.

2. No approval shall be granted unless approval is granted by the U. S. Army Corps of Engineers, the Department of Environmental Regulation, the South Florida Water Management District or other governmental bodies with applicable jurisdiction.

C. Docks in Intracoastal Waterway and Boca Raton Inlet

1. Piers shall be permitted in the Intracoastal Waterway where the width of the waterway is 300 feet or greater, subject to approval by the U. S. Army Corps of Engineers. Piers shall be prohibited in the Intracoastal Waterway where the width of the waterway is less than 300 feet.

2. A pier located or situated in the Intracoastal Waterway shall be prohibited if any of the following conditions are present:

   a. The location or design is such that it creates a hazard to navigation.
   b. The location abuts a marsh, swamp, or mangrove area.
   c. The location or design creates a safety hazard.

3. Docks shall be prohibited in the Inlet, except that a dock for passenger loading and unloading may be permitted subject to the approval of the U. S. Army Corps of Engineers and the city council.

Pensacola, Florida

The City of Pensacola has minimal regulations governing the permitting of marinas. It addresses development from a zoning perspective (ie. permitted uses, parking requirements, set backs, etc.) and leaves environmentally oriented issues to applicable state and federal agencies.

Sarasota, Florida

The City of Sarasota classifies all water bodies into a single zoning district: the MP-Marina Park District. The regulations for this district are summarized below:

A. Intent and Purpose

Water orientation is of major importance to the city and its citizens. The economy of the city depends in considerable measure upon the water, and it is intended that the MP District be used for the purposes of protecting and preserving water areas within the jurisdiction of the city. All waters, including, but not limited to, all basins, bays, bayous, canals, lakes, rivers, streams, waterways and waters of the Gulf of Mexico, and all publicly and privately owned submerged lands thereunder extending from high tide or bulkhead line are included in this zoning district.

B. Permitted principal uses and structures

Permitted uses shall include noncommercial, water-oriented uses such as boating, swimming, fishing, diving, waterskiing, surfboarding, wading and similar uses. In addition, all uses of any waters and submerged lands shall:

1. Protect the right of the public to the use and enjoyment for recreational purposes of any of the waters or submerged lands affected.

2. Preserve grass flats and flats for breeding and spawning grounds for fish.

3. Not cause or contribute to erosion of waterfront properties.

4. Not create any alteration of water flow, accumulation of debris or creation of water pockets for incubation of "red tide."

5. Demonstrate that adequate precautions are taken to prevent saltwater intrusions into surface water tables.

6. Display that there are proper provisions to be taken for protection of an access to existing or proposed navigable channels or basins.

C. Special exceptions

Special exceptions in the MP District shall be commercial uses which relate directly and immediately to permitted uses and which show a clear public convenience and necessity and will provide for the enhancement of public health, recreation and enjoyment. In addition, all uses of any waters and submerged lands shall:

1. Protect the right of the public to the use and enjoyment for recreational purposes of any of the waters or submerged lands affected.

2. Preserve grass flats and mud flats for breeding and spawning grounds for fish.

3. Not cause or contribute to erosion of waterfront properties.

4. Not create any alteration of water flow, accumulation of debris or creation of water pockets for incubation of "red tide."

5. Demonstrate that adequate precautions are taken to prevent saltwater intrusions into surface water tables.

6. Display that there are proper provisions to be taken for protection of an access to existing or proposed navigable channels or basins.

7. Provide parking for such commercial uses at a location appropriately zoned and reasonably convenient to the place of business, or principal mooring site in the case of a boat or vessel when there is finding of need in the particular case. The requirement for parking may be waived where the planning board determines that adequate public parking exists.

Manatee County, Florida

Manatee County, like Charleston County, is studying alternatives for a more comprehensive and less subjective manner of evaluating marina impact on the environment. But even in its present state, the county's marina development regulations are among the more comprehensive, tackling some of the environmental issues untouched by most other communities.

For example, the Manatee Comprehensive Plan and Land Development Code includes policies directed at vegetative resources, as follows:

A. Marine Grass Beds

1. Preservation. Marine grass beds shall be preserved to the fullest extent possible. Modification should be considered only in the case of overriding public interest.

2. Control of Induced Turbidity. Marine grass beds are particularly sensitive to increased turbidity that may result from development activities in adjacent areas. Special attention should be given to control of runoff in order to prevent increased water turbidity. Dredge and fill activities in or adjacent to these areas should be closely monitored and controlled to prevent increased turbidity.

3. Control of Nutrients. Marine grass beds can indirectly be affected by the introduction of nutrients and the resulting increased phytoplankton and algal growth. Special attention should therefore be given to control of nutrients in runoff.

4. Monitoring. Marine grass beds should be monitored periodically by the appropriate governmental agencies to determine their health and productivity.

5. Management. The preservation and restoration of marine grass beds should be encouraged wherever possible. In cases where damage to marine grass beds occurs from a specific activity, the burden of restoration of the grass bed shall rest on the person or persons responsible.

6. Access Considerations. Access to coastal navigable waters is a littoral right and should be recognized to the extent that some system of access should be allowed. Therefore, marinas should be encouraged to serve large geographic areas as an alternative to a series of access channels for individual docking facilities.

B. Mangrove

1. Preservation. Mangrove forests shall be preserved to the fullest extent possible. Modification should be considered only in the case of overriding public interest.

2. Management. The preservation and restoration of mangrove forests should be encouraged wherever possible. In cases where damage to mangrove forests occur from a specific activity, the burden of restoration of the mangrove forest shall rest on the person or persons responsible.

C. Tidal Marshes

1. Preservation. Tidal marsh systems shall be preserved to the fullest extent possible. Modification should be considered only in the case of overriding public interest.

2. Management. The preservation and restoration of tidal marshes should be encouraged wherever possible. In cases where damage to tidal marshes occurs from a specific activity, the burden of restoration of the tidal marsh shall rest on the person or persons responsible.

D. Review of Development. Review for all development proposals in or adjacent to such ecologically sensitive areas as marine grass bends, mangrove and tidal marshes shall include specific consideration of anticipated water quality and quantity changes, vegetative removal or restoration after development, and the consideration of cumulative affects of prior development in the area.

The Land Development Code addresses marinas more specifically. Marinas are conditional uses requiring special permits in all residential zoning districts and are permitted uses in all commercial zoning districts, unless the dock is in excess of eighty (80) feet, then a special permit is required.

The following criteria is used to evaluate special permit requests for marinas:

* possible conflict with surrounding residential development
* height and mass of structures
* length of docks with regard to aesthetics and conflict with navigation or marine grass beds, and
* general intensity of use for the particular neighborhoods (automobile traffic, boat traffic, repair work, restaurant use, boat sales, etc.)

Additionally, docks and piers should not:

a) hinder navigation or unnecessarily restrict public use of waters,

b) be located in a manner which degrades area appearance and interferes with the use of surrounding property, and

c) be constructed in a manner restricting water circulation.

If a marina survives the above rather subjective review, various mitigating measures are imposed to ensure minimal impact. These may include perimeter landscape buffering, direct collector road access, sufficient parking (1 parking space/2 boat slips or equivalency based upon best experience) controlled outdoor lighting, limiting repair activity, and limiting dock length(s), where necessary.

Indian River County, Florida

In Indian River County, marinas are permitted in four zoning districts. All are commercial districts or have a tourist-commercial orientation. However, the county also allows yacht clubs and beach clubs in four multiple-family zoning districts, as special exceptions. Traditionally, marinas have been considered commercial uses and yacht clubs as private clubs, compatible with residential developments.

Sarasota County, Florida

Sarasota County has adopted the more conventional approach to regulating marinas through its zoning ordinance, with little in the way of an innovative response to the situation.

Sanibel, Florida

The City of Sanibel does not permit the dredging or filling of lands to create marinas or new tidal water bodies.

Palm Beach County, Florida

Palm Beach County, like so many others, permits marinas as special exceptions. The permitting process allows the Planning Commission to impose discretionary controls. "In recommending approval of any special exception the Planning Commission may prescribe reasonable conditions, restrictions and limitations as contained herein or as it deems necessary or desirable, in order to maintain the plan or land use trend of the area and in compatability therewith."

Specific requirements set forth by the ordinance deal with dimensons, off-street parking and on-site water and sewer requirements. Dock length is limited to 200 feet.

Again, the criteria for granting a special exception leaves much to the discretion of the Planning Commission, with little in the way of "definitive guidelines."

Martin County, Florida

One of the more comprehensive efforts to mitigate the effects of marina development on existing land use is contained in a set of proposed Dock Standards and Regulations for Martin County, Florida. These standards are presented as Appendix A of this study.

Summary Analysis of Findings and Conclusions

For the most part those cities and counties investigated by this report have concentrated on traditional land use issues, ie. permitting marinas in certain zoning districts, regulating off-street parking and imposing dimensional requirements.

Regulating or measuring the overall impact of a marina has been attempted by only a few. And this few has yet to adequately address the issue, according to some of the commentary received.

Where not permitted as a use by right, much of the regulatory language is subjective, employing such phrases as "to the fullest extent possible," "special attention," and "should be encouraged." This type of language leaves much to interpretation by the reviewing body or agency, resulting in subjective conclusions.

More often than not, marinas are treated as special exceptions. But again, the language setting forth what is acceptable is generally too vague and broad to give a quanitative measure of the impact. The net result is that they are subject to special review, without adequate quantifiable criteria to judge their impact.

Most natural environmental issues are viewed as the responsibility of the state and Corps of Engineers. This is probably the result of (1) reluctance on the part of cities and counties to tackle such complex issues, because of difficulty in measuring environmental impact, and (2) the need for broader regulatory powers when dealing with water issues, as they are not confined to local jurisdictions.

Probably the most significant finding of this exercise is that none of the 14 respondents indicated satisfaction with their present permitting system. The concensus favors a more quantifiable means of measuring impact and siting marinas. In fact, the East Coast Regional Planning Commission, faced with the responsibility of reviewing and commenting on Corps dredge and fill permit applications, and the numerous issues related to the siting of docks and marinas, has commissioned a similar study--one designed to provide more specific development criteria.

It appears from our research that communities in Florida are no further along in addressing the issues of marina development than we here in South Carolina. But they do recognize the need for a "better way," and many are in the process of doing something about it.

CHAPTER II

THE NEED FOR MARINAS IN CHARLESTON COUNTY

Growth of the Boating Industry

The need for marinas is directly related to the boating industry. In 1983, 61.7 million Americans participated in recreational boating, having used the waterways more than once or twice during the year. The total number of pleasure craft making their way through the waters reached an estimated 13.3 million.[1]

Growth of the industry has not by-passed South Carolina. Boat ownership in the state is among the highest on the East Coast. Only Maine has more boats per person. South Carolina has one registered boat for every 16 persons, compared with one per 21.9 people in Florida, per 27.5 in neighboring Georgia and per 31.8 in neighboring North Carolina.

In fact, the total number of boats registered in South Carolina exceeds the number in all but three other states on the East Coast: Florida, Georgia and New York (Table I). And each of these states is considerably larger in terms of population. Two point two percent of all registered boats in the country are located in South Carolina, compared with 2.1 percent in North Carolina, a state approximately twice the size.

In analyzing ownership characteristics, one logically would assume a correlation between boat ownership and income. This does not appear to be the case however, as per capita effective buying income in the state is the lowest of any of the 12 East Coast states, but the number of boats per person is second only to Maine. Where there is water, apparently there is a way. And South Carolina has abundant water resources and boating opportunities.

Over the past 10 years (from 1972 to 1983), the number of registered boats in South Carolina has increased by 47 percent, adding 67,278 boats to the state's waterways (Table II). The largest increase was in boats ranging in size from 16 to 25 feet, where there was a 79 percent gain resulting in 25,389 additional boats. Of more significance to this study was the recorded increase in large boats,26 feet and over. Here, there was an increase of 1,238 boats, for an average 138 a year. This

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[1] Boating Industry, The Boating Business, 1983.

TABLE I

POPULATION, BOATS, INCOME:
EAST COAST - MAINE TO FLORIDA
1982

States	Population (1,000)	Total Registered Boats	% Total Registered Boats U.S.	One Boat Per ( ) Persons	Effective Per Capita Buying Income
Maine	1,148.3	117,213	1.3	10.0	$7,770
New Hampshire	970.1	6,801	.07	142.7	9,222
Massachusetts	5,765.0	181,699	2.0	31.7	9,946
New York	17,509.6	321,881	3.5	54.4	10,214
New Jersey	7,431.3	130,922	1.4	56.8	10,900
Delaware	607.0	34,861	.4	17.4	9,539
Maryland	4,278.1	137,719	1.5	31.1	10,198
Virginia	5,541.7	139,694	1.5	39.7	9,156
North Carolina	6,073.8	191,037	2.1	31.8	7,603
SOUTH CAROLINA	3,244.3	203,121	2.2	16.0	7,216
Georgia	5,693.0	207,254	2.3	27.5	7,876
Florida	10,573.5	483,749	5.3	21.9	9,150

Source: National Marine Manufacturers Association (NMMA), Boating Registration Statistics, 1982, Copyright 1983.

TABLE II

TRENDS IN BOAT OWNERSHIP IN SOUTH CAROLINA
(1974-1983)

BOAT SIZE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Change '74-'83 No.	%
Under 16'	107,933	115,209	121,883	120,209	125,124	130,779	136,064	141,327	145,449	148,584	40,651	38%
16'-Less than 26'	32,225	34,066	36,103	38,351	41,896	44,238	48,832	51,634	54,384	57,614	25,389	79
26'-Less than 40'	1,917	1,978	2,079	2,188	2,352	2,457	2,684	2,825	2,948	3,066	1,149	60
40'-65'	261	279	279	268	292	297	312	318	335	347	86	33
Over 65'	2	2	4	4	4	5	5	6	5	5	3	150
Total	142,338	151,534	160,348	161,020	169,668	177,776	187,897	196,110	203,121	209,616	67,278	47%
BOAT TYPE												
Inboard	5,910	5,074	4,770	4,842	5,104	5,339	5,814	6,035	6,274	6,504	594	10
Outboard	132,145	139,268	143,638	141,310	147,080	153,026	160,231	166,551	171,681	176,587	44,442	34
InB/Out	3,941	6,685	5,901	6,598	7,411	7,903	8,780	9,330	9,837	10,441	6,500	165
Auxilary Sail (InB/Out)[1]	342	507	740	847	943	1,044	1,280	1,439	1,565	1,672	1,330	389
Other	-	-	5,299	7,423	9,130	10,464	11,792	12,255	13,764	14,412	---	--
Total	142,338	151,534	160,348	161,020	169,668	177,776	187,897	196,110	203,121	209,616	67,278	47%

Source: S. C. Department of Wildlife and Marine Resources, Division of Boating, Coast Guard Reports, 1974-1983.

[1] Includes all sailboats with auxilary power, inboard and outboard.

was an increase of 57 percent in large boats over a 10 year period.

In terms of boat types, the largest rate of increase was in auxiliary sailboats, nearly 400 percent. The significance of this increase is in the "height" and size of these boats---generally too large to trailer and too tall for many of the bascule and swing bridges, requiring opening for passage.

Turning from the state to Charleston County, we find boat ownership to be even higher. While in 1982 the ratio of persons-to-boats was 16 to 1 in South Carolina, it was 14.2 to 1 in Charleston County. Moreover, it is projected to be 12.3 to 1 by 1990, and 10.3 to 1 by the year 2000.

The ratio of boat ownership to population in the state is expected to climb to 14.7 to 1 by 1990 and 13.4 to 1 by the year 2000 (Table IV). This translates into a projected increase of approximately 5,000 more boats in Charleston County by 1990, and over 12,000 more by the year 2000.

The number of registered boats in Charleston County is not a true reflection of the actual number, however. Excluding transients (overnights and other short term dockings), approximately 20 percent of all long-term marina spaces are occupied by out of county registered boats. So Charleston County, because of its water resources, must accommodate not only its resident boat owners, but a substantial number of "outsiders" as well.

Table III

Number and Ratio
Of Out-Of-County
Boat Berths (Long-Term)
At Selected Charleston County Marinas,
1984

Place of Residence of Boat Owners	Mt. Pleasant Marina		Charleston Municipal Marina		Stono Marina		Total	
	No.	%	No.	%	No.	%	No.	%
Charleston County	158	83	234	85	74	63	466	80
Outside Charleston County	33	17	42	15	43	37	118	20
Total	191	100	276	100	117	100	584	100

Source: Registers of selected marinas, 1984.

TABLE IV

CORRELATION OF POPULATION TO BOAT REGISTRATION,
SOUTH CAROLINA AND CHARLESTON COUNTY, 1970 - 2000

	Population[1]		Registered Boats[2]		One Boat Per ( ) Persons[3]	
	South Carolina	Charleston County	South Carolina	Charleston County	South Carolina	Charleston County
1970	2,603,800	248,400	73,521	7,890	(35.4)	(31.5)
1978	2,897,800	271,600	169,668	17,958	(17.1)	(15.1)
1979	3,013,000	274,500	177,776	18,329	(16.9)	(14.9)
1980	3,129,500	277,400	187,897	18,974	(16.7)	(14.6)
1981	3,207,100	285,900	196,110	19,678	(16.4)	(14.5)
1982	3,244,300	288,100	203,121	20,320	(16.0)	(14.2)
1990	3,770,000	313,300	256,700	25,500	(14.7)	(12.3)
2000	4,328,500	332,600	323,700	32,200	(13.4)	(10.3)

Note: Boat Registrations for 1970 are misleading in that they are incomplete. Prior to 1972, only motor boats with 10 hp or greater had to be registered. And it was not until 1974 that all new boats and motors had to be registered at the time of purchase. As a result, it was 1977 before all boats and motors were actually recorded, due to the three year registration cycle.

Sources: (1) Population - U. S . Census, with estimates and projections by the South Carolina Division of Research and Statistical Services.
(2) Boat Registrations - South Carolina Wildlife and Marine Resources Department; projections to 1990 and 2000 by Vismor, McGill & Bell, Inc.
(3) Correlation - Vismor, McGill & Bell, Inc., and NAEBM, Boating Registration Statistics, 1978-1982.

The Demand For Marina Space In Charleston County

One of the most reliable indications of the need for space is the amount that is available or unoccupied. When all of the marinas are filled, and back-logged with entrance applications, there exists a "tight" market and a need for additional space. And in reviewing the situation at Lockwood Municipal Marina,with its two-year waiting list of 290 applicants, one would assume there is a substantial unmet demand. There is also a waiting list of three to six months at Buzzard's Roost, Ashley Marina and the Naval Base Yacht Club. And until the sale of the Mount Pleasant Marina, there was a waiting list of equal time.

But not all marinas are backed up with waiting lists, as there are 128 vacant slips in the county. So there is something to be said for the product---principally location and price. The municipal marina, as an example, is centrally located to serve the Charleston market and is priced at considerably less than most other marinas,at $2.00 as opposed to $3.00 a foot.

Of the more than 20,000 registered boats in Charleston County in 1983, 545 were 26' in length or longer. This represents 16 percent of all "large" boats registered in the state, compared with only 10 percent of all boat registrations. This is significant in that these boats generally require marina docking space. Also, add to this number 486 registered boats between 23 and 25 feet, and approximately 270 out-of-county boats tied up in Charleston. This produced in 1983 a potential demand for approximately 1,300 boat slips.

	1983	1990	Increase Aggregate	Increase Annual Average
Number boats generally requiring marina slips (23' and larger)	1,300	1,730	430	60

Source: Vismor, McGill & Bell, Inc.

Projected through 1990, there will be a demand for approximately 60 boat slips a year, or a total of 430 additional slips. This is based on trends in "big boat" ownership over the past 10 years, increasing from 1.2 percent of the total to 1.6 percent carried through to 1990.

In Charleston County, the estimated number of registered boats requiring marina space is five percent of the total; it is projected to reach 5.4 percent by 1990, in keeping with state trends.

The demand will not be uniform throughout the county, however. All things being equal, boat owners will patronize the marina which is most convenient and accessible to their place of residence. In support of this statement, we checked the registers of three selected marinas in different parts of the county to determine the geographic market area of each.

East of the Cooper, we looked at Mount Pleasant Marina and found that 65 percent of all boats are owned by people living east of the Cooper. Discounting out-of-county boats, the ratio of East Cooper to Charleston County boats increased to 78 percent.

Seventy-six percent of the boats from Charleston County docked at Stono are from west of the Ashley. Only at Lockwood Municipal is the ratio less. Here 50 percent of the boats from the county are from the Charleston-North Charleston area. The balance comes from across both rivers.

What this is saying is that if you live in Mount Pleasant, you prefer to keep your boat in Mount Pleasant, if comparably priced space is available.

Capacity of Existing Marinas To Meet The Demand For Dock Space

There is available within the county, marina space for approximately 1,361 boats. Not all of this space can accommodate larger boats (23' plus), however. Shem Creek Marina is a dry stack operation, limited in capacity to boats no larger than 22 feet. Average size is between 18 and 20 feet. Discounting the 80 spaces at Shem Creek, we have an adjusted capacity of 1,281. Of this number, 114 are vacant, for a vacancy rate of nine percent.

With so many vacant slips, the market would seem to be rather "soft" at this time, but then we have several marinas with lengthy waiting lists. So, why the contradiction. In addition to price, which can be a major factor in choosing a marina, providing marina space convenient to the boat owner probably is of even greater importance.

The three major marinas in the Charleston peninsula area are filled and have waiting lists--Lockwood Municipal, Ashley and the Naval Yacht Club. And while rates are less at Lockwood Municipal and the Naval Yacht Club, Ashley's rates are among the highest in the county. So why is it too filled, while Bohicket, which is comparably priced, is only 50 percent occupied? The answer may be found in Table VI.

TABLE V

NUMBER AND RATIO OF BOATS BERTHED AT SELECTED MARINAS, BY PLACE OF RESIDENCE OF BOAT OWNERS

Place of Residence of Boat Owners	Mount Pleasant Marina		Charleston Municipal Marina		Stono Marina	
	No.	%	No.	%	No.	%
Charleston County						
East Cooper Area:						
#1 McClellanville/ Awendaw	1	--				
#2 Mt. Pleasant	87	46	18	07	1	01
#3 Sullivan's Island/ Isle of Palms	36	19	10	04		
Between The Rivers:						
#4, #5, #6 Charleston/ North Charleston	22	12	117	42	17	15
West Ashley Area:						
#7 St. Andrews/Bear Swamp	9	05	59	21	19	16
#8, #9, #11 Folly Island/ James Island/rural John's Island	3	02	28	10	36	31
#10 Kiawah/Seabrook						
#12 Wadmalaw Island						
#13 Ravenel/Hollywood/ Meggett			2	01	1	01
#14 Edisto Island						
Dorchester County	7	03	14	05	7	06
Berkeley County	8	04	4	01	8	06
Other S. C. Counties	15	08	19	07	13	11
Other States	3	01	5	02	15	13
Totals	191	100	276	100	117	100

Source: Ibid., Table

Table VI

Geographic Distribution of Big Boat Owners and Marina Slips, 1983

	East of Cooper		Between the Cooper & Ashley		West of Ashley		Total Number
	No.	%	No.	%	No.	%	
Registered Boats 23' in length, plus	284	28	616	60	131	12	1,031[3]
Boat slips available	268[1]	21	498[2]	39	515	40	1,281
Number vacancies	6	05	0	0	108	95	114
Vacancy Rate		02		0		21	09%

[1]Does not include 80 dry-stack spaces at Shem Creek Marina because of size limitation.
[2]Includes 78 moorings at the Naval Base Yacht Club.
[3]Does not include estimated 270 boats registered out-of-county.
Source: Marina Survey, 1984, Vismor, McGill & Bell, Inc., Boat Registrations, S. C. Wildlife and Marine Resources Department, 1983.

From the table, it is obvious that the marinas are not where the boat owners are. Sixty percent of the large boat owners reside in the Charleston-North Charleston peninsula area, but only 39 percent of the marina slips are in this area. Conversely, west of the Ashley there are 515 slips, but only 131 large boat owners. Here, we find registered 12 percent of all large boats in the county, and 40 percent of all available boat slips.

The situation east of the Cooper is very much influx at this time. Mount Pleasant Marina, with 191 slips, is being replaced by a condominium/marina complex with 50 fewer slips. The situation will be eased somewhat with the soon to be completed expansion of the Isle of Palms Marina, which will add 320 slips to the inventory, but only 163 will be available to the general public. Also, 400 slips are tentatively planned for the Patriots Point Complex.

In addition to the two previously mentioned marina projects, there are a number of others on the drawing board at this time, including planned expansions at seven marinas (Table VIII,Part II). And if they all materialize, there will be an additional 856 slips available at existing marinas, including the 320 under construction at Isle of Palms. Also, 891 new spaces will be available from six new marina proposals (Table

Table VII

Geographic Distribution of "Planned"Enlargements and New Facilities

	East of Cooper	Charleston/ N. Charleston (Between the Rivers)	West of Ashley	Total
Existing Marina Slips (long-term)	217[1]	498	515	1,231
Planned Additions at Existing Marinas	326	320	210	856
Planned Additions by New Marinas	400[2]	30[3]	461[4]	891
Total	943 (32%)	848 (28%)	1,186 (40%)	2,977

[1]Less 50 spaces that will be lost with conversion of Mt. Pleasant Marina.

[2]Planned for Patriots Point.

[3]Planned for Festival Market Place.

[4]Includes plans for 123 slips at Kiawah Island; 48 slips at Botany Bay Island; 200 slips on the South Edisto River, just below the Intracoastal Waterway, and 90 slips at the Merritt Dredging Site, on James Island.

Only one of the proposed six new marinas will be located in the Charleston peninsula area, where the need is greatest. And this project (Festival Market Place) is designed principally for transient boats, not long-term occupancy. Too, it will have only 30 spaces.

Patriots Point could help meet the demand from this area however, as it will be readily accessible, and open to Charleston Harbor.

The largest expansions are planned for the West Ashley area, where there is little evidence at this time of the need for such expansions. This area has the fewest number of big boat owners (12%), the largest number of boat slips (429), and the highest rate of vacancy (21%). And nearly as many slips as exists, are planned. Thus, the number is expected to increase from 515 to 1,186, but the distribution ratio will fall slightly, to 40 percent of the total.

Here, marinas are being planned as adjuncts to resort-residential complexes, designed principally for residents of the project, ie. Mariner's Cay, Kiawah Island. But these projects, because of their location, are not meeting the needs of boat owners in the Charleston/North Charleston area. To the contrary, these projects do more to generate usage than to satisfy needs. If all marina proposals materialize as planned, the ratio of slips in the Charleston/North Charleston area actually will be less than at present. And this is the area where 60 percent of the big boat owners reside and prefer marina space. This is also the area of the county best suited to marinas from the standpoint of water quality and shellfish harvesting. Water in this area is not of pristine quality and shellfishing is prohibited. This is not the case with many of the new proposals.

In summary, we have a projected demand for 430 additional slips by 1990, and plans on the board for 1,747 slips. If everything goes forward as planned, marina space in Charleston County should be plentiful in the future, but will it be where it is needed and in greatest demand?

TABLE VIII

MARINA INVENTORY, PART I
Facilities and Cost - 1984

Marina	Location	Type	Facilities										Rates	
			Ramp	Fuel	Boat Sales	Boat Yard (Dry Dock)	Boat Store	Elect. Pow to Slips	Wastewater Pump-out	Restaurant	Showers-Toilets	Laundry	Long Term Monthly (per ft)	Over Night (per ft)
Ashley	Charleston Lockwood Dr.	Commercial	-	*	*	-	-	*	-	-	*	*	$3.00	$ .60
Bohicket	John's Island Andell Bluff Rd.	Commercial		*	*	*	*	*	*	*	*	*	3.00	.50
Creekside	Isle of Palms Palm Blvd	Commercial	*	*	-	-	*	*	-	*	-	-	3.00	8.00[2]
Isle of Palms	Isle of Palms 41st Street	Commercial	*	*	-	-	*							
Shem Creek	Mt. Pleasant	Commercial	*	*	*	*	*	(1)	-	-	*	-	65.00 90.00 (2)	-
Stono	Maybank Hwy.	Commercial	-	-	-	-	-	*	*	-	*	-	1.75	.50
Municipal	Charleston Lockwood Dr.	City	*	*	*	-	*	*	*	*	*	*	2.00	.50
Buzzard's Roost	Maybank Hwy	Commercial	*	*	*		*	*	*	*	*	*	2.15	.50
Botany Bay	Wadmalaw Is.	Commercial	*	*	*	*	*			*				
Hobcaw Yacht Club	Mt. Pleasant Hobcaw Subd.	Club												
Mariners Cay	Folly Beach	Commercial	*	*	-	-	*	*	-	*	-	-	3.00	.50
Mt. Pleasant Marina	Mt. Pleasant	Commercial	*	*	-	*	*							
Naval Base Yacht Cl.	N. Charleston Naval Base	Military		-	-	*	-	-	-	-	*	*	20.00[2]	1.00[2]

(1) Dry Storage (2) Per Boat

Table VIII (continued)

MARINA INVENTORY, PART II

Size and Space, Existing and Planned

1984

Marina	Size	Boat Slips							No. Dry Storage Spaces		No. Off Street Parking Spaces
					Occupied		Slips				
	Acreage	Total	Long Term	Over Night	Sail	Power	Vacant	Planned	Occupied	Vacant	
Ashley	(3.4)	150	130	20			0	0	0	0	268
Bohicket	-	140	130	10	33	36	61	60 [1]	55	45	339
Creekside		23	23	-	9	8	6	6	-	-	12
Isle of Palms		18						320 [4]			
Shem Creek	(2)	90	80	10		66	14	0	80	14	20
Stono	(5)	105	100	5	40	50	15	50 [2]	0	0	145
Municipal	(8)	305	290	15	230	60	0	300			525
Buzzard's Roost	(3)	210	200	10	123	77	0	0	0	0	575
Botany Bay		20	20	--			0	0			
Hobcaw Yacht Club	(3)	36	36	--	36		0	0	0	0	--
Mariners Cay		85	65	20	32 [5]		33	100	yes		60
Mt. Pleasant Marina		191	Marina being converted to condo complex with fewer slips--50 to 140 Depending on final approval								
Naval Base Yacht Cl.	(5)	78 [3]	78	-	76	2		20			50

(1) Approved by existing permit, will be added as demand increases
(2) Application is pending
(3) Moorings
(4) 157 for exclusive resident use; 163 will be available to general public.
(5) Sail and power combined

Note: A marina at Kiawah Island was approved by DHEC March 22, for 123 slips, pump-out facilities and related services, but not fuel, replacing the 15 to 18 slip floating dock.

CHAPTER III

CONSTRAINTS TO MARINA DEVELOPMENT IN CHARLESTON COUNTY

This chapter offers a general overview of constraints to marina development in Charleston County. Specific or localized constraints are dealt with in the sub-area analysis which follows.

Constraints fall generally into seven categories:

- Water Quality
- Dredging
- Land Use and Zoning
- Marshes and Wetlands
- Bridges
- Shellfish Areas

Water Quality

Under the Pollution Control Act [48-1-D (et. seq.) S. C. Code of Laws, 1976] the Department of Health and Environmental Control is vested with the responsibility of (1) protecting the public health and welfare and maintaining and enhancing the quality of the water; (2) specifying appropriate water uses to be achieved and protected (such as domestic water supply, swimming, fishing, propagation of fish, shellfish and wildlife, or outstanding ecological resources); and (3) specifying appropriate water quality criteria (such as, dissolved oxygen, fecal coliform bacteria or temperature) necessary to support those designated uses.

Toward this end, the Department has tested, evaluated, classified and established standards for South Carolina's waters. All streams, rivers and water bodies are classified in one of eight established classes, where practicable, ranging from AA (the highest) to SC (the lowest).

Five of the eight classes are present in Charleston County, including Class A, B, SA, SB and SC. The water quality standards for each are presented by the following table. They serve as a basis for determining National Pollutant Discharge Elimination System (NPDES) effluent limitations for point source dischargers. They are intended to protect the classified use from degradation and are used for evaluating and modifying Best Management Practice (BMP) for control of nonpoint sources of pollution.

TABLE IX

WATER QUALITY STANDARDS FOR ALL STREAMS, RIVERS AND WATER BODIES IN CHARLESTON COUNTY

ITEM	CLASS A	CLASS B	CLASS SA	CLASS SB	CLASS SC
(a) Garbage, cinders, ashes, sludge or other refuse	None allowed	None allowed	None allowed	None allowed	None allowed
(b) Treated wastes, toxic wastes, deleterious substances, colored or other wastes except in (a) above.	None alone or in combination with other substances in suffificent amounts: to make the waters unsafe or unsuitable for primary contact recreation or to impair the waters for any other usage.	None alone or in combination with other substances or wastes in sufficient amounts: to be harmful to the survival of freshwater fauna and flora or the culture or propagation thereof; to adversely affect the taste, color, odor or sanitary condition of fish for human consumption; to make the waters unsafe or unsuitable for a source of drinking water supply after conventional treatment; to make the waters unsafe or unsuitable for secondary contact recreation; or to impair the waters for any other best usage.	None alone or in combination with other substances or wastes in sufficient amounts: to adversely affect the taste, color, odor or sanitary condition of clams, mussels, or oysters for human consumption; or to impair the waters for any other best usage.	None alone or in combination with other substances or wastes in sufficient amounts: to make the waters unsafe or unsuitable for primary contact recreation; or to impair the waters for any other best usage.	None alone or in combination with other substances or wastes in sufficient amounts: to be harmful to the survival of marine fauna or flora or the culture or propagation thereof; to adversely affect the taste, color, odor or sanitary condition of fish for human consumption; to make the waters unsafe or unsuitable for secondary contact recreation; to impair the waters for any other best usage.
(c) Dissolved oxygen	Daily average not less than 5 mg/1, with a low of 4 mg/1, unless lowered by natural conditions.				Not less than 4 mg/1.
(d) Fecal coliform	Not to exceed a geometric mean of 200/100 ml during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100 ml.	Not to exceed a geometric mean of 1000/100 ml during any 30 day period; nor 2000/100 ml in more than 20% of the samples examined during such period.	Not to exceed an MPN total coliform median of 70/100 ml, nor shall more than 10% of the samples exceed an MPN of 230/100 ml.	Not to exceed a geometric mean of 200/100 ml, during any 30 day period; nor shall more than 10% of the samples in any 30 day period exceed 400/100ml.	Not to exceed a geometric mean of 1000/100 ml during any 30 day period; nor exceed 2000/100 ml in more than 20% of the samples examined during such period.
(e) pH	Range between 6.0 and 8.0, with a low of 5.0 due to natural conditions	Not to vary from levels existing under natural conditions.	Range between 6.5 and 8.5, but not vary more than 3/10 of a pH per unit.	Range between 6.5 and 8.5, but not vary more than 1/2 of a pH per unit.	Range between 6.5 and 8.5, but not vary more than 1 pH per unit.
(f) Temperature	As prescribed in C. (7) of the Water Classification Standards System Manual. →				

Source: South Carolina Department of Health and Environmental Control, Water Classification Standards and Stream Classifications For The State of South Carolina, 1983.

They also serve as a basis for judgement in other water quality related programs, including dredge and fill activities. These standards publicly and officially define the state's water quality objective and hence form a basis for planning and permitting marinas.

Charleston's more pristine waters generally are classified SA--tidal salt water suitable for harvesting shellfish and primary contact recreation. But the county does have some equally pristine Class A freshwaters beyond Penny Creek on the upper end of the Edisto River.

Moreover, the Department has under preliminary consideration the Edisto River, east of Penny Creek for SAA reclassification, as well as the Cape Romain Estuary. Such a classification would impose higher water quality standards, recognizing these waters as constituting outstanding recreational or ecological resources.

The upper end of the Ashley River, as well as the upper end of the South Santee, has been identified as Class B, a somewhat lower freshwater classification.

Charleston Harbor, the Ashley and Cooper Rivers, Clark Sound and Wappoo Creek are Class SC waters. The balance and majority of the county's waters are classified SA, indicating the pristine nature of most of its water resources.

The specific classification of all streams, rivers and water bodies in the county is presented by the following table, together with a definition of each class.

TABLE X

WATER QUALITY CLASSIFICATIONS
AND DEFINITIONS
OF ALL STREAMS, RIVERS AND
WATER BODIES IN CHARLESTON COUNTY

NAME	DESCRIPTION	CLASSIFICATION
Ashley River	That portion to salt water intrusion	B
	Salt water intrusion to Charleston Harbor	SC
Bohicket Creek	From junction with North Edisto River to its junction with Church Creek	SA
Brickyard Creek	The entire stream tributary to Ashley River	SC
Cape Romain Harbor	The entire stream tributary to Atlantic Ocean	SA
Charleston Harbor	From Battery to Atlantic Ocean	SC
Clark Sound	The entire sound tributary to Charleston Harbor	SC
Coastal Waters	From the land to the limits of State jurisdiction	SA
Cooper River	That portion of the stream from U.S. 52 to a point approximately 30 miles above the junction of the Ashley and Cooper Rivers	B
	That portion below that point to the junction of the Ashley and Cooper Rivers	SC
Copahee Sound	The entire sound	SA
Edisto River	The entire stream to the North Edisto and South Edisto Rivers	A
Folly River	The entire stream tributary to Stono River	SA
Grays Sound	The entire sound	SA
Hamlin Sound	The entire sound	SA
Intracoastal Waterway	That portion of the waterway from South Edisto River to SCL Railroad Bridge over Stono River	SA
	From SCL Bridge to the confluence to Elliott Cut and the Stono River	SA
	From confluence of Elliott Cut and the Stono River through Charleston Harbor to Ben Sawyer Bridge	SC
	From Ben Sawyer Bridge to South Santee River	SA

NAME	DESCRIPTION	CLASSIFICATION
North Edisto	The entire stream tributary to Atlantic Ocean	SA
Shem Creek	The entire stream tributary to Charleston Harbor	SC
South Edisto	The entire stream tributary to Atlantic Ocean	SA
South Santee	That fresh water portion	B
	From U.S. 17 to 1000 feet below the Intracoastal Waterway	SB
	From that point to the Atlantic Ocean	SA
Stono River	That portion extending eastward to SCL Railroad Bridge	SA
	From the SCL Railroad Bridge to Abbapoola Creek	SA
	From Abbapoola Creek to Folly River	SA
Wadmalaw River	The entire stream tributary to North Edisto River	SA
Wadmalaw Sound	The entire sound tributary to Wadmalaw River	SA
Wando River	The entire stream tributary to Cooper River at Charleston Harbor	SB
Wappoo Creek	The entire stream tributary to Stono River	SC

Class A - freshwaters suitable for primary contact recreation. Also suitable for uses listed in Class B.

Class B - freshwaters suitable for secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with requirements of the Department. Suitable for fishing, survival and propagation of fish, and other fauna and flora. Suitable also for industrial and agricultural uses.

Class SA - tidal salt waters suitable for harvesting of clams, mussels or oysters for market purposes or human consumption except within buffer zones designated by the Department. These buffer zones are consitent with this classification. Suitable also for uses listed in Class SB and Class SC.

Class SB - tidal salt waters suitable for primary contact recreation. Suitable also for uses listed in Class SC with the same exception.

Class SC - tidal salt waters suitable for secondary contact recreation, crabbing and fishing, except harvesting of clams, mussels or oysters for market purposes or human consumption. Also suitable for the survival and propagation of marine fauna and flora.

Dredging

Where dredging is prerequisite to marina siting and maintenance, a whole new series of constraints is introduced. Generally, dredging is discouraged by the South Carolina Coastal Council. However, a dredging permit may be issued, pending the approval of a maintenance dredging schedule and a spoil-dispersal site. The disposal of dredge spoil materials into wetlands generally is to be discouraged.

SCCC Dredge and Spoil requirements are as follows:

1. Dredging and filling in wetland areas should be undertaken only if the proposed activity is water-dependent and there are no feasible alternatives.

2. To the maximum extent feasible, dredging and filling activities should be restricted in nursery areas and shellfish grounds and during critical periods in the life of important sport and commercial species.

3. Dredging and excavation shall not create stagnant water conditions, lethal fish entrapments, or deposit sumps, or otherwise contribute to water quality degradation.

4. Designs for dredging and excavation projects shall, where feasible, include protective measures such as silt curtains, diapers, and weirs to protect water quality in adjacent areas during construction by preventing the dispersal of silt materials.

5. Dredged materials shall be deposited and contained in such a manner so as to prevent dispersal into adjacent wetland areas.

6. Upland disposal of dredged materials is preferred; vegetated wetlands and mudflats shall not be utilized for disposal unless there are no feasible alternatives; any other wetlands should not be used for disposal when other alternatives exist.

7. Open and deep water sites should be considered for disposal if highland alternatives are not feasible only after consultation with the Council and other relevant state and federal agencies.

8. Existing disposal sites should be utilized to the fullest extent possible (where feasible).

9. Dredged materials containing hazardous levels of toxic materials shall never be disposed of in wetland areas.

10. Dikes surrounding disposal areas should be shaped and vegetated immediately, with outfalls positioned to empty into nonwetland areas.

11. Attention must be given to possible adverse impacts of alternative deposition sites on public health and welfare.

12. In all cases, dredging activities shall not be approved until satisfactory disposal sites have been acquired.

From the above, it is obvious that dredging is one of the more mitigating constraints. Generally, it is permissible when the above requirements are observed, but depending on administrative interpretation, one or more of the regulations could be used to prohibit dredging altogether.

For example, the requirement that "dredging and filling in wetland areas shall be undertaken only if the proposed activity is water-oriented and there are no feasible alternatives" leaves much to interpretation. The developer may not have an alternative site which would require no dredging, but there could be a more acceptable site within the vicinity---one requiring no dredging. Should Coastal Council hold out for the "no dredging" site or approve the one requiring dredging? The answer, of course, will depend on mitigating circumstances. As a result, most of the above "regulations" are not regulations at all, but guidelines, criteria and "preference alternatives," making enforcement a tenuous exercise--one rooted in mitigation.

But there are certain criteria that specify what shall and shall not be. They are not negotiable, and so stated in the proposed Impact Matrix. The result being that when such criteria cannot be met, permit denial is consenquential.

Land Use and Zoning

Marinas are restricted or prohibited by zoning from relatively few areas of Charleston County. Existing land use has a far greater impact on future siting than does zoning, due largely,

(1) to extensive federal holdings of water access lands, particularly on the Cooper River, and

(2) to established water oriented, residential subdivisions.

Inasmuch as development is regulated throughout the county, zoning is a consideration wherever a marina is proposed. Unfortunately, regulations pertaining to marina siting are not uniform. Generally, however, marinas are viewed as conditional uses, requiring special consideration relative to their potential impact on existing development.

City of Charleston. The City of Charleston permits marinas as a use by right in the Conservation District only. But they are also permitted (not prohibited) in the Limited and General Business Districts and the Limited and Heavy Industrial Districts.

They are prohibited as commercial enterprises from all residential zones, but may be included as an accessory use, without limitation as to size, to a residential project or neighborhood. Thus, depending on how or by whom marinas are used, they may be located anywhere within the city limits, irrespective of zoning.

Charleston County. Only in the OR, Office Restricted and P, Parking Districts of Charleston County are marinas prohibited. They are permitted in all residential and agricultural zones as "conditional uses," as well as in the OP and OG Office Districts, the CN, Neighborhood Commercial District, and the PDD, Planned Development District. Elsewhere, they are permitted as "uses by right," provided they meet all applicable regulations of the district within which they are proposed.

As conditional uses, they are required to meet the criteria setforth on the following table, in addition to all applicable district regulations.

Folly Beach. The Folly Beach Ordinance is much more restrictive, limiting marina development to the Marine District only. And this district is established in but one relatively small place on the island, thus effectively excluding marinas elsewhere.

Mount Pleasant. Mt. Pleasant, like Folly Beach, restricts marina development to but one district, as a use by right--the Marine District. However, it may be approved as part of a Planned Development in a PDD District, subject to planned development requirements. But for the most part, marina development is tightly controlled in Mount Pleasant.

North Charleston. North Charleston permits marinas in PUD projects only, denying use by right status in any other zoning district. But because of limited access to the Ashley and control of the Cooper by the federal government, there are few potential sites within North Charleston.

In fact, all areas of North Charleston fronting on the Ashley are west of the Seaboard Coastline Bridge, which is only nine feet high, thus reducing if not eliminating any potential for marina development, although it is a bascule bridge and may be opened.

Isle of Palms. Marinas are permitted within the city's commercial district, but only two such areas are located with access to water, and both are developed with marinas.

Sullivan's Island. Marinas are not permitted by the city's zoning ordinance.

TABLE XI

MARINA ZONING IN CHARLESTON COUNTY

	Districts In Which Marinas Permitted Use By Right	Conditional Use	Districts In Which Marinas Prohibited	Conditional Use Requirements
harleston	Commercial: LB, GC Industrial: LI, HI Conservation	None	Residential Districts, except for non-commercial marinas (accessory use)	NA
harleston County	Office: OD Commercial: CA, CC, CG, CH, CR, CS Industrial: MP, ML, MM, MH, MHS	Residential: RS, RT, RM, RD Office: OP, OG Commercial: CN Agricultural: AC, AG, AM & AR PDD, Planned Development District	Office: OR Parking: P	(1) Will not cause substantial injury to value of property in neighborhood. (2) Will contribute to and promote welfare of community and general public. (3) Will not dominate neighborhood so as to prevent development in accord with regulations. (4) Will provide adequate utilities, off-street parking, drainage and access roads. (5) Other conditions as may be reasonable to accomplish purposes of ordinance (specific use conditions are listed as Appendix B of this report).

Table XI (continued)

	Districts In Which Marinas Permitted Use By Right	Conditional Use	Districts In Which Marinas Prohibited	Conditional Use Requirements
Folly Beach	Marine Commercial: C-3	None	All residential Districts, C-1 and C-2 Commercial Districts, PUD Districts	None
Mt. Pleasant	Marine District	Planned Development District, PD	All other districts	5 acres minimum, site plan review and approval.
North Charleston		PUD	All other districts	Site plan review and approval prerequisite to zoning amendment to establish PUD on map
Isle of Palms	Commercial (however, only commercial areas with water access are developed with marinas (Creekside and Isle of Palms)	None	All other districts	None
Sullivan's Island			Not allowed	

Conclusions. Because of the conditional use status of marinas in most districts of the county, zoning is not an absolute constraint. That is, there are few areas in which marina siting is prohibited by zoning. For the most part, marinas may be established in the county, if the standards and criteria for conditional use permitting can be satisfied. Of course, zoning could become a much greater constraint, if the county elected to take a more prohibitive posture toward marina siting in certain areas and districts.

Marshes and Wetlands

Marshes and wetlands pose a major constraint to marina siting in Charleston County, as they:

(1) parallel nearly all navigable waterways, and

(2) are tightly controlled by the South Carolina Coastal Council, and the U. S. Corps of Engineers, and to a lesser extent by local zoning.

Development of wetlands often is considered synonymous with dredging and filling, which generally is discouraged by the Coastal Council. However, there are conditions under which the Council may approve such activity. They are:

(1) where the proposed acitvity is water-dependent (marina) and there are no feasible alternatives,

(2) where dredging and excavation shall not create stagnant water conditions, lethal fish entrapments, or deposit sumps or otherwise contribute to water quality degradation,

(3) where dredged materials shall be deposited and contained in such a manner so as to prevent dispersal into adjacent wetland areas,

(4) where an overriding public interest can be demonstrated.

However, the Council is emphatically opposed to the use of wetlands as depositories for dredged materials, unless there are no feasible alternatives, which quite often is the case. Thus, the entire proposition must be mitigated, often hinging as much on the availability of a disposal site as on the original wetlands development request.

Clearly, some marsh and wetlands are more productive and essential to aquatic life than others, particularly those which have been infringed upon by development. The more productive areas deserve all out protection, not to be mitigated on the basis of "no feasible alternative," as some wetland constraints should be greater than others, as indicated by the Impact Matrix.

Bridges

Bridge openings = Traffic delays = traffic congestion. Probably no other impact directly affects so many people or is as apparent to the general public as a bridge opening, halting traffic. This is particularly true in urban areas and on heavily traveled roads. Yet, not enough attention has been given this matter, as illustrated by the location of the Stono Marina.

The contamination of a single oyster bed is sufficient reason for DHEC to deny a marina request, but the inconvenience, delay and disruption to traffic from a bridge opening apparently is not given equal or adequate consideration.

The year after the Stono Marina opened (1978), the number of bridge openings at the Stono River increased from 471 to 1,503---an increase of 1,032 or 219 percent.

The Stono Marina situation is vividly illustrated by the following chart. While the number of openings at most swing and bascule bridges increased gradually over the past 10 years, the change at Stono was much more dramatic.

Had the Stono located across the street, on the waterway side of the bridge, this would not have occurred. And at the time, Buzzard's Roost was not there. With the opening of Buzzard's Roost, the number of bridge openings has declined slightly. This trend may be explained, in part, by the unobstructed accessibility of Buzzard's Roost. Here, larger power and sail boats have direct access to the waterway, Charleston Harbor and the ocean, without the inconvenience and delay associated with opening the Stono River Bridge.

In support of this contention, we surveyed each marina and found that 67 percent of the ships at Stono were occupied by sail and power boats exceeding 8 feet in height, compared with 86 percent at Buzzard's Roost. This finding suggests that the accessibility of Buzzard's Roost does, indeed, influence docking decisions of large boat owners.

There are seven bascule and/or swing bridges in Charleston County. All have round-the-clock operators on duty, except for Wando, where 24-hour notice is required for opening. Four of the bridges may be opened for boat traffic at anytime---Ashley, Dawho, Limehouse and the Stono. The Ben Sawyer and Wappoo Creek bridges have scheduled operating times to minimize the disruption of vehicular traffic movement (Table XII).

Drawbridge Openings, Charleston County 1973-1982

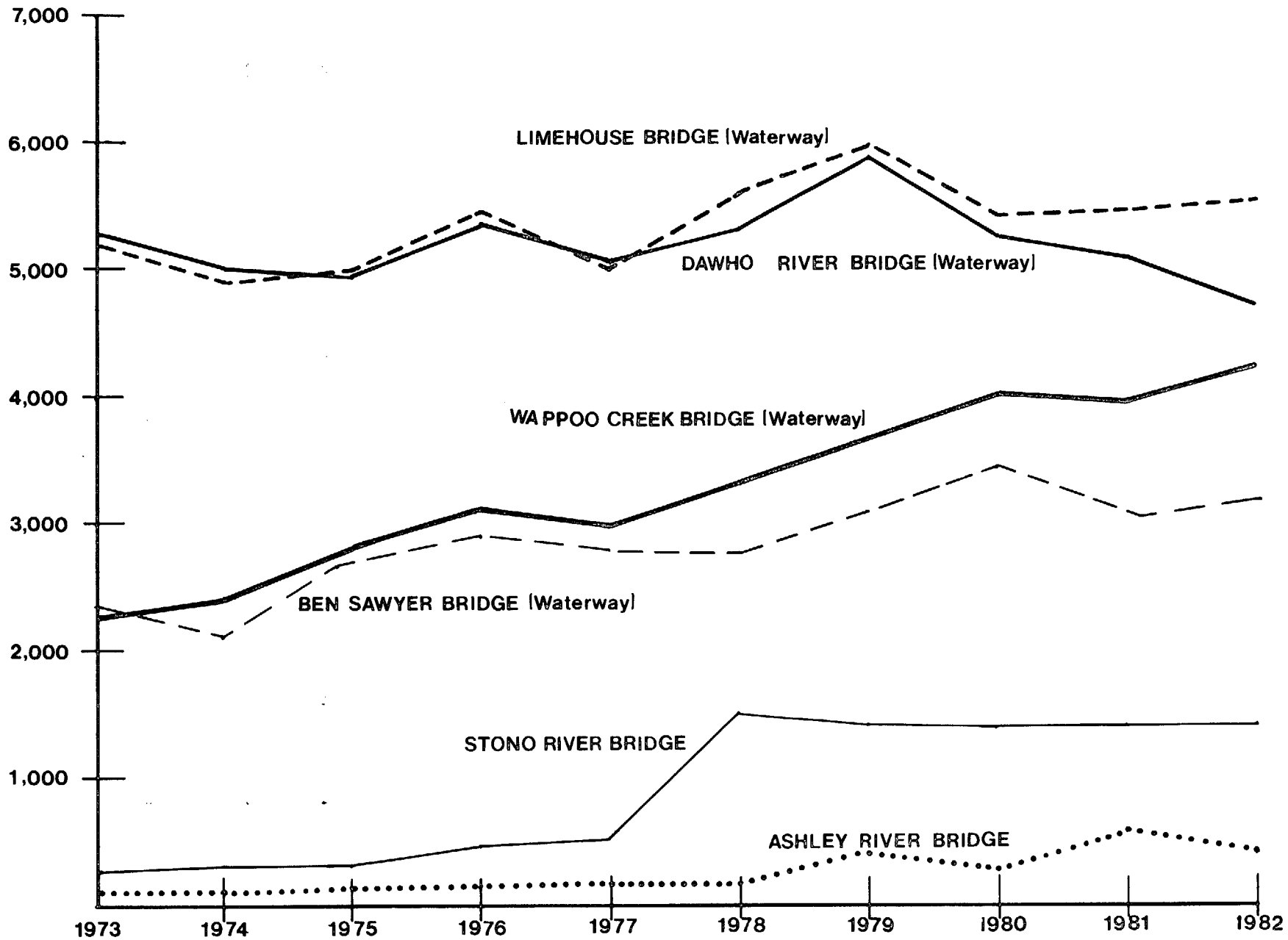


TABLE XII

CHARLESTON COUNTY BRIDGE OPENING SCHEDULES

Bridge	Scheduled Openings	Comments
Ashley River	24 hours daily (No Schedule)	Operator on duty, can be opened anytime
Ben Sawyer	Cannot be opened from 7-9 a.m. and 4-6 p.m. Monday through Friday. Sat., Sun. and holidays can be opened on hour and half hour between 2-6 p.m.	Operator on duty, can be opened anytime other than during scheduled periods.
Dawho River	24 hours daily (No Schedule)	Operator on duty, can be opened anytime
Limehouse	24 hours daily (No Schedule)	Operator on duty, can be opened anytime
Stono River	24 hours daily (No Schedule)	Operator on duty, can be opened anytime
Wando River	Requires 24 hour notice to open	
Wappoo Creek	Cannot be opened from 6:30-9 a.m. and 4-6 p.m. Monday through Friday. Sat., Sun. and holidays can be opened on hour and half hour between 2-6 p.m.	Operator on duty, can be opened anytime other than during scheduled periods.

Source: Information furnished by the South Carolina Highway Department, per U. S. Coast Guard Regulations.

Generally, bridges are placed on schedule by the U. S. Coast Guard, in cooperation with the S. C. Highway Department. Scheduling is initiated when traffic volumes are such that bridge openings unduly delay and congest traffic during peak periods.

The case for scheduling is compounded when vehicular traffic increases are accompanied by increases in boat traffic, pushing up the number of requests for bridge openings. Since 1973 vehicular traffic over the Ashley River Bridge, for example, has increased by 20,300 vehicles per day. Boat traffic under the bridge increased 400 percent. The actual increase was only 297, but any increase is cause for concern under these circumstances--the Ashley River Bridge carries 86,400 vpd.

An average of five minutes is required to open and close a bridge for passage of a single boat, according to the South Carolina Highway Department. Where more boats are involved, the time delay is longer, of course.

The South Carolina Highway Department has evaluated traffic count data for several selected bridge crossings, and found that 80 percent of the average daily traffic occurs between the hours of 7:00 a.m. and 7:00 p.m. This means that of the 86,400 vpd crossing the Ashley River Bridge in 1983, approximately 69,000 did so between 7:00 a.m. and 7:00 p.m.

Researching bridge logs, we found that on the average 90 percent of the bridge openings occur between these same hours. Obviously then, the greatest impact on vehicular traffic movement is during this period.

To better dimension the impact, we converted bridge openings into lost or delayed time to the motoring public, with the results, presented on Table XIV.

From the table, we are able to measure the impact of bridge openings in terms of time-travel delays. The Ashley River Bridges, for example, were opened only 335 times between the hours of 7 a.m. and 7 p.m. in 1982, but the number of vehicles effected at each opening (480) was so high that the aggregate travel delay time was 40 hours, at 5 minutes per vehicle. For the year, travel delay time amounted to 13,400 hours.

The impact is not nearly as severe at other bridge crossings, except for the Wappoo, which due to the frequency of openings, has the greatest impact on aggregate travel time of any of the seven opening bridges in the county, 77,500 hours in 1982.

The table does more than measure the impact of bridge openings based on the present situation, it may be used to gauge the future impact, based on marina siting in the county.

TABLE XIII

BASCULE AND SWING BRIDGES, CHARLESTON COUNTY: HEIGHT, OPENINGS, CROSSINGS

Bridge	Vertical Clearance	Number Bridge Openings 1973	Number Bridge Openings 1982	Change Number	Change Percent	Number Bridge Crossings Vehicles Per Day (VPD) 1973	Number Bridge Crossings Vehicles Per Day (VPD) 1983	Change Number	Change Percent
Ashley River, Rt. 17 (#1 & #2)	14'	75	372	+297	3.96	66,100	86,400	+20,300	31
Ben Sawyer, Rt. 703 (Waterway)	31'	2,412	3,165	+749	0.31	10,400	11,900	+1,500	14
Dawho River, Rt. 174 (Waterway)	8'	5,273	4,729	-544	0.10	1,500	1,050	-450	30
Limehouse Rd. 20 (Waterway)	12'	5,214	5,560	+346	0.07	5,600	6,900	+1,300	23
Stono River, Rt. 700	8'	245	1,380	+1,083	4.42	7,400	10,400	+3,000	41
Wando River, Rt. 41	6'	3	4	+1	0.33	2,500	4,400	+1,900	76
Wappoo Creek, Rt. 700 (Waterway)	33'	2,348	4,306	+1,958	0.83	37,000	44,000	+7,000	20

Sources: (1) South Carolina Department of Highways and Public Transportation, Traffic Flow Maps, 1974, 1980 and 1983 (unpublished); Draw Bridge Reports, 1973, 1982. (2) U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Nautical Charts for Charleston County.

This application of the table is discussed in greater detail in the sub-section analysis of this report.

In view of the extent to which bridge openings effect the traveling public and the amount of time delay and inconvenience associated with such openings, it appears that considerably more weight should be given this factor. Surely there are enough potential marina sites in Charleston County, unobstructed by low level bridges, without developing those areas which will adversely impact traffic conditions. Traffic volumes on most bridge routes increased rather significantly over the past 10 years and, in all probability, will continue to do so. Therefore any increase in the number of bridge openings will have a negative impact on the transportation system.

The situation may be alleviated somewhat by going to a schedule, as with Ben Sawyer and Wappoo Creek. But outside of the waterway bridges, which accommodate the bulk of the county's boat traffic, schedules will have little impact on the situation. Most pleasure craft is operated in late afternoons and on week-ends, when vehicular traffic is at its lowest.

A case in point is the Stono River Bridge. In 1983, the bridge was opened 1,645 times, but only 27 times during the hours of 7 a.m. to 9 a.m., Monday through Friday, and 83 times during the hours from 4 p.m. to 6 p.m. This is less than seven percent of all openings. This is an average of just over twice a month during the morning rush hour and seven times a month during the evening rush hour.

Certainly, scheduled closings during these periods will help, particularly during the evening hours, but the overall effect will be minimal as the number of "post-poned" openings is quite small in relation to the total.

Here, the only effective resolve is a replacement bridge. And one is in the planning stage. Additionally, replacement bridges are planned for the Ben Sawyer and the Dawho River Bridges.

The Ben Sawyer and Dawho River cross the inlet waterway and will be replaced with 65' fixed span structures, thus alleviating traffic delays in these areas. The proposed Stono Bridge will be less in height, according to highway sources, but will have considerably more room for passage than is permitted by the existing 8' bridge. The final design is not yet complete.

The Dawho Bridge is scheduled for construction within the next one to two years. However, neither the Stono nor the Ben Sawyer has been scheduled for construction, the latter being held up by local opposition to the eventual placement of the new structure. The Stono is still in the engineering stage.

TABLE XIV

IMPACT OF BRIDGE OPENINGS,
TRAVEL-TIME DELAYS

Bridge	Total[1] Number Openings	Number[2] Openings	Average[3] Number VPD	Average[4] Number Vehicles Delayed Per Opening	Annual[5] Aggregate Number Vehicles Delayed	Time-Travel[6] Delay (Hours) Per Opening	Time-Travel[6] Delay (Hours) Yearly Aggregate
		7:00 a.m. - 7:00 p.m.					
Ashley	372	335	69,000	480	160,800	40.0	13,400
Ben Sawyer	3,165	2,850	9,500	66	188,100	5.5	15,675
Dawho River	4,729	4,260	840	6	25,560	.5	2,130
Limehouse Road	5,560	5,000	5,500	30	15,000	2.5	12,500
Stono River	1,380	1,240	8,300	58	71,920	4.8	595
Wando River	4	--	3,500	24	--	---	--
Wappoo Creek	4,306	3,875	35,200	244	945,500	20.0	77,500

[1]Recorded openings by the S. C. Highway Department, 1982.
[2]S. C. Highway Department logs; average 90% of all openings between 7:00 a.m. and 7:00 p.m.
[3]S. C. Highway Department, calculations for selected bridges; average 80 percent crossings between 7:00 a.m. and 7:00 p.m.
[4]Average opening time 5 minutes divided into 12 hour period = 144 five minute intervals divided into the average number vehicles crossing in a 12 hour period = average number delayed vehicles.
[5]Aggregate is calculated by multiplying number of bridge openings by number vehicles delayed during 5 minute interval.
[6]Number vehicles converted to time lost per vehicle.

Source: Vismor, McGill & Bell, Inc.

Shellfish Areas

The South Carolina Department of Wildlife and Marine Resources is in the process of mapping all shellfish areas in Charleston County. This program includes identifying all oyster beds according to size, productivity and pollution. At this point in time, the department has completed inventoring all oyster beds in "polluted" waters, as determined by the South Carolina Department of Health and Environmental Control. The results are presented on an accompanying map, entitled "Constraints to Marina Development." More detailed maps are available from the Marine Resources Division.

The maps are subject to change as waters are reclassified by DHEC, but as of now approximately one-third of the county's waterways have been classified as polluted and unsuitable for shellfish harvesting.

The total number of "polluted" oyster beds in the county is 2,464, according to the S. C. Wildlife and Marine Resources Department. While it is not possible to relate the number of polluted to non-polluted, harvestable oyster beds, due to incomplete survey data, it is sufficient to know the extent of shellfish pollution in the county. Further pollution and degradation of SA waters and subsequent closing of shellfish areas, as a result of any action, including marina siting, should be discouraged if not prohibited in light of the present situation---2,464 polluted oyster beds.

Information relative to the location and productivity of non-polluted oyster beds is available on request for any area of the county, by contacting the Marine Resources Division.

CHAPTER IV

CHARLESTON COUNTY SUB-AREA ANALYSIS

As established earlier by this report, there is a positive correlation between population and boat ownership, and the ratio is higher in water oriented areas such as Charleston County. Consequently, there is a need to know where, within the county, and at what rate future growth is expected to occur, in order to anticipate the market demand and subsequent pressure for new marina development.

All things being equal in a marina, proximity is the single most important factor in determining the demand for space and the overall market potential, as indicated by the results of our resident-docking survey. People living in Mount Pleasant, for example, want to use a marina in the Mount Pleasant area; not one on Johns Island.

This chapter, therefore, will focus on sub-areas of the county: (1) to determine the potential demand for marinas in each, and (2) to inventory and assess conditions bearing on such development.

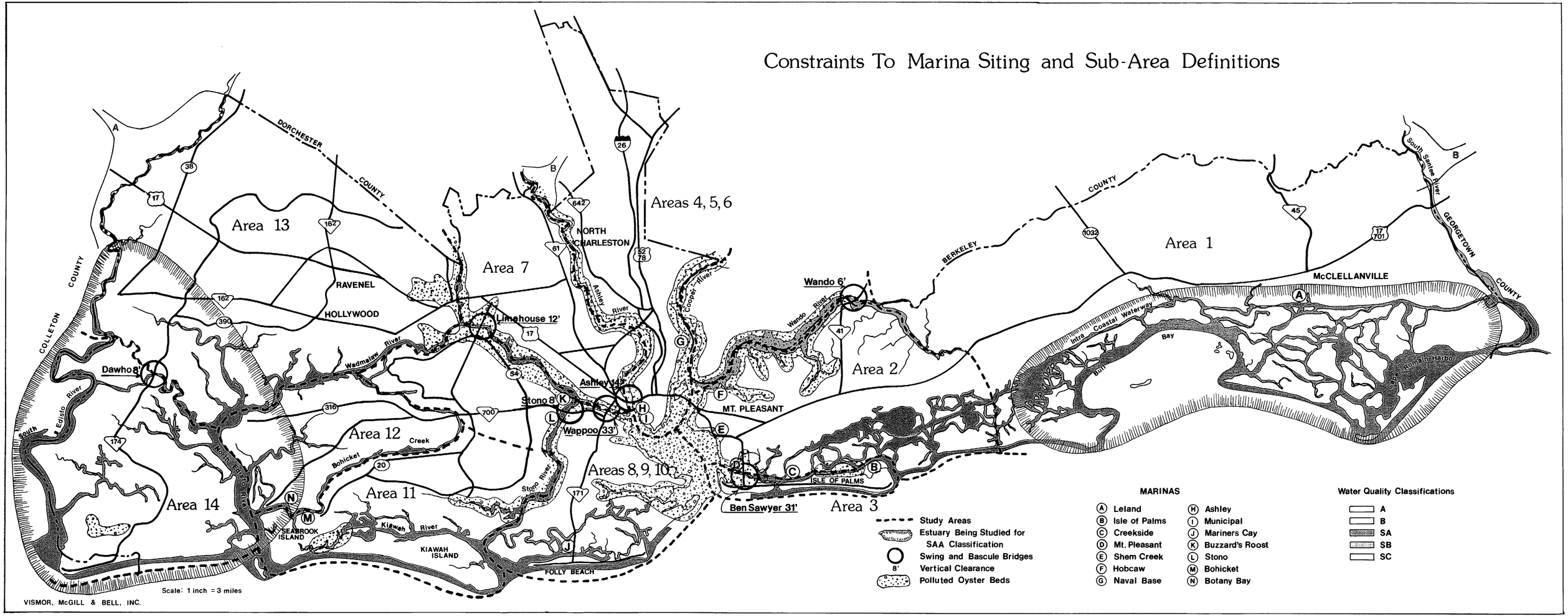
METHODOLOGY

Charleston County, with its many waterways, providing natural barriers to development and creating island communities, lends itself to sub-area analysis. Because of natural boundaries, most of these areas previously have been recognized for demographic study by the Bureau of Census and the BCD Council of Governments. Recognition of these same areas by this study, therefore, is important from the standpoint of developing statistical data that may be easily updated over time (Appendix C).

Toward this end, we divided the county into 14 study areas, starting with sub-area #1 east of the Cooper and concluding with #14, Edisto Island, as identified by the accompanying sub-area map.

A development profile is constructed for each, beginning with an assessment of current and projected population, boat ownership and available docking facilities. This is followed by a comprehensive inventory and assessment of the conditions, ie. water quality, transportation, etc. which may be impacted by future marina development.

Constraints To Marina Siting and Sub-Area Definitions



Sub Area #1: McClellanville/Awendaw

Description

The McClellanville-Awendaw area occupies much of the northern portion of the county, extending from the Santee River to Price Creek and the upper reaches of the Wando River.

Potential Demand

Demand for marina space is predicated principally on three factors: (1) population, (2) registered boats, and (3) marina facilities.

	Existing	Projected	
	1980	1990	2000
Population	4,200	4,250	4,300
Boats	285	350	420

As this area is predominantly rural, and is projected to remain so through the year 2000, the demand for additional marina facilities will be minimal. Although, the number of registered boats is expected to increase by over 300.

At present, Leland Marina, in McClellanville, is the only one in the area, and it is not a full service marina. But it does provide such essential services as fuel. It also offers a few berths.

One reason the demand is not expected to increase in proportion to the number of boats, is that most new boats are expected to be in the smaller, fishing and recreation class, capable of trailering.

Constraints

In the absence of "market demand" it matters little what the constraints to marina development might be. However, in this area, there are many.

The greatest constraint to development is in the area of water quality. The Department of Health and Environmental Control has classified all water bodies in this area SA, which is the highest salt water quality rating in the state at this time. Moreover, the Department is considering the reclassification of the Cape Romain Area, which essentially includes the entire Study Area #1, to class SAA. The Department estimates that less than 10 percent of South Carolina's waters could meet this higher quality classification, Cape Romain being one of the few. Discharge of any kind is prohibited in such waters.

Secondly, this area has limited passage to the Atlantic, Five Fathom Creek being the only marked channel.

Sub Area #2: Mount Pleasant

Description

This includes all the urbanized area east of the Cooper, except Sullivan's Island and Isle of Palms. It extends from the Cooper River to the boundary of Sub-Area #1, along Price Creek and the Wando.

Potential Demand

Based on its water orientation, income status, and projected growth, an additional 1,200 registered boats are estimated for the Mount Pleasant community by 1990, an increase of approximately 150 percent over the current estimate.

	Existing	Projected	
	1980	1990	2000
Population	23,476	33,000	41,700
Boats	1,600	2,800	4,100
Increase		+ 1,200	+ 2,500

With the loss of 50 spaces at Mount Pleasant Marina, the potential demand for marina space is expected to be quite strong. At present, this area, in conjunction with Sullivan's Island, and the Isle of Palms has by far the highest ratio of big boat owners in the county. On the average, one out of every 100 persons in this area owns a big boat (23' plus), compared with one out of every 268 persons countywide.

If this ratio holds through 1990, we will have an additional 100 big boat owners in this area, accounting for nearly one-fourth of the projected demand for the county over the next six years. This will produce a need for approximately 470 spaces by 1990, including space for the out-of-county demand. Already planned and/or existing at this time is space for 943 boats, excluding the 80 dry stack slips at Shem Creek Marina.

Isle of Palms	338
Creekside	29
Hobcaw	36
Mt. Pleasant	140
Patriots Point	400
	943

Constraints

Perhaps the greatest constraint to marina development in this area is zoning. Within the constantly expanding boundaries of the Town of Mount Pleasant, marinas are restricted to a single zoning district. And this district is established in but two areas of the town: at the site of the Mount Pleasant Marina and on Shem Creek. However, they may also be included as part of a PUD project.

Much of the area outside of town is in marsh and wetlands, posing major natural constraints to marina development. Also SA waters and non-polluted shellfish grounds are located east of the town and above the Ben Sawyer Bridge.

Sub Area #3: Sullivan's Island/Isle of Palms

Description

This study area includes basically the two island communities of Sullivan's Island and Isle of Palms, and is entirely incorporated.

Potential Demand

Boat ownership is expected to be somewhat higher in this area than in the county as a whole. But the limited land area will restrict the growth potential and the demand for future marina space.

	Existing	Projected	
	1980	1990	2000
Population	5,288	6,000	6,600
Boats	400	600	700
Increase		+ 200	+ 300

The number of registered boats by island residents is projected to increase by 300. But the demand for future marina space is expected to come largely from second home owners in the Wild Dunes section of the Isle of Palms.

With the planned expansion of Isle of Palms Marina (320 slips), and an additional pier at Creekside, the demand for dock space should be satisfied through 1990, and perhaps beyond, but price may dictate otherwise.

Constraints

Natural constraints identified by the previous discussion on Mt. Pleasant, also are present here, ie. marsh lands, SA waters, non-polluted oyster beds. Moreover, zoning by both towns is very restrictive, making further marina development unlikely, barring any ordinance changes.

Sub-Areas #4, #5 and #6: Charleston and North Charleston

Description

This area includes everything in Charleston County between the Cooper and Ashley Rivers. The reason for grouping these areas, as opposed to evaluating them singularly, is the market implication, brought about by constraints of both rivers--the Cooper being flanked principally by the military and commercial docking, and the Ashley being denied unlimited access by the two low level, high volume river bridges. This forces the market into the peninsula area--the only logical place for marinas in the three sub-areas.

Potential Demand

	Existing 1980	Projected 1990	Projected 2000
Population	142,836	147,000	150,500
Boats	9,800	12,100	14,600
Increase		+ 2,300	+ 4,800

Already sixty percent of the big boat owners reside in this area. And each of the three marinas located here--Lockwood Municipal, Ashley and the Naval Base Yacht Club--has a substantial waiting list. So, the demand for space here is far greater than the supply at this time.

There are 498 boat slips in this area and 616 big boat owners. Taking into account 20 percent occupancy by out-of-county boats, the number of spaces is effectively reduced by nearly 100, making available only 398 spaces for 616 big boat owners. The future demand will be even greater, as the total number of boats is projected to increase by 2,300 over the next six years. Of this number, 130 will be big boats, giving us a projected deficit of approximately 350 slips. Much of this deficit will be met by the city, which has plans for 300 additional slips at Lockwood Marina, and an additional 30 slips at the Festival Market Place. Although, the latter will be reserved principally for transient boats.

Constraints

Zoning does not appear to be much of a constraint, nor are the issues of water quality or shellfish harvesting of particular concern. The waters of the Cooper and Ashley Rivers, and Charleston Harbor are already off-limits to oyster harvesting. As a result, another marina would have little or no impact on the present situation.

What then are the constraints? Actually, there are several, not the least of which are the low level Ashley River Bridges, limiting usage of the Ashley River. This is a major constraint and one which should not be compromised because of the potential impact on traffic, discussed in Chapter III. Moreover, this river is flanked by numerous marshes and wetlands, which would have to be mitigated in order to properly site a marina. But the major constraint to the use of the Ashley is the bridges.

Much of the Cooper River is inaccessible because of large land holdings by the U. S. Navy. And a large part of the harbor is occupied by the S. C. Ports Authority, making available space a premium commodity.

Sub-Area #7: St. Andrews/Bear Swamp

Description

This area, too, is bounded by water, forming a peninsula in much the same fashion as Charleston. And the situation is quite similar in that the potential on the Ashley is restricted by the low level bridges, and access to the Stono is somewhat restricted by the Seaboard Coastline and expansive marsh areas.

Potential Demand

The projected growth of this area will be accompanied by

	Existing	Projected	
	1980	1990	2000
Population	49,425	57,000	63,200
Boating	3,400	4,700	6,100
Increase		+ 1,300	+ 2,700

an increase in ownership of approximately 1,300 boats by 1990. Of this number, approximately 70 will be large boat owners, generally requiring marina space.

Constraints

This area is flanked by the Stono and Ashley Rivers. And in the area of the Ashley, the constraints are the same as those listed previously: the Ashley River Bridges. This one obstacle is so great as to preclude marina siting on the Ashley.

In the opposite direction lies the Stono and Wappoo Creek, both of which are virtually inaccessible because of existing development or marsh.

Water quality and shellfish beds are of little concern here, as the oyster beds have been declared "polluted" by DHEC, although some of the upper reaches of the Stono carry an SA classification.

One final constraint to marina siting beyond the Limehouse Bridge is the bridge itself, with a clearance of only 12 feet. At present, the bridge is carrying only 6,900 vehicles per day, but because of its limited height and position on the waterway, it is opened more than any other bridge in the county--5,560 times during 1982. As a result, any future siting on this river should be east of the bridge.

Sub-Areas #8, #9 and #10: Folly Island, James Island and Rural John's Island

Description

These areas are grouped together because of their proximity to Stono and Buzzard's Roost Marinas, the Stono River and Wappoo Creek. They comprise a combined market area for existing and potential marinas in this vicinity.

Potential Demand

Boat ownership is expected to increase by 1,700 at the end of this century. It should be relatively consistent, based on population growth, but it will fluctuate with the economy.

	Existing 1980	Projected 1990	Projected 2000
Population	30,159	34,000	38,400
Boats	2,100	3,000	3,800
Increase		+ 900	+ 1,700

The number of resident big boat owners is projected to increase by 50 during the next six years, to 1990. Planned for the area is a 50 slip expansion by Stono Marina (application pending) and 100 slip addition by Mariner's Cay. Interestingly, neither marina is currently filled. Also, in the preliminary planning stages is a residential docking facility for a complex at the Merritt Dredging site, on James Island.

Constraints

Constraints to marina development in this area are many, although most shellfish areas have been classified as polluted by DHEC and would have little bearing on future siting. The principal constraint, as with the Ashley River, is the low-level bridge crossing the Stono. Its impact on traffic previously has been documented and discussed, but it bears restating in view of the severity of the problem. Until such time as this bridge is replaced, further marina expansion east of this location should be prohibited, as the problem will escalate in direct proportion to the number of slips added. And this includes slips on the Kiawah and Folly Rivers, as principal destinations for recreational vehicles are the ICWW and Charleston Harbor, both of which are more easily accessible via the Stono as opposed to the Atlantic Ocean. Thus, any marina siting down the Stono is apt to increase the number of bridge openings.

Mr. Harry Brunson of Buzzard's Roost Marina estimates that 90 percent of the traffic from his marina is directed toward Charleston Harbor, with only 10 percent headed down the Stono. This ratio most likely applies to the Stono Marina, as well. For boats docked further down river, at Mariner's Cay or Kiawah, the ratios probably would be less, but the number using this route would still exceed the number heading toward the Atlantic, in all probability. As a result, any sitings in this area will impact the bridge, causing additional openings and traffic delays.

Additionally, there are SA waters and harvestable shellfish beds to contend with in much of this area. Marsh and wetlands also are in great supply. But part of the Stono, down to Abbapoola Creek, has been closed to shellfishing, although the water carries an SA classification.

Sub-Area #11: Johns Island/Bohicket/Kiawah/Seabrook

This area, rual and sparsely developed in parts, is developing as a major resort complex. It is quite removed from the Charleston peninsula and its marina facilities; thus making it a market unto itself.

Potential Demand

Boat ownership is estimated to be quite low, at 380. It is projected to reach 800 by the year 2000, however, this may be artificially low.

	Existing	Projected	
	1980	1990	2000
Population	3,380	5,700	8,000
Boats	380	650	800
Increase		+ 270	+ 420

The demand for slip space in this area may be much higher than projected by this study because of the second home markets at Kiawah and Seabrook Islands. The demand projections are based on growth of the resident population, plus 20 percent for non-residents. But here, the ratio of out-of-county residents is apt to be much higher, and the subsequent demand for marina space greater. Although this has not proven to be the case thus far. Bohicket Marina, with 130 long-term slips, is just over one-half filled. And it is positioned to serve both complexes, located at the entrance to each. Moreover, there are plans to expand Bohicket by another 60 slips if and when the need arises.

Constraints

With few exceptions, the water in this area is of pristine quality, SA classification, and shellfish areas are not polluted. Unspoiled marsh and wetlands are in abundance. These natural constraints to marina siting are further compounded by the Stono River Bridge. It, too, will be impacted by marina development on the Kiawah River, as indicated previously. So, add to the list of natural constraints, and they are many, one man-made constraint--the Stono River Bridge.

Sub-Area #12: Wadmalaw Island

Description

Wadmalaw Island is clearly defined by its water boundaries. It is characteristically rural, but because of its access to the North Edisto River, a deep water marked channel to the Atlantic Ocean, it has great appeal for the boating enthusiast. However, it is remote and quite removed from the growth center of the county.

Potential Demand

Because of its remote location, little growth is projected for this area. Likewise, boat ownership and the demand for marina space is minimal as well.

	Existing	Projected	
	1980	1990	2000
Population	2,440	2,600	2,800
Boats	170	200	270
Increase		+ 30	+ 100

Constraints

Surrounded as it is by pristine waters, one would think that any marina siting would degrade water quality. But due to the flushing action on the Wadmalaw and Edisto Rivers, and Bohicket Creek, this is not necessarily the case. Therefore, unless oyster beds are involved, the natural constraints in this area may be mitigated. Any mitigating action also would have to take into account the projected impact on the Limehouse Bridge, as a marina siting in this general area would be felt at the bridge.

Unless a residential resort complex is planned for this area, these constraints may never have to be mitigated, as projected growth is quite low and the area is too far removed from the urban fabric of the county to attract much attention as a marina site.

Sub-Area #13: Ravenel/Hollywood/Meggett/St. Paul Area

Description

This area of the county is rural and sparsely developed. As a result, it is outside the boundaries of the Charleston Area Transportation Study (CHATS). It includes everything in the county west of the Wadmalaw River and south of Rantowles Creek.

Potential Demand

As this area is not projected to grow at the accelerated rate of some of the more urbanized areas of the county, growth in the number of boat owners also is expected to be modest. And the demand for marina facilities limited.

	Existing	Projected	
	1980	1990	2000
Population	10,950	12,100	13,300
Boats	750	1,000	1,290
Increase		+ 250	+ 540

Like Wadmalaw Island, there is little potential for marina development here, unless a major residential resort complex is proposed. At present, the market is insufficient to support a marina, and is not projected to expand enough over the next 16 years to do so, unless something out of the ordinary occurs.

This is not to rule out the possibility that one will not be proposed, however. But market indications would tend to rule out such a proposal for some time.

Constraints

While the demand appears to be small, the constraints are large. Prestine waters, shellfish beds and marsh areas are in abundance. But where the water may be reached without disturbing wetlands or oyster beds, marina siting may be mitigated due to the flushing action on the major waterways.

In addition to the Limehouse Bridge, the Dawho also must be considered, as it has an even lower clearance (8'). This situation may be only temporary, however, as the Dawho is scheduled to be replaced within the next few years.

An area of particular concern is the South Edisto basin. Its waters are of the highest quality in the state, and could support an SAA classification, according to DHEC. This could essentially disallow future marina siting. But due to the nature of these waterways, shouldn't they be protected? Shouldn't DHEC be requested to make such a classification official, before the quality is compromised?

Sub-Area #14: Edisto Island

Description

Because of the many waterways separating it from the rest of the county, Edisto Island is perhaps the most inaccessible area of the county. Its remote position already has resulted in the loss of Edisto Beach, when in 1975, it annexed to neighboring Colleton County.

Potential Demand

The population on Edisto Island, outside of Edisto Beach, is quite sparse,numbering only 1,345 in 1980. And in contrast to most other areas in the county, it is projected to decline slightly in population. The total is expected to be around 1,300 by the year 2000. Boat ownership also is expected to be lower, generating no demand from within for marina facilities.

	Existing 1980	Projected 1990	Projected 2000
Population	1,345	1,330	1,300
Boats	90	100	120
Increase		+ 10	+ 30

The above demand projections belie the present situation. There are two marina proposals pending for this area. Both are adjuncts to planned residential resort complexes. One includes slips for 200 boats and the other will have space for 48 boats (previously discussed).

Constraints

The 200 slip marina proposed for the South Edisto River would jeopardize any hopes of securing an SAA classification for these waters. The flushing action of the Edisto probably is sufficient to accommodate the project, but not sufficient for an SAA classification.

Again, we are dealing with some of the more pristine waters in the state, flanked heavily by marsh and wetlands. Additional constraints posed by shellfish areas, if any,will have to be considered separately, as the data are not available for the entire county at this time.

But this entire area is extremely critical from the standpoint of its natural qualities--qualities that have not as yet been compromised. The question arising in face of the two marina proposals is, should they be approved in light of the fact that they would compromise the water quality to such an extent that an SAA classification would be unattainable?

CHAPTER V

RECOMMENDED CRITERIA FOR EVALUATING AND PERMITTING MARINAS IN CHARLESTON COUNTY

Any attempt to quantify and make uniform marina siting criteria will be met by the cry "that each situation is different and therefore, should be evaluated individually." And to an extent, this is true. But there are degrees to which any marina will impact the environment, ranging from acceptable to unacceptable.

The thrust of this study is to discern between the two. If everything is left to mitigation, then there are no absolute constraints. This is not the case, however. There are conditions which should not be compromised or mitigated. But, also there are conditions where mitigation is necessary; and conditions where it is not required.

Therefore, we have structured an evaluation process, or matrix of "siting standards", which establishes conditions as:

(1) Generally acceptable to marina siting

(2) Generally marginal to marina siting, requiring mitigation, and

(3) Generally unacceptable to marina siting.

(1) Generally Acceptable: The project shows a positive or neutral impact on all major environment elements. Normally there would be no objection to marina siting.

(2) Generally Marginal, Requiring Mitigation: The project shows negative impacts, but may be acceptable with mitigation, of the type prescribed by the siting standards matrix.

(3) Generally Unacceptable: The project exceeds the limits of acceptability, posing sufficient negative impacts to warrant permit denial.

What Is A Marina?

Before we go any further, we need to establish just what is a marina. According to Charleston County's Zoning Ordinance, a marina is:

> "A basin or marine terminal that provides space, docks, moorings and related facilities/services for 5 or more pleasure boats.
>
> "This does not include the sale and repair of recreational marine craft nor ship and boat building and repairing."

The South Carolina Coastal Council has a somewhat different definition. It describes marinas as:

> "facilities that provide boat launchings, storage, moorage, supplies, and services. There are three basic types of marinas:
>
> (a) the open structure type where open pile work and/or floating breakwaters are used;
>
> (b) the solid construction type where bulkhead and landfill are used to provide moorings and shelters;
>
> (c) the dry storage type where boats are stored in specially designed warehouses placed entirely on high land.
>
> Commercial docks are also considered a marina type facility."

The Council adopted a revised definition May 18, 1984, classifying any docking facility with six or more slips as a marina.

The South Carolina Department of Health and Environmental Control has not adopted an official definition of a marina, but generally considers a marina to be a docking facility, where marine services are available. Herein lies a problem which surfaced during the Kiawah Marina hearings. DHEC has a policy of closing all shellfish areas within 1,000 feet of a marina. Therefore, to permit the proposed facility at Kiawah would result in such a closing. However, there exists at Kiawah a "community docking facility" with a capacity for up to 18 boats. But because this facility is not recognized by DHEC as a marina, there has been no such closing. By its own admission, DHEC has permitted marinas smaller in size. And where permitted, shellfish areas are routinely closed as a precautionary measure.

The applicant argued that the 18 slip community docking facility was, in fact, an existing marina and as such should have caused the closing of shellfish areas within 1,000 feet.

That it was not called a marina nor permitted as such had no bearing on the impact it had on water quality. The distinction was made principally on the basis of operation: because it was not operated as a marina, it was not a marina. And because it was not considered a marina, shellfish areas within 1,000 feet were not closed. But according to the county's definition, it was a marina.

Recommended Definitions

For purposes of this study and for regulating marinas in Charleston County, four classifications are recommended:

Proposed Definitions

(1) Marina, Non-commercial Multiple Docking Facility

A basin or marine terminal that provides space, docks, moorings for five (5) or more boats on a private or non-commercial basis. This includes multiple docking facilities such as for condominiums or other residential uses or subdivisions, and includes non-profit "yacht clubs." It does not include service generally associated with commercial marinas, such as fuel, over-night docking, ship's store, etc. Dry storage and/or dry stack is permitted.

(2) Marina, Commercial

A basin or marine terminal that provides space, docks, moorings and related facilities and services for five (5) or more pleasure boats. This includes the sale and repair of recreational marine craft and the sale of fuel, food, beverage, supplies, hardware and other accessory uses. Dry storage and/or dry stack is permitted. It does not include boat building and boat yards.

(3) Marina/Boat Yard

A basin or marine terminal that provides space, docks, moorings and related facilities and services for five (5) or more boats, including pleasure and commercial craft. This includes the sale, repair, and building of boats, dry storage, and/or dry stack, fueling operations, and other uses permitted by the marine commercial definition.

(4) Marina, Dry Stack

A facility for storing and keeping boats out of water. This is principally a land operation, where boats are dry stored or "stacked" until such time as they are transferred to the water for use. Because of the

mechanics involved in this operation, dry stack marinas seldom accommodate boats in excess of 25 feet. A dry stack marina shall provide dock space for no more than four (4) pleasure craft, which space shall be used principally for "temporary docking" during the loading and unloading operation. A dry stack marina may include the sale of fuel, supplies, hardware and other accessories, but not boat building, boat yards, or facilities for overnight docking.

The above definitions make clear what constitutes a marina and distinguishes among such uses on the basis of functional characteristics. Dry stack marinas are defined principally as "land marinas " and, as such, may be developed individually where no more than four dock spaces are provided,or as part of one of the previously defined marinas, where five or more "wet" slips are provided.

In the above context, non-commercial marinas are viewed as complementary or accessory uses to residential development, similar to golf courses, and tennis clubs.

Commercial marinas are designed to fit into selected commercial districts; while marina-boat yards are intended for industrial or heavy commercial zoning districts. Dry stack marina operations may qualify for any given zoning district or area of the county, depending on how they are developed, ie. as a non-commercial accessory use, commercial use, or in tandem with boat yard operations.

Recommended Objectives

Before we recommend the adoption of a criteria for evaluating the impact of marinas, we need first to determine what we hope to accomplish. Toward this end, the various state and federal agencies involved in the permitting process already have enunciated their objectives, most of which are contained in their respective enabling legislation. But what are the county's objectives? What does Charleston County hope to accomplish as a result of this study?

The county's objectives are not unlike those of the various state and federal agencies involved in the permitting process, but primary consideration shall be given:

(1) To maintain the applicable water quality standards and to cause such standards to be upgraded as they apply to the South Edisto River Basin and the Cape Romain Estuary, from SA to SAA.

(2) To preserve the integrity of the natural shoreline, including marsh areas and wetlands.

(3) To minimize the impact of marina siting on traffic flow, and the operation of low level bascule and swing bridges.

(4) To preserve marsh and wetlands.

(5) To prevent further pollution and closing of oyster beds and shellfish areas.

(6) To encourage marina siting in response to market demands, as demonstrated by Chapter II.

(7) To site and maintain marinas, including dry stack marinas, so as to minimize any detrimental impact on adjacent residential uses or environmentally sensitive areas.

(8) To insure through site plan review, adequate consideration of storm water runoff, erosion, service utilities, and bufferyards.

(9) To discourage marina siting in areas where dredging is required or "flushing" is inadequate.

Recommended Siting Standards

Siting standards for marina development in Charleston County are recommended by the following Impact Matrix. It addresses each of the key elements which may be impacted by such development, setting forth "conditions of acceptance."

Recommended Use of Siting Standards Matrix

The matrix includes development criteria and standards used by the various permitting agencies, ie. S. C. Coastal Council, S. C. Department of Health and Environmental Control, U. S. Corps of Engineers, and local governments. As such, it represents a comprehensive approach to marina siting in the county.

Much of the detailed information required by the various permitting agencies is absent from the matrix, and must be secured directly from such agencies. But the conditions that generally constitute acceptance, mitigation or unacceptance are there. And if the matrix, including the definitions and objectives are adopted for use by each of the local governments in Charleston County, it will provide for the first time, a uniform criteria and reference for marina siting, irrespective of the local jurisdiction within which such siting is proposed.

But in order for the siting standards to have uniform applicability, marinas cannot be permitted as "uses by right." Instead, they must be re-established in all local zoning ordinances as "conditional uses." In this way, it will be possible for local planning commissions and councils to review marina applications with the siting standards contained in the Matrix.

Recommended Steps To Implementation

The use and implementation of the recommendations contained in this document may be facilitated by the following schedule of action by Charleston County Council:

Step I

Adopt the study for use in reviewing all future marina applications in the county.

Step II

Instruct the planning staff to prepare the necessary language to amend the zoning ordinance:

(1) to include the proposed marina definitions;

(2) to make marinas "conditional uses" in each district in which they are presently permitted--to remove them as uses by right where they are presently permitted as such;

(3) to adopt by reference the Siting Standards contained in the Impact Matrix.

Step III

To forward copies of this document to all municipal governments in the county, with a request that each consider taking the same action outlined in Step II. If complied with, this will establish uniform standards for siting marinas throughout the county, irrespective of political jurisdiction.

MARINA SITING STANDARDS

(IMPACT MATRIX)

ELEMENTS IMPACTED BY MARINA SITING	CONDITIONS GENERALLY ACCEPTABLE TO MARINA SITING	CONDITIONS GENERALLY MARGINAL TO MARINA SITING, REQUIRING MITIGATION	CONDITIONS GENERALLY UNACCEPTABLE TO MARINA SITING
Water Quality (classification)	SC--Marina siting is generally acceptable in SC waters.	SB, B and SA--Marina siting may be acceptable in SB, B and SA waters, provided such siting will not result in the lowering of water quality; the closing of existing shellfish areas open to harvesting; or otherwise interfere with existing uses of such waters, as determined by the S. C. Department of Health and Environmental Control (DHEC).	SAA and A--Marina siting is generally unacceptable in SAA and A waters, including waters of pristine quality, ie. South Edisto River basin and Cape Romain Estuary. A marina siting on these waters would jeopardize the upgrading and reclassification of such areas in the future.
Water Depth	Adequate for all recreational boats--no dredging required.	Inadequate for recreational boats--no alternative to dredging; however, required dredging: (1) will have no measurable impact on existing shellfish grounds, nursery areas or submerged aquatic vegetation of value to fish, shellfish and wildlife, and (2) deposits may be disposed of in a manner acceptable to the U. S. Corps of Engineers.	Inadequate for recreational boats--required dredging: (1) will destroy existing harvestable shellfish grounds, nursery areas, submerged aquatic vegetation of value to fish, shellfish and wildlife, or (2) will produce stagnant water conditions, fish entrapments or degrade water quality.
Bridges	Marina siting will have no direct impact on existing bascule and swing bridges. Note: In making this determination: (1) a marina siting on either side of the Ben Sawyer or Wappoo Bridge shall be considered to have no direct impact, because of their relative height and urban location on the Intracoastal Waterway; (2) a marina siting on the waterway and/or Charleston Harbor side of any other bascule or swing bridge, except the Dawho, shall be considered to have no direct impact, as opposed to a siting on the opposite side; (3) a marina siting in the vicinity of and on either side of the Dawho shall be considered to have a direct impact and require mitigation as provided for by this matrix.	Marina siting will have an impact on bridge traffic, but because of conditions at the bridge, the impact may be mitigated where: (1) vehicle crossings are less than 10,000 per day, as reported by the most recent highway dept. count, and (2) vertical clearance beneath the bridge is at least 7.5 feet, but no greater than 15 feet.	Marina siting will have an unacceptable impact on bridge traffic, where (1) vehicle crossings exceed 10,000 per day as reported by the most recent highway department count, and (2) vertical clearance beneath the bridge is less than 15 feet. Note: Dry stack marinas shall be exempt from these conditions, provided (1) no boats exceeding the clearance of any bridge between the marina and ICWW are stored or kept at the facility, (2) no fuel pumps shall be accessible from the water, and (3) assurances to this effect shall be provided and shall constitute "conditions of approval."

MARINA SITING STANDARDS
Impact Matrix (Continued)

ELEMENTS IMPACTED BY MARINA SITING	CONDITIONS GENERALLY ACCEPTABLE TO MARINA SITING	CONDITIONS GENERALLY MARGINAL TO MARINA SITING, REQUIRING MITIGATION	CONDITIONS GENERALLY UNACCEPTABLE TO MARINA SITING
Streets and Roads	Marina siting will have no significant impact on existing traffic patterns; create no hazardous intersections; cause to be installed no additional traffic controls; or utilize neighborhood or minor streets as the principal means of access, unless, of course, the proposed marina is a residential docking facility, designed to serve the neighborhood in question.	Marina siting will impact the transportation system, but the situation may be mitigated through street design modifications, such as acceleration-deceleration ramps, street alignments, installation of traffic controls, and other design alternatives which would minimize the impact.	Marina siting will have a substantial negative impact, where: (1) neighborhood streets would provide the primary access to a commercial or boatyard marina, or (2) a potentially hazardous intersection would be created.
Marsh Areas and Wetlands	Marina siting will have no affect on marshes, wetlands, mudflats, and similar areas contiguous or adjacent to coastal waters.	Marina siting would impact marshes, wetlands or mudflats, but through proper site planning and design consideration of the following elements, the impact could be eliminated or reduced to an acceptable level by: (1) providing open dockage to deep water, as opposed to excavation and filling; (2) limiting impervious surface areas to no more than 25 percent of the "high ground;" (3) utilizing best management practice(s) as recommended by the S. C. Coastal Council, in the design of a stormwater runoff system (see SCCC Stormwater Management Guidelines, 1983); (4) minimizing any disturbance of such areas by retaining them, as nearly as possible, in an unaltered state.	Marina siting would substantially impact marsh and wetlands, disturbing and disrupting the use of such areas as wildlife habitats, and marine life resources. Also, where marina siting would affect an irreplaceable historic and archaeological site.
Shellfish Areas	Marina siting is generally acceptable in any polluted areas or areas "closed to shellfish harvesting." This includes principally SB and SC classified waters.	Marina siting is generally unacceptable in any SA, pristine classified waters, but may be located in such areas where (1) they have been closed to shellfish harvesting by DHEC, (2) they are void of shellfish beds, or (3) they would cause no closing or destruction of any known shellfish areas of value for human consumption or marketing purposes.	Marina siting is generally unacceptable: (1) in any SA, pristine classified waters where there is an existing use of shellfish which would be closed or destroyed by such siting, or (2) in any SAA, pristine classified waters, or waters capable of meeting SAA standards (see Constraints Map).

MARINA SITING STANDARDS
Impact Matrix (Continued)

ELEMENTS IMPACTED BY MARINA SITING	CONDITIONS GENERALLY ACCEPTABLE TO MARINA SITING	CONDITIONS GENERALLY MARGINAL TO MARINA SITING, REQUIRING MITIGATION	CONDITIONS GENERALLY UNACCEPTABLE TO MARINA SITING
Existing Land Use	Marina siting is generally acceptable (1) where recommended by applicable Land Use Plans, (2) where permitted by applicable zoning regulations as a use by right, or (3) where such siting is sufficiently removed from existing residential development so as to have no impact on such use.	Where marinas are permitted by zoning as "conditional uses," the implication is that such a siting could have a negative impact on existing land use. To reduce, if not eliminate such a possibility, the following safeguards are recommended: (1) require installation of bufferyards, appropriately dimensioned to assure adequate buffering of adjacent land uses from noise, light, access or visual nuisance, (2) limit the size and scale of the marina if the area to be impacted is predominantly residential and the waters are used for primary contact recreational activities, (3) require landscaping and structural design modifications as appropriate for the area in which the marina is to be located, (4) impose other requirements as necessary to make the marina compatible with existing land uses.	Marina siting is prohibited from certain areas by some local zoning ordinances, and is not recommended for others by some local Land Use Plans. But ordinances and plans are subject to change. As a result, a more definitive criteria prohibiting such development is recommended where such a change (1) would create a "spot zone," or isolated district unrelated to adjacent properties, (2) would be incompatible and at variance with existing land uses, (3) would be a detriment to improvement or development of adjacent property, (4) would adversely affect property values in adjacent areas, (5) would allow a land use out of scale with the needs of a given neighborhood or community, or (6) create a safety hazard in water areas used extensively for primary contact recreational activities.
Public Services and Utilities	Marina siting can be accommodated with "in-place" water lines, sewerage facilities, fire and police protection, etc., creating no additional need for such facilities or demands on such services.	Marina siting will create additional demands for public services and utilities, but all such essential support elements can and will be made available to the site without creating an excessive demand on local government.	Marina siting (1) cannot be adequately facilitated without creating an excessive demand on local government for drainage system improvements, additional fire and police protection, and/or water and sewer facilities, including any additions necessary to handle "pump-out" facilities, or (2) all essential public services and facilities are not available to the site.

APPENDICES

APPENDIX A	Martin County, Florida, Dock Standards and Regulations
APPENDIX B	Use Conditions For Siting Recreational Marinas In Charleston County
APPENDIX C	Population Distribution and Projections, Charleston County, 1980-2000
APPENDIX D	Population Projection Methodology

APPENDIX A

MARTIN COUNTY, FLORIDA
DOCK STANDARDS AND REGULATIONS

I. PURPOSE AND INTENT

(a) The purpose of these standards and regulations is to implement those sections of the Martin County Comprehensive Plan pertaining to shoreline construction within and adjacent to the estuaries of the County, and further to provide general policies and guidelines for the consideration, location, design parameters, permitting and construction of docks within the waters of Martin County.

(b) It is the intent of these policies to, 1) Employ flexible parameters and dock design criteria in order to minimize adverse environmental and social impact. 2) To establish easily understood guidelines for the waterfront property owner utilizing scientifically based standards to simplify and expedite the permitting process. 3) To aid ... . . fair and equitable distribution of access to and use of submerged lands between the uplands and channels. 4) To assure a direct unobstructed means of ingress and egress over the foreshore and tidal waters to the channel. 5) To encourage the space efficient utilization of docks. 6) To eliminate the necessity of arbitrary decision making in the permitting approval process.

II. DEFINITIONS

The following definitions shall be employed in interpretation of the purpose and intent:

1) "Dock" (or "Pier") shall mean a fixed or floating structure providing access on or over submerged lands.

2) "Mooring Piling" shall mean a stake, post, pillar, pilings used for the purpose of berthing buoyant vessels either temporarily or indefinitely or for a finite period, whether or not used in conjuction with a Dock.

3) "Platform" shall mean any portion or portions of a dock with a width in excess of the allowable width of the access pier.

4) "Commercial dock" shall mean a docking facility constructed and used for the purpose of sale, lease, or rent for profit.

5) "Non-Commercial dock" shall mean any docking facility not herein defined as a commercial dock.

6) "Riparian line" shall mean a line as near as practicable toward the direction of the thread of the stream or channel from the intersection of the Mean High Water Line (MHWL) with the upland property line which will provide fair and equitable access between the upland and the stream or channel; this line is generally perpendicular to the MHWL at point of intersection with the upland ownership line. In cases where there is a significant dispute as to the proper location of the riparian lines, a riparian line survey is recommended.

7) "Waterway width" shall mean, with respect to any dock to which the measure applies, the straight line distance from the point at which the centerline of the dock or pier intersects the mean high water line measured to the nearest point on the mean high water line of the opposite shore of the waterway.

8) "Submerged Lands" shall mean all those lands lying waterward of the mean high water line.

III. DOCK CATEGORIES AND CRITERIA

A. Non-commercial single family and single establishment dock facility -

1. Maximum width and area:

   a) Access pier: 6 feet wide

   b) Platform(s): 500 square feet in area

   c) Boat shelters, mooring pilings and lifts shall be excluded from this requirement.

2. Unoccupied setbacks from riparian lines:

   a) Mooring pilings and uncovered boat lifts: 10 feet

   b) All other structures and uses: 25 feet

3. No docking facility may occupy or cause to occupy more than twenty-five percent of any water way width as measured at the location of the docking facility. Additionally, no docking facility may be located closer than one-hundred (100) feet to any established channel unless waived by the U.S. Army Corps of Engineers.

B. Non-commercial multiple dock facility -

1. Maximum width and area:

   a) Access pier: 8 feet wide

   b) Platform(s): 500 square feet in area

   c) Boat shelters, mooring pilings and lifts shall be excluded from this requirement.

2. Unoccupied setbacks from riparian lines: 25 feet

3. No docking facility may occupy or cause to occupy more than twenty-five (25) percent of any water way width as measured at the location of the docking facility. Additionally, no docking facility may be located closer than one-hundred (100) feet to any established channel unless waived by the U.S. Army Corps of Engineers.

C. Commercial Dock Facility - this category is established to implement Comprehensive Plan policies for managing land designated for Marine Waterfront Commercial development which meets standards for Waterfront Resort Commercial or Waterfront General Commercial.

1. Maximum Width and Area:

   a) Access pier: 12 feet wide

   b) Platform(s): not applicable

   c) Boat shelters, mooring piles and lifts shall be excluded from this requirement

2. Unoccupied setbacks from riparian lines: 25 feet

3. No docking facility may occupy or cause to occupy more than twenty-five (25) percent of any water way width as measured at the location of the docking facility. Additionally, no docking facility may be located closer than one-hundred (100) feet to any established channel unless waived by the U.S. Army Corps of Engineers.

4. Parking requirement: one (1) parking space per five (5) slips or dock spaces.

IV. PERMIT PROCEDURE

A. Non-commercial single family and single establishment facility dock -

Applications for approval shall be processed together with any applicable Department of Environmental Regulation and U.S. Army Corps of Engineers permits in the same manner as required for obtaining building permits.

B. Non-commercial multiple dock facility-

1. For a dock 200 feet or under in length:

   Applications for approval shall be processed together with any applicable Department of Environmental Regulation and U.S. Army Corps of Engineers permits in the same manner as required for obtaining building permits.

2. For two (2) or more docks with access piers 200 feet or under in length and for all docks greater than 200 feet in length having less than 99 slips:

   Applications for approval shall be processed together with any applicable Department of Environmental Regulation and U.S. Army Corps of Engineers permits in the same manner as required for multi-family site plan approval (Ordinance [illegible]) or non-residential site-plan approval (Ordinance 142), whichever is applicable.

3. For docks having more than (99) slips:

   In addition to meeting the above requirements, Planning and Zoning Board approval shall be obtained.

C. Commercial Docking Facility

1. For a dock 200 feet or under in length:

   Applications for approval shall be processed together with any applicable Department of Environmental Regulation and U.S. Army Corps of Engineers permits in the same manner as required for obtaining building permits.

2. For two (2) or more docks with access piers 200 feet or under in length and for all docks greater than 200 feet in length having less than 99 slips:

   Applications for approval shall be processed together with any applicable Department of Environmental Regulation and U.S. Army Corps of Engineers permits in the same manner as required for non-residential site plan approval (Ordinance 142).

3. For docks having more than (99) slips:

   In addition to meeting the above requirements, Planning and Zoning Board approval shall be obtained.

V. WAIVERS

Where there is a recorded agreement between the affected adjoining property owners, setback requirements shall be waived.

VI. VARIANCE PROCEDURE

The procedure for an authorization of variances as established in Section 23-37.5 (Powers) of the Martin County Code shall apply to this Ordinance.

VII. APPEALS PROCEDURE

The procedure for appeals as established in Section 23-37.6 and 23.37.7 (Appeals;Functions) of the Martin County Code shall apply to this Ordinance.

APPENDIX B

USE CONDITIONS FOR SITING
RECREATIONAL MARINAS IN CHARLESTON COUNTY

Sec. 30.80.7110. Recreational Marinas

1. Permitted Uses. Recreational marinas containing five or more boat slips may provide the following uses when specifically authorized either as a use-of-right or Conditional Use Permit approval:

   a. All recreational marinas

      (1) launching ramps and small hoists (to accommodate primarily the launching of watercraft not exceeding 3,000 pounds);

      (2) piers, wharves and other facilities for the berthing and securing of recreational watercraft;

      (3) dockside maintenance and repair necessary to keep watercraft in operable condition;

      (4) wet storage and mooring of seaworthy pleasure craft in operable condition;

      (5) dispensing of fuel subject to Sec. 30.70.70.30;

      (6) shower and laundry facilities for marina clientele only;

      (7) vending machines.

   b. Recreational marinas providing 50 or more boat slips may provide the following additional services:

      (1) bait and tackle retail sales;

      (2) retail sales of basic marine supplies and accessories necessary for boat operation, maintenance and upkeep (not to include the sale of boats and/or motors);

      (3) snack bars and retail groceries.

   c. Other uses or services. Marinas located in districts by use-of-right may provide such additional activities or services as permitted by the applicable use tables.

2. All recreational marinas shall meet the following criteria:

   a. Lot size and location. The property shall have a minimum of one acre of high ground above the mean high water mark when public water and public sewer are available, shall have frontage on a public-owned road, and have a minimum width of 150 feet at the water front.

   b. Services. All services provided by the marina shall be located on the same zoning lot or on the piers associated therewith.

   c. Structures. All retail sales and services shall be enclosed. The maximum structure size or bulk shall be limited to 10 square feet of net floor area for each boat slip.

   d. Setbacks. All structures shall be set back a minimum of 100 feet from abutting property zoned as an AR, R, or OP District except where the property line is the street right-of-way line, in which case the front yard established for the zoning lot shall apply.

   e. Parking. Off-street parking shall be provided in accordance with Article 30.65. Any parking associated with the use of the launching ramp and other marine activities must be accommodated on-site. Parking surfaces and off-street roads or driveways within the facility shall be graded and covered with a permanent dustproof surface.

   f. Storage. Areas for boat trailer storage and open field boat storage shall be designated and screened in accordance with Sec. 30.10.20 from any adjacent AR, R, or OP District. Open field boat storage on trailers may be provided on a ratio of one 10 x 20 space for each two boat slips.

   g. Signs. Sec. 30.80.0631 shall apply for all signs located within the district. Those signs which identify commercial activity shall be placed and designed so as not to attract the general public.

   h. Waterborne activities. The conducting of business activities from or on waterborne craft is prohibited.

3. Wastewater disposal facilities shall meet the requirements of the regulatory agencies having jurisdiction.

4. Firefighting or fire prevention equipment shall be as specified by the local fire district in which located.

Sec. 30.80.7491. Camping and Picnicing Areas

In any Agricultural or Residential District where camping and picnicing areas are permitted, the following minimum conditions shall apply:

Such areas shall be located only within public or recreational vehicle parks and at least 100 feet from the nearest property line hereof.

Sec. 30.80.8540. Excavation of Soil, Gravel or Rock

In granting a Conditional Use Permit for this use, the Planning staff shall require that the application be accompanied by a copy of a valid permit from the State of South Carolina Land Resources Conservation Commission that has been issued within six months of the conditional use application date. The Board may, on a case basis, also require that the excavation area be screened, that a drainage plan be submitted and approved for the restoration of the site when excavation has been completed. When approval by the Planning Board has been granted to the applicant, the Planning staff will provide locator data by tax map data to the Environmental Health section of the Charleston County Health Department as well as to the Mosquito Abatement section of the Public Works Department.

APPENDIX C

POPULATION DISTRIBUTION AND PROJECTIONS, CHARLESTON COUNTY, 1980-2000

STUDY AREA No.	STUDY AREA Name	TRAFFIC DISTRICTS AND ZONES (Established in CHATS Report)	1980 Population: Census Count	1980 Population: CHATS Estimates	Percent of County Total, 1980: Census Count	Percent of County Total, 1980: CHATS Estimates	Population Projections, 2000: CHATS Report	Population Projections, 2000: Adjusted[5]	Percent of County Total, 2000: CHATS Report	Percent of County Total, 2000: Adjusted
1	McClellanville/ Awendaw	(Outside CHATS Area)	4,199	---	1.5	--	---	4,300	---	1.3
2	Mt. Pleasant	D-33, 34	23,476	22,552	8.5	8.4	35,200	41,700	10.1	12.5
3	Sullivans Island/ Isle of Palms	D-32	5,288	6,159	1.9	2.3	13,020	6,600	3.7	2.0
4	Charleston	D-1 through 8	40,795	47,469	14.7	17.7	44,680	36,900	12.8	11.1
5	Charleston"Neck"	D-9, 10		12,649			10,704	7,000		
6	North Charleston	D-11, 12, 13, 14, 15, 18, 19, 20 (minus TZ 273), 22 (TZ 286, 287, 288), 23 (290, 292, 293, 294), D-S1 (485), D-S2 (486)	102,041	84,997	36.8	36.5	106,548	106,600	33.6	34.2
7	St. Andrews/Bear Swamp	D-24, 25, 26	49,425	53,113	17.8	19.9	72,945	63,200	20.8	19.0
8	Folly Island Area	D-28	27,719	3,305	10.0	10.8	5,435	4,500	12.2	10.7
9	James Island	D-27		25,550			37,290	31,100		
10	Johns Island-(Part)	D-30		6,220			8,613	5,300		
11	Johns Island-(Part) Bohicket/Kiawah/ Seabrook	D-29	9,296	3,381	3.4	3.6	12,550	8,000	6.1	4.0
12	Wadmalaw Island	D-31	2,440	2,150	0.9	0.8	2,295	2,800	0.7	0.8
13	Ravenel/Hollywood/ Meggett Area	(Outside CHATS Area)	10,950	---	4.0	--	---	13,300	---	4.0
14	Edisto Island	(Outisde CHATS Area)	1,345	---	0.5	--	---	1,300	---	0.4
COUNTY TOTAL			276,974[1]	267,545[2]	100.0	100.0	349,280[3]	332,600[4]	100.0	100.0

[1] Census Data (1980).
[2] BCD Estimates (1980) for CHATS Area of Charleston County, 1982 CHATS Report.
[3] CHATS Projections, based on CHATS 1980 Estimates, does not include Study Areas 1, 13 and 14.
[4] Projections by the S. C. Division of Research and Statistical Services, based on 1980 Census Data.
[5] Projections adjusted by Vismor, McGill & Bell, Inc., based on 2000 Projections for the County by the S. C. Division of Research and Statistical Services, and allocated back to the study areas on the basis of historical trends and projections by the BCD COG.

APPENDIX D

POPULATION PROJECTION METHODOLOGY

The most recent "area" projections for Charleston County are contained in the 1982, Charleston Area Transportation Study Update, prepared by the BCD Council of Governments. This document, together with 1980 Census Reports, County projections by the South Carolina Division of Research and Statistical Services, and current population studies for specific areas of the County, constitutes the basis for updating sub-area projections to the year 2000.

In comparing 1980 Census data with 1980 Estimates in the CHATS Report, we found the CHATS estimates to be 2.7 percent higher than the official Census count. This meant there were 7,061 fewer people in the County than estimated by the CHATS Report. And while this is an acceptable variance, when projected to the year 2000, the variance increases to over 11 percent in comparison with the official projection for the County, by the Division of Research and Statistical Services---predicated on the 1980 Census.

As a result, we substituted the CHATS projection for Charleston County with the State's projection, giving us a revised "control number" or total population of 332,600 by the year 2000. This left us with sub-area totals exceeding the total for the County.

Accepting the premise upon which the sub-area projections were based and the methodology used in making them, we then began an area-by-area adjustment, taking into account the previously cited data.

Study Area 5, in Charleston, for example, had nearly 7,000 fewer people in 1980 than estimated by the CHATS Report. As a result, the downward projection shown in the report is actually an upward projection of nearly 4,000, based on the 1980 Census. But assumming the downward trend to be valid, our data adjustment shows a projected population of 36,900 for the area.

There were only three areas where the '80 Census was higher than the '80 estimates: (1) Mt. Pleasant, (2) North Charleston, and (3) Wadmalaw Island. As a result an increase adjustment greater than the CHATS projection seemed valid, especially in the Mount Pleasant area, where, based on 1980 Census data, a special population report has been prepared, indicating an even greater increase than shown by the adjusted data.

The general finding, however, was that the sub-area projections were somewhat high, and had to be adjusted downward to reflect the official State projection for the County, as a whole.