

CLIFF WALK: A USER PROFILE



NEWPORT, RHODE ISLAND

National Park Service
North Atlantic Regional Office

University of Rhode Island
Office of Travel, Tourism, and Recreation

SEPTEMBER 1987

CLIFF WALK USER PROFILE

Karen M. Hayes M.A.
National Park Service

Patt Manheim, Ph.D.
Office of Travel, Tourism and Recreation
University of Rhode Island

Steven Golden, Project Manager
National Park Service

This cooperative project was conducted as part of the National Park Service, State and Local River and Trail Technical Assistance Program. It is authorized under Section 11 of the National Trails System Act (PL90-543) and assistance was requested by the City of Newport. The help of Mr. Bruce T. Bartlett, Director, Department of Planning, Zoning and Delevopment, Newport, Rhode Island was greatly appreciated.

EXECUTIVE SUMMARY

The objective of this study was to provide background information as a precursor to developing a comprehensive management plan for the Cliff Walk. Two surveys were conducted as a means for collecting this information.

A survey of users on the Cliff Walk indicated that it is more than a local or even a regional resource. It's natural beauty is enjoyed by visitors from throughout the country and many parts of the world (Table 1). Visitors recognize the problems associated with maintaining the Cliff Walk, however, they feel it is important that it is preserved and maintained to ensure its continued existence.

Visitor's clearly value the Cliff Walk as evidenced by their willingness to pay to help cover the cost of maintenance. Eighty-two percent (82%) of respondents were willing to pay \$1.00 per visit to help cover the cost of improvements necessary to ensure the safety of the Cliff Walk to users. Forty-four percent (44%) were willing to pay \$2.00 per visit to cover the cost of improvements that not only ensured safety but that made possible additional uses (accessibility to handicapped, for example) as well. However, safety is the primary concern most respondents; eighty-seven percent (87%) of all users would prefer no additional uses. They expressed concern that change would destroy its (the) natural character. (of the Cliff Walk.)

Fifty-nine percent (59%) of the respondents would be willing to donate \$5.00 per year as members of a non-profit organization established to preserve and maintain the Cliff Walk. Respondents expressed a strong belief that the Cliff Walk should be a common resource -- available to all apart from ones ability to pay -- and therefore favor a donation to a non-profit organization over a user per-visit fee.

A survey of Newport residents indicates that the Cliff Walk is an important resource to them as well. Eighty-seven (87%) of the residents reported visiting the Cliff Walk at least once during the past year. Residents recognize the seriousness of the erosion problem (85%) and the need for immediate action to prevent further damage, and to assure the preservation and maintenance of the Cliff Walk.

Residents too would be willing to contribute to preservation and maintenance of their unique resource. Eighty-two (82%) of resident respondents were willing to pay \$1.00 per visit to help cover the cost of improvements to ensure the safety of walkers. Sixteen percent (16%) were willing to pay for improvements that provided for additional uses as well as for safety. Seventy-one (71%) of resident respondents also preferred a \$5.00 donation to a non-profit organization over a per-visit fee.

Conclusions drawn from this study suggest that the Cliff Walk is a valuable natural resource regionally and attention must be given to its preservation and maintenance. However, a management plan must be devised that will allocate equitably the costs of preservation and maintenance. Some arrangement of public-private cooperation to accomplish this goal would be an acceptable option to survey respondents and should be encouraged. Private non-profit groups should also be encouraged to play a more aggressive role in defining the future of the Cliff Walk.

Further research is also identified to facilitate development of an implementable management plan.

BACKGROUND:

The Cliff Walk in Newport, Rhode Island, is a place of unique natural and architectural beauty. It is a 3.5 mile path of varied surfaces along the southern shore of Aquidneck Island (see map), with the ocean on one side and the famous, historic Newport mansions on the other. Thousands of visitors from throughout the nation, and from other countries enjoy its beauty each year.

The exact origin of the Cliff Walk is obscure in history. The best guess is that the first path was worn by fishermen treading to and from their toils, by townspeople seeking escape from a daily trade, and by the first tourists. According to tradition, the walk originated around 1640 under the Colonial Charter of King Charles II, which allowed that a man could "strike whale, dubertus or other great fish and pursue them unto any part of the coast and there kill them without molestation." This right was reinforced in 1842 by the Rhode Island State Constitution which affirmed that, "the people shall continue to enjoy and freely exercise all the rights of fishery and the privileges of the shore."

By 1925 it was reported that the earlier dirt-paved path had become an almost continuous gravel walkway connecting Easton's Beach at the northern end and Bailey's Beach at its southern end. As the magnificent mansions -- summer "cottages" to many of the nations wealthiest industrialists -- were built near the cliffs, the owners beautified their vantage toward the Atlantic. Some erected decorative fieldstone and granite walls, others tunneled archways and accentuated the walk with carved marble or limestone balustrades. The mansion owner's gardeners raked the gravel path daily and maintained the ledges.

Conflicts developed over the building of walls, gates, and fences which threaten the continuity of the walk. In 1913 the Mayor of Newport led a group of demonstrators who tore down one newly constructed fence. Later, in 1944 William Beach Lawrence, sold an acre of land at Ochre Point to a friend and constructed a wall between the two properties across the Cliff Walk. Infuriated townspeople tore down the wall. Lawrence rebuilt the wall facing it with broken glass, and again the townspeople tore it down. Lawrence went to court. The case dragged on for years, but in the end, the townspeople won the right to walk the path unobstructed (Darling, 1972).

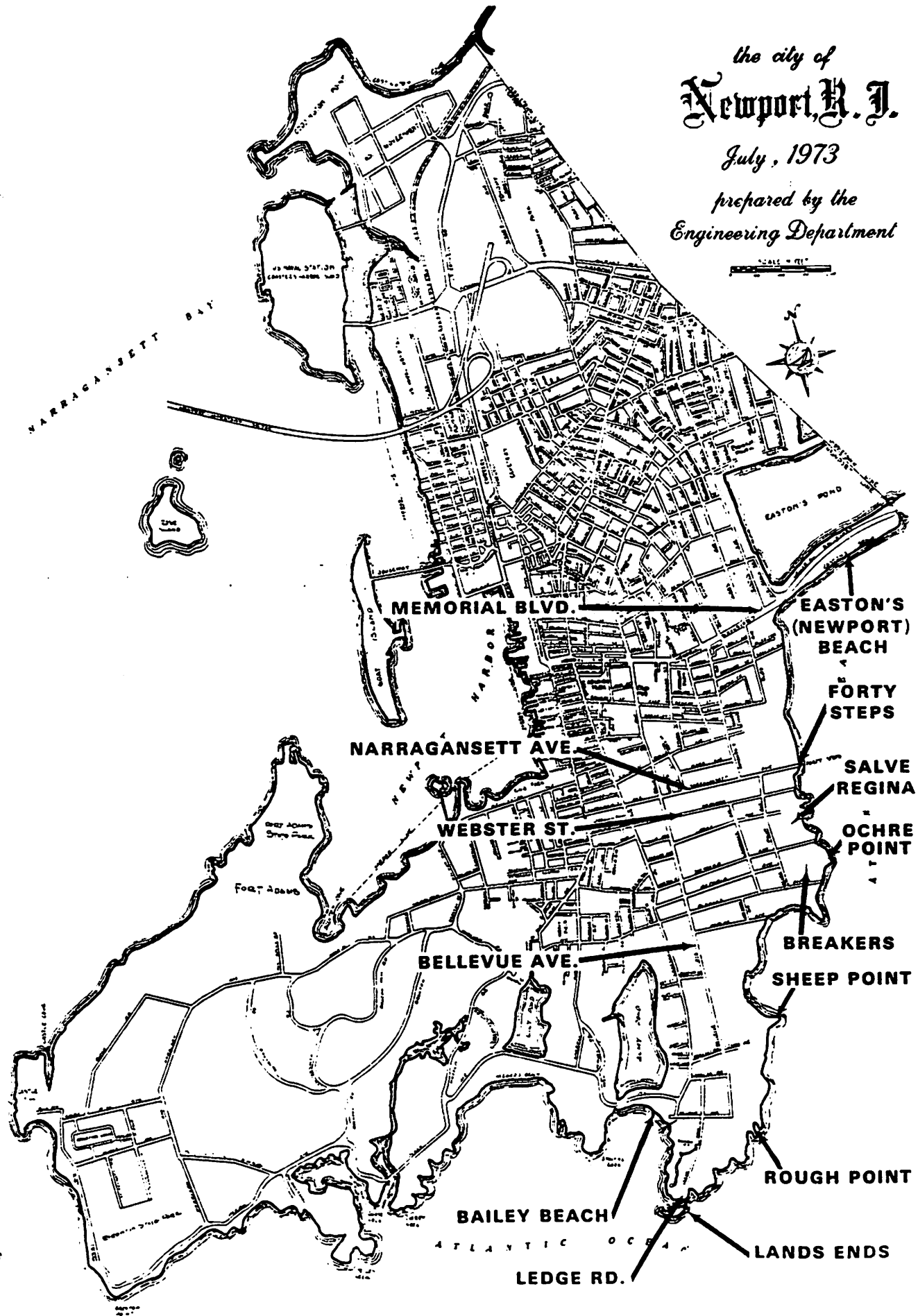
Also threatening the continuity of the Cliff Walk is its deteriorating condition. The Cliff Walk is in constant struggle with nature, battered by ocean waves and salt air, it is gradually losing the continuing battle against the elements. Serious damage occurred along its entire 3.5 mile length during the 1938 and 1954 hurricanes. In some sections, the trail has been completely washed away and visitors must now scramble over rocks to reach trail portions beyond. In other sections, it is obvious that as the trail was destroyed, new stretches further inland have been created. Nature keeps the Cliff Walk in constant need of repair!

the city of
Newport, R. I.

July, 1973

prepared by the
Engineering Department

SCALE = 1" = 100'



NARRAGANSETT BAY



MEMORIAL BLVD.

EASTON'S
(NEWPORT)
BEACH

FORTY
STEPS

NARRAGANSETT AVE.

SALVE
REGINA

WEBSTER ST.

OCHRE
POINT

BELLEVUE AVE.

BREAKERS
SHEEP POINT

BAILEY BEACH

ROUGH POINT

ATLANTIC OCEAN

LEDGE RD.

LANDS ENDS

Although the legal ownership of the Cliff Walk remains unclear; most of the abutting property owners in recent times have cooperated by permitting the public to use the right-of-way. Responsibility for the preservation and maintenance of the Cliff Walk has rested primarily with the City of Newport and adjacent owners. However, no funds are budgeted specifically for its care, and only occasional maintenance is possible with current resources. The Cliff Walk Commission was founded in 1975 to oversee usage and maintenance of the walk. Also, private groups have taken responsibility for occasional maintenance, organizing "trash days" to remove litter and soliciting sponsors to cover the cost of materials -- plastic bags and the like. One private organization, the 40 Steps Restoration Committee is currently raising the funds necessary to replace the presently unuseable 40 Steps. This group hopes to raise enough funds to cover the cost of design and installation of granite steps as a permanent record of their donors.

Liability for harm or injury to users of the Cliff Walk has yet to be adjudicated. The City of Newport, in (cite case) agreed to a pre-trial settlement and in doing so presumed de facto responsibility.

In 1975 the Cliff Walk was designated the 65th National Recreation Trail in the U.S., the first such trail in New England. In the last 10 years almost \$2 million has been invested in stabilizing the Cliff Walk. The funds have come from cooperative state, local and federal efforts. The last project cost \$770,000 for less than .5 miles of trail. Current estimates call for an additional \$2 million investment to complete the stabilization project. On January 20, 1987 Senate Bill 323 was introduced by Senator Pell and Senator Chafee calling for a study to investigate the option of including the Cliff Walk as a unit in the National Park System.

PURPOSE:

The objective of this study was to provide background information as a precursor to developing a comprehensive management plan for the Cliff Walk. Currently, there is no unified vision of what ideally the Cliff Walk should be and how it can be managed.

A profile of users of the Cliff Walk was developed to gain a clear understanding of the value of the resource and how it is currently being used. Information was also collected from residents concerning their attitudes about the Cliff Walk. Attention was given to users' willingness to contribute money to pay for its management, and opportunities to generate revenue. It is clear that there will be substantial costs associated with preserving, and maintaining the Cliff Walk, thus alternative funding sources need to be explored.

THEORY AND METHODOLOGY:

To assist in decision making about the future of the Cliff Walk, some estimate of its value must be derived. But, as with other environmental resources, it is very difficult to find measures that adequately reflect its value. Economists often assume that the value of something is associated with

the level of satisfaction it provides, and furthermore that consumers reveal their values (or preferences) of anything (goods and services) by the way they allocate their budgets among all of the available choices (of goods and services). Thus a consumers' willingness to pay for a particular good or service is a measure of their value of that good or service.

Environmental resources like the Cliff Walk that provide recreational opportunities, are unique in that they cannot be priced in the usual market setting. Furthermore, some individuals who may never "use" the resource, may never the less value the knowledge that the resource exists now and for future generations. Thus measures of both direct (user) and indirect or intrinsic (non-user) values must be somehow accounted for. But because no market price exists, there is no direct information available to determine the value of these resources to individuals.

In the absence of direct information, economists use methods that then substitute for the "missing" market to capture a measure of the value a consumer places on the environmental resource. The method used in this study--the Contingent Valuation Method--establishes a hypothetical market and asks individuals to reveal their preferences by asking them directly such questions as "how much are you willing to pay for the preservation and maintenance of the Cliff Walk?"

The goal of the Contingent Valuation Method is to derive values analogous to market prices that can be incorporated into the benefit cost framework. An important advantage of this method is that it allows the inclusion of "non-users" who may never the less receive some intrinsic benefit from the resource. Equally important, the contingent valuation method is an ex-ante tool, that is, respondents can be asked to value improvements to the resource before they actually occur. This is especially useful to policy makers in their evaluation of the effects of current or proposed policies.

SURVEY PROCEDURES: USER SURVEY

In-person interviews were conducted with a sample of users on the Cliff Walk. Surveys were conducted alternately three or four days a week including one weekend day each week. The time of day was varied to include both morning visitors (32%) and afternoon visitors (60%). From every fourth group encountered on the Cliff Walk, one representative was asked to respond to a set of eighteen questions (see Appendix B.).

The primary objectives of the survey was to create a profile of users. Visitors were asked where they were from (home town/state) and where they traveled from that day. They were also asked whether or not they were there as part of a vacation or a day trip, and whether they came alone or in a group. Those who came as part of a group were also asked how many people were in their group, how many were from Rhode Island, and how many were from Newport. Respondent's were also asked how they got to the Cliff Walk (private car, tour bus, etc.), whether or not it was their first visit to the Cliff Walk, how they heard about the Cliff Walk, whether the Cliff Walk was their primary reason for coming to Newport, and what attracted them to the Cliff Walk.

Visitors' perceptions of the Cliff Walk were of particular interest. We were interested in what visitors expected as part of their experience, if they had accurate information about the length of the Cliff Walk, and the types of amenities they expected to find there. Respondents were also asked to indicate whether or not they felt that certain issues concerning the Cliff Walk were important and how they would rate the overall condition of the Cliff Walk. The survey ended with three questions about the individual's willingness to pay. The purpose of these three questions was to obtain a measure of the value of the Cliff Walk to users. The social value of a resource is equal to the sum of individual's willingness to pay for a given level of the resource.

RESULTS OF USER SURVEY:

A total of 147 interviews were completed during the period June 28 to August 26, 1987. 86% of the respondents came to the Cliff Walk in groups of two or more persons. The total number of people represented by our sample is 462.

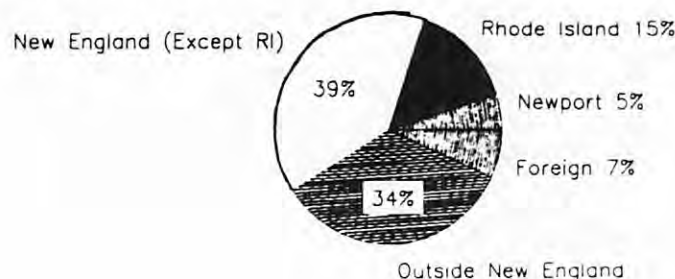
To help determine the importance of the Cliff Walk in the national arena, respondents were first asked to identify their home town and state. Responses to this question were aggregated into five regions: Newport, Rhode Island (excluding Newport), New England (excluding Rhode Island), the U.S. outside New England, and Foreign countries (see Table 1). From Table 1, it is clear that the Cliff Walk is not only a local or even a state resource, but is of regional and national importance as well.

Table 1: Respondents by region of origin.

<u>Region of Origin</u>	<u>Number</u>	<u>Percent</u>
Newport	7	4.8%
Rhode Island (excluding Newport)	16	10.9%
New England (excluding Rhode Island)	54	36.7%
U.S. Outside New England	62	42.2%
Foreign Countries	8	5.4%

Twenty-eight percent (28%) of the respondents stated that the Cliff Walk was their primary reason for going to Newport that day. Figure 1 shows the breakdown of these people by their region of origin. Of those people who stated that the Cliff Walk was their primary reason for going to Newport, some were there as part of a vacation and others just for the day.

Figure 1: Place of origin of the 28% of respondent's who stated that the Cliff Walk was their primary reason for going to Newport.



Thirty-three percent (33%) of those respondents who were in Newport just for the day traveled from some location outside of Rhode Island. Because they are willing to travel some distance (and incur the costs associated with travel in terms of time and dollars spent) to enjoy a few hours on the Cliffs, we may reasonably assume, that for this group of users, a trip to the Cliff Walk is of value.

Respondent's were asked what attracted them to the Cliff Walk. Table 2 lists the most commonly cited reasons. Enjoying the extended ocean views and fresh air were the most frequent response followed by viewing of the mansions.

Table 2: Most commonly cited reasons for visiting the Cliff Walk.

<u>Reason</u>	<u>Number</u>	<u>Percent</u> ^a
Enjoy the Ocean View	55	37.4%
Like to Walk	37	25.2%
Enjoy the Fresh Air	40	27.2%
To See the Mansions	32	21.8%
Enjoy the Natural Setting	22	15.0%
To Show Friends/Relatives	8	5.4%
Jogging/Running	5	3.4%

^a Percentages do not sum to 100.0 because many respondents gave multiple responses.

People's expectations of the Cliff Walk were explored next. Did visitors know the length of the Cliff Walk? Only about 14% of the respondents knew its accurate length. Only about 12% of the respondent's said they intended to walk the entire walk (both ways). When asked whether or not they would expect a ride back to where they started upon reaching the end of the Cliff Walk, 28.8% of the respondents said that they expected such a service. Ninety-nine percent (99%) of the respondents said that they did not expect to find concession or souvenir stands. Many of these respondents added that they would have been offended had they found concession stands along the Cliff Walk. However 24% of the respondents expected to restrooms, and 41% expected to find some benches or reststops along the walk.

When asked how they traveled to the Cliff Walk, 85.6% of the respondents stated that they drove there by private car. Eighty-eight percent (88%) of those who traveled by car had no trouble finding adequate parking. However, when respondent's were then asked, "If parking were restricted near the Cliff Walk, would you have been willing to pay \$3.00 to park your car in town and take a shuttle bus to and from the Cliff Walk?", 42.5% of the respondents said that they would have been willing to pay the \$3.00 fee.

Respondent's were read a list of issues and were asked whether or not they felt that these were important concerns (Table 3). Parking and the safety of parked vehicles was reported to be an important issue, especially for out-of-state visitors.

Trash was reported to be a serious problem along the Cliff Walk, especially by Rhode Island residents. Many said that there were not enough trash receptacles along the Cliff Walk, nor did it appear that the trash was picked up regularly.

Respondent's did not feel that the walkway was of adequate width. They noted that because the brush was so overgrown, people are forced to walk outside of the established path. Furthermore, the brush does not appear to be cut back regularly so that in some places on the path it is very difficult to pass, even single file.

Fencing/railings towards the ocean side did not seem to be a problem to most respondents. Many felt that it was adequate for safety purposes and "any more would detract from the beauty of the walk." They feel that the Cliff Walk is safe as long as people are careful.

Sixty-seven percent (67%) of all Cliff Walk users perceived erosion to be a serious problem. In a few locations south of Sheeps Point, the walkway has been totally washed out. Several other locations near the Breakers, 40 Steps and Memorial Boulevard are in danger of being washed away.

Sixty-five percent (65%) of the respondents felt that trespassing on private property was an important issue. Many expressed a belief that private property should be respected.

Lighting in the tunnels (specifically the tunnel that runs underneath the Japanese Pagoda) posed a problem for forty-two percent (42%) of the respondents. A few people stated that "they almost fell inside the tunnel" because they could not see where they were going and stumbled into a hole. There are also storm drains along one side of the tunnel that are hazardous to unwary travelers.

Table 3: Issues identified as important by percent of response and residency of respondent.

<u>Issues</u>	<u>Total</u>		<u>RI Resident</u>		<u>Non-Resident</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
o Parking and the safety of parked vehicles.	111	75.5%	15	65.2%	96	77.4%
o Trespassing on private property.	95	65.1%	15	65.2%	80	65.0%
o Trash along the Cliff Walk.	105	71.4%	20	87.0%	85	68.6%
o Adequacy of width of the Cliff Walk.	103	70.1%	20	87.0%	83	66.9%
o Adequacy of fencing to provide for safety	101	69.2%	16	69.6%	85	69.1%
o Erosion	98	67.1%	21	91.3%	77	62.6%
o Lighting in the tunnels	44	42.7%	9	42.9%	35	42.7%

When asked to describe the overall condition of the Cliff Walk, fifty-four percent (54%) of all respondents felt that it was in good condition, and sixteen percent (16%) went so far as to say it was in excellent condition. Many people liked the variety of surfaces of the walkway, and did not mind having to scramble over the rocks at the southern end of the walk. Table 4 presents the total responses of all visitors and disaggregates these by residency.

Table 4: Overall condition of the Cliff Walk by percentage of responses and residency of respondent.

<u>Condition</u>	<u>Total</u>		<u>RI Residents</u>		<u>Non-Resident</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
Excellent	23	15.7%	5	21.7%	18	14.5%
Good	80	54.4%	8	34.8%	72	58.1%
Fair	39	26.5%	8	34.8%	31	25.0%
Poor	5	3.4%	2	8.7%	3	2.4%

Finally, visitors were asked to respond to questions about their willingness to pay to enjoy the Cliff Walk (Table 5). They were first asked whether or not they would be willing to pay \$1.00 per visit to help cover the cost of improvements necessary to make the Cliff Walk safe. Ninety-one percent (91%) of Rhode Island residents and ninety-seven percent (97%) of non-residents in the sample population of users felt that the Cliff Walk was already safe for walkers. Seventy percent (70%) of the residents and eighty-four percent (84%) of non-residents said that they would be willing to pay \$1.00 per visit. We can reasonably assume that these people are willing to pay to ensure the continued safety and maintenance of the Cliff Walk.

Table 5: Percentage of respondent's willing to pay by residency of respondent.

<u>Willingness to Pay Question</u>	<u>Total</u>		<u>RI Resident</u>		<u>Non-Resident</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
o \$1.00 for safety	120	81.6%	16	69.6%	104	83.9%
o \$2.00 for safety and additional uses	65	44.2%	5	21.7%	60	48.4%
o \$5.00 donation to non-profit organization	87	59.2%	17	73.9%	70	56.4%

Next, they were asked whether they felt the Cliff Walk should be expanded to provide for additional uses (in addition to walking). Ninety-six percent (96%) of the Rhode Island residents and eighty-five percent (85%) of non-residents in the sample population of users did not feel that there was a need for additional uses. They expressed concern that expanding the use of the Cliff Walk would lead to commercialization that would alter the natural character of the Cliff Walk. However, when asked whether they would be willing

to pay \$2.00 per visit to help cover the cost of safety as well as additional uses, twenty-two percent (22%) of the residents and forty-eight percent (48%) of the non-residents said they would be willing to pay the amount. Apparently respondents are more concerned about the safety of the Cliff Walk than with additional uses. It should be noted that many of the non-resident users expressed a belief that Newport residents should not have to pay a per day user fee.

Visitors were asked whether or not they would be willing to make an annual donation of \$5.00 to a non-profit organization whose sole purpose was to preserve and maintain the Cliff Walk. Seventy-four percent (74%) of the Rhode Island residents and fifty-six percent (56%) of non-residents in the sample population of users said that they would be willing to donate \$5.00 per year as a member of such an organization. Most people feel that the Cliff Walk should be available to all individuals and no one should be excluded from using it based on their ability to pay. For this reason a donation to a non-profit organization seemed less offensive to many people and appears to be the preferred funding mechanism (in terms of generating revenue) if users are to be charged to gain access to the Cliff Walk.

USER SURVEY FINDINGS:

(1) It is clear from the findings of the User survey that the Cliff Walk is more than a local or even a regional resource. It's natural beauty is enjoyed by visitors from throughout the country and many parts of the world. According to the data, 84% of the visitors interviewed were from places outside of Rhode Island, and 48% of these were from outside New England including 5.4% from outside the United States.

(2) Visitors recognize the problems associated with maintaining the Cliff Walk: it is difficult to cut the vegetation and to keep people from throwing trash along the walkway. However, visitors feel that it is important to preserve and maintain the Cliff Walk to ensure its continued existence.

(3) Visitor's clearly value the Cliff Walk as evidenced by their willingness to pay to help cover the cost of maintenance. Most visitor's (82%) were willing to pay a \$1.00 per day fee to help cover the cost of necessary improvements to the Cliff Walk to make it safe. When this fee was increased to \$2.00 which would cover the cost of improvements for safety as well as expansions to provide for additional uses, only 44% of the respondents were willing to pay. 59% of the respondents would be willing to donate \$5.00 as members of a non-profit organization established to preserve and maintain the Cliff Walk. To generate revenues, the establishment of a non-profit organization appears to be the most feasible means. It would be very difficult, and expensive, to charge a per day user fee because there are many ways to access the walk and it would require that all of these access points be closed off or patrolled. Furthermore, a donation does not seem as offensive to people as a user fee since people expressed a belief that the resource should be available to all people.

The variety of surfaces along the Cliff Walk does not deter visitors from using it. Erosion was cited as an important concern by 67% of the respondents, however, 70% of the respondents felt the Cliff Walk was in good to excellent condition.

Visitors do not want to see the natural character of the Cliff Walk changed. This is evidenced by the fact that eighty-seven percent (87%) of the respondents did not want to see the Cliff Walk expanded to provide for any additional uses. The cultural and natural history of the Cliff Walk combined help to make it a unique resource.

SURVEY PROCEDURES: RESIDENT SURVEY

The Cliff Walk Resident Survey questionnaire (Appendix C) was designed to obtain information about the value Newport residents place on the preservation and maintenance of the Cliff Walk. This questionnaire was mailed to a random sample of 1060 Newport residents, representing a 10 percent sample of households, measured as occupied housing units reported in the 1980 Rhode Island Census of Population and Housing. Names were selected from the current Newport telephone directory. This was selected as the least biased sampling procedure, although it is recognized that residents who do not have telephones or who have unlisted telephone numbers are excluded. A stratified sampling procedure was conducted using a computer generated random number routine that selected the page, column, and name in the column from the directory.

Each household was contacted only once. The mailing included the survey questionnaire and a postage-paid envelope in which residents could return the completed questionnaire. Of the 1,060 surveys mailed, 292 were completed and returned. The final response rate was approximately 30 percent after deducting 91 surveys that could not be delivered.

The first questions asked respondents about their use of the Cliff Walk -- how often they went there, what percentage of their visits were made during each season, their reason for going to the Cliff Walk, and how they traveled there (private car, public transportation, etc.)? Next, they were given a list of issues concerning the safety and maintenance of the Cliff Walk and asked to state whether or not they were of concern. Respondents were asked to rate the overall condition of the Cliff Walk on a scale of excellent to poor. They were also asked to respond to three willingness to pay questions, two of which involved a per day user fee and the other a donation to a non-profit organization.

The remaining questions asked for demographic information about the respondent -- whether or not they lived in Newport year around, whether they rented or owned their Newport residence, how long they had been residents of Newport, and the family income (before taxes) during 1986. The purpose of these questions were to classify responses and to verify that our sample was representative of Newport residents. We also asked residents who they felt should have responsibility for the preservation and maintenance of the Cliff

Walk, the City of Newport, the state of Rhode Island, some agency of the Federal government, private organizations or any combination of two or more of these. And, finally, we gave the respondents the opportunity to express their concerns and make any additional comments they felt were relevant.

RESULTS OF THE RESIDENT SURVEY:

Below Table 6 summarizes the use rate of Cliff Walk by Newport residents during the past year. Eighty-seven percent (87%) of the respondents reported visiting the Cliff Walk at least once, and some (15%) as many as twenty or more times during the past year.

Table 6: Frequency of visits to the Cliff Walk by Newport residents.

<u>Number of Visits</u>	<u>Number</u>	<u>Percent</u>
Zero visits	39	13.4%
1 to 4 visits	111	38.0%
5 to 9 visits	45	15.4%
10 to 20 visits	54	18.5%
21 to 99 visits	31	10.6%
100 or more visits	12	4.1%

Respondents were asked to tell us what attracted them to the Cliff Walk. The most commonly cited reasons are listed in Table 7. The ocean view is the most commonly cited feature that attracts residents to the Walk (77%).

Table 7: Most commonly cited reasons for visiting the Cliff Walk.

<u>Reason</u>	<u>Number</u>	<u>Percent</u> ^a
Like to walk	133	45.5%
To Enjoy the Ocean View	224	76.7%
To See the Mansions	66	22.6%
Enjoy the Natural Setting	38	13.0%
To Show Friends/Relatives	15	5.1%
Jogging/Running	14	4.8%

^a Percentages do not sum to 100.0 because many respondents gave multiple responses.

We also wanted to get an idea of how well residents knew the Cliff Walk, so we asked them if they knew how far it was to walk the entire Cliff Walk. We were surprised that very few (only 5%) respondents correctly described its length. Residents do not have very accurate information about the length of the Cliff Walk.

Residents were asked to tell us how they usually got to and from the Cliff Walk. Sixty percent (60%) of the respondents stated that they traveled to the Cliff Walk by car for at least some portion of their visits (some respondents

gave multiple answers), forty-six percent (46%) of the respondents stated that they would often walk to the Cliff Walk, and about eleven percent (11%) sometimes went by bicycle. Very few people used public transportation; less than two percent of the respondents.

Thirty-seven percent (37%) of those respondents who traveled to the Cliff Walk by car claimed to have had trouble finding a place to park. However, only nine percent of those who traveled by car would be willing to pay to park their car at an alternative location in town and take a shuttle bus to and from the Cliff Walk.

Respondents were asked to reveal their feelings about certain issues concerning the Cliff Walk (see Table 8). In terms of the overall maintenance of the Cliff Walk, ninety-two percent (92%) of the respondents expressed concern about trash along the Cliff Walk. There are few trash receptacle along the Cliff Walk, and trash is strewn in many locations along the walkway.

Erosion was of concern to eighty-six percent (86%) of the respondents. Sixty percent (60%) of the respondents felt that the Cliff Walk is of adequate width for walkers, although in some sections the path is virtually non-existent, overgrown with vegetation. About 5% of the respondents specifically mentioned that the brush needs to be cut back, and the everpresent poison ivy is a concern.

Fifty-nine percent (59%) of the respondents said that parking and the safety of parked vehicles was a concern. Residents recognize that the availability of adequate parking is an important issue in Newport, especially since it is a city often overburdened by large numbers of out-of-town visitors. The parking issue is not specific to the Cliff Walk but a problem throughout Newport.

Fifty-three percent (53%) of the respondents felt that there is adequate fencing to provide for safety and that additional fencing would obstruct the view and interrupt the natural character of the Cliff Walk.

Table 8: Issues of concern to Newport residents by number and percentage of responses.

<u>Issues</u>	<u>Number</u>	<u>Percent</u>
o Parking and Safety of Parked Vehicles	171	58.6%
o Trespassing on Private Property	144	49.3%
o Trash along the Cliff Walk	268	91.8%
o Adequacy of Width of Cliff Walk	175	59.9%
o Adequacy of Fencing to Provide for Safety	156	53.4%
o Erosion	250	85.6%
o Lighting in Tunnels	103	35.3%

Trespassing on private property was also viewed as an important issue by forty-nine percent (49%) of the respondents. In general, most people feel that respecting the rights of private property owners is of concern. This concern is especially important at the southern end of the walk where the path is not clearly marked.

Lighting in the tunnels was of concern to thirty-five percent (35%) of the respondents.

Table 9 lists respondents feelings towards the overall condition of the Cliff Walk. Fifty-two percent (52%) expressed that it is in only fair condition, less than 1% felt it was in excellent condition and 28.5% felt that it was in good condition. Comparing these results with those of the user survey, residents perceive the Cliff Walk to be in worse condition than users interviewed at the site.

Table 9: Residents feelings toward the overall condition of the Cliff Walk.

<u>Condition</u>	<u>Number</u>	<u>Percent</u>
Excellent	2	0.7%
Good	86	29.5%
Fair	153	52.4%
Poor	39	13.4%
Not Sure	12	4.0%

When asked if they felt that the Cliff Walk was safe for walkers, sixty-five percent (65%) of the respondents reported that it was. When asked if they would be willing to pay \$1.00 per visit to help cover the cost of necessary improvements to the Cliff Walk to make it safe, eighty-two percent (82%) agreed that they would be willing to pay. Residents are willing to pay to improve or maintain the safety of the Cliff Walk for walkers. However, they are less willing to pay a \$2.00 fee per visit to cover the cost of necessary improvements for safety as well as additional uses. Only fourteen percent (14%) of the respondents felt that the Cliff Walk should be expanded to provide for additional uses, and only 16% said they would be willing for the cost of improvements beyond those necessary for safety. Safety is clearly the primary concern of resident respondents.

In place of a user fee, residents were asked if they would be willing to donate \$5.00 per year as a member of a non-profit organization whose sole purpose was to preserve and maintain the Cliff Walk. Seventy-one percent of the residents stated that they would be willing to donate \$5.00 per year to such an organization and 30% of these people said that they would be willing to donate more than \$5.00, with values ranging from \$8.00 to \$100.00. The Cliff Walk is important enough to residents that they would be willing to pay for its preservation and maintenance, however, they clearly favor donating to a non-profit organization to user fees.

Responses to the willingness to donate question were also analyzed using a methodology outlined by Hanemann (1984; 1985). An estimate for the total willingness to donate (or total benefits) for the preservation and maintenance of the Cliff Walk for residents of the City of Newport was derived (Appendix D). The estimated aggregate benefits (or total willingness to donate) for the City of Newport was approximately \$270,000. For a city with 6,759 families this translates to an annual donation of about \$40.00 per family.

The last questions asked for specific information about the respondent. Year round Newport residents made up 89% of the respondents, and 5% were summer residents. 59% of the respondents were homeowners and thus paid property tax to the city of Newport. We asked respondents to indicate which income category represented their total family income. The purpose of this question was to verify that all income categories were adequately represented by our sample. Our results indicate that the three highest income categories are disproportionately represented.

Residents recognize the need for assistance beyond what can be realistically provided by the City of Newport, and they seek a more equitable distribution of costs among all users. Only 24% of the city residents believe that the preservation and maintenance of the Cliff Walk should be the sole responsibility of the city of Newport and its residents. Eighteen percent believe the Federal government should assume responsibility while approximately 14% believe that the State of Rhode Island should do so. Approximately 25% of the resident respondents believe that the responsibility should be shared cooperatively among multiple levels of government, or by the public and private sector (5.8%) (see Table 10).

Table 10: Resident's feelings concerning the agency which should have responsibility for maintaining the Cliff Walk.

<u>Agency Responsible</u>	<u>Number</u>	<u>Percent</u>
City of Newport	69	23.6%
State of Rhode Island	41	14.0%
Federal Government	52	17.8%
Private Organization	11	3.8%
Governmental Cooperation	72	24.7%
Public-Private Cooperation	17	5.8%

RESIDENT SURVEY FINDINGS:

- (1) From the results of the Resident Survey, it is clear that the Cliff Walk is an important resource to the residents of Newport. 87% of the resident respondents reported visiting the Cliff Walk at least once during the past year, and approximately 33% more than 10 times per year.
- (2) Residents recognize the need for immediate measures to assure the preservation and maintenance of the Cliff Walk. In terms of maintenance, trash along the Cliff Walk was the major concern of residents (92%). Although the annual trash day represents a nice joint effort on the part of Newport residents, more needs to be done throughout the year (especially during the tourist season) to alleviate the litter problem.
- (3) Resident's recognize the seriousness of the erosion problem (86%) and the need for immediate action to prevent further damage. Resident's would even be willing to contribute to its preservation and maintenance, however, they prefer to make this contribution through a donation to a non-profit organization (71%) rather than having to pay a per day user fee (42%).
- (4) Only 24% of the respondents felt that the preservation and maintenance of the Cliff Walk should be the sole responsibility of the City of Newport. The remaining 76% felt that other agencies should share part or all of this responsibility.

MEASURING TOTAL NUMBER OF VISITORS PER YEAR:

One obvious concern here is the total number of visitors represented by this sample group. Obtaining this total number proved to be a perplexing and unsolved problem; several methods were explored unsatisfactorily. One method estimated the total number of visitors to the Cliff Walk by using the total number of mansion visitors as a proxy for Cliff Walk visitors and multiplied this number by the percentage of respondents who stated that they came to the Cliff Walk specifically to see the mansions. We know that the attendance record at the mansions during 1986 was 853,637 visitors. We also know from the user survey, that 22% of the respondents stated that they went to the Cliff Walk to see the mansions. If we multiply these two figures we obtain an estimate of the total number of visitors at the Cliff Walk, or 187,800 persons per year. (This is a conservative estimate compared to the one used by the Corp of Engineers based on an estimate that 50% of the visitors to Newport mansions visit the Cliff Walk.) However, without conducting an exit poll at the mansions, we have no way of knowing what percentage of mansion visitors use the Cliff Walk. Therefore, the use of mansion visitors as a proxy for Cliff Walk visitors is at best a crude estimate.

A second method used an average of hourly counts and a visitation period of ten hours per day, for a total of 1,064 daily visitors. Assuming a peak seasonal visitation period of 92 days (June, July, and August) we obtain 97,888 persons. Consistent with the tourist visitation patterns in Newport, we further assume a visitation rate of 25% for the saddle months of September, October, April and May, and a 5% visitation rate for winter months of December, January, February and March, and obtain a total figure of 146,406 visitors.

The two methods do yield comparable figures, however, neither method has statistical elegance with which to defend its use.

FINAL RECOMMENDATIONS

It is clear from this study that the Cliff Walk is a resource of value to local residents and to visitors both regionally and throughout the country. Cliff Walk visitors and residents of Newport alike have indicated a willingness to contribute to its preservation and maintenance.

Erosion along the Cliff Walk is a major concern. However, the high cost of maintenance and reconstruction work required to stabilize the Cliff Walk is beyond what the City of Newport alone can afford to spend. It is important that some method be devised to fund the work required to preserve this significant resource before it deteriorates further. As these funding strategies are being developed, additional planning and research is essential.

A consensus must be reached about the future of the Cliff Walk, and goals for its preservation and management defined. A statement of these goals should describe the design and level of visitor use preferred. It should consider whether or not current accessibility is adequate or if the walkway should be made accessible to other users such as bikers, or handicapped; should accessibility be enhanced through additional parking or access points? It should also describe the boundaries of the Cliff Walk and a means by which the ownership issue would be permanently resolved.

Alternative levels of use, and management plans will have different costs. Until a common vision is defined, it will be difficult to assess the funding required, and the role each level of government should play in the preservation and management of this important resource.

Private non-profit organizations should be encouraged to play a more aggressive role in defining the future of the Cliff Walk. Most survey respondents support private sector involvement in the management of the Cliff Walk.

Signs and interpretive brochures should be developed to assist visitors. It is clear from the user profile that visitors to the Cliff Walk, including Newport residents, have very limited information about the resource. A simple brochure and signs along the path would enhance the visitors experience, and provide needed logistical information.

Further research is necessary to facilitate the development of a management plan. Studies should include:

- a) development of a more precise estimate of the number of visitors to the Cliff Walk;
- b) measurement of the rate of erosion occurring along the path;
- c) a determination of the legal status of the Cliff Walk and ownership interests of abutting property owners;
- d) review and update of engineering studies of stabilization efforts not yet completed.

APPENDIX A

THEORY AND METHODOLOGY: EXPANDED DISCUSSION

Introduction

Economics is a behavioral science which seeks to translate an individual's preferences into economic values. Economists assume that for consumers, the value of a commodity (goods and services) is associated with the level of satisfaction, or utility, that it provides. Utility (or satisfaction) is broadly defined to include the enjoyment of non-consumptive commodities such as a scenic view or the preservation of unique recreational environment for future generations. Utility depends on not only the physical existence of a recreational facility, but also on the attributes of the particular recreational environment that contributes to an individual's enjoyment. Economists also assume that people reveal their preferences by allocating their budgets among all available private and public goods and services.

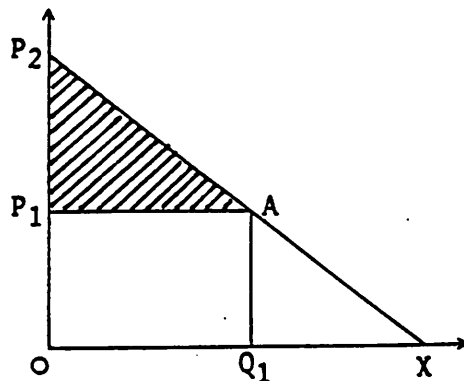
While most people recognize the importance of recreation activities, the demand for recreation is poorly understood because many recreation facilities such as beaches or recreation trails like the Cliff Walk are not priced in an ordinary market setting as are commodities like food or clothing. Some recreation activities such as sporting events, or theme parks such as Disney World are market goods and their value to society is determined through the interaction of supply and demand. But, other types of recreation facilities such as beaches or nature trails are usually publicly provided due to several factors which inhibit profitable private enterprise. For these recreation activities no market price exists - most public authorities charge fees only to cover maintenance for the facility. Therefore, there is no direct information available to determine the value of these facilities to individuals (Milon and Johns, 1982).

Individuals decide which market goods and services to purchase based on the amount of utility they expect to enjoy and the resources that must be given up as reflected by the price of the good and the time and effort necessary to acquire the good or service (opportunity costs). It follows that the individual would not purchase the good if the opportunity cost exceeds the expected utility. Nonmarket recreation activities (such as a walk along the Cliff Walk) also involve opportunity costs for individuals in terms of time and resources that must be given up to engage in the activity. Individuals will choose to participate in a recreational activity as long as the expected utility exceeds the opportunity cost of participation. These concepts are the basis for estimating the demand for specific recreation facilities.

Economic theory asserts rational behavior on the part of individual consumers. Consumers are believed to engage in some sort of constrained maximizing behavior, the objective of which is to maximize utility subject to a budget constraint. Given that "utils" (the unit measure of utility) are not measurable, the most meaningful measure of this welfare gain is in terms of the usual medium of exchange, money, even though money itself affords only indirect utility.

There are five types of welfare measures (see Currie, et al., 1971; Mishan, 1981; and Just, et al., 1982). The idea of consumer surplus was originally introduced by Dupuit (1840), who argued the case for building bridges even though they were commercially unprofitable. Provided the gains to society from building the bridge, calculated over the lifetime of the bridge, is expected to exceed the cost of its construction, the bridge ought to be built. Marshall (1930) defined consumer surplus as the excess of the price (i.e., total expenditure) which an individual would be willing to pay for something rather than go without it, over that which he actually does pay for it. Consumer's surplus is measured as the area behind the Marshallian demand curve (holds income constant) above the horizontal price line. The individual demand function, describes for any good, X, the maximum amount an individual would be willing to pay for each quantity of the good. The downward slope of the demand curve indicates that individuals are willing to purchase more of the commodity at lower prices than at higher prices (Figure A.1). If the market leads to a price P_1 , the individual will purchase Q_1 of the good at a total expenditure of OP_1AQ_1 . Since the demand function measures the individual's maximum willingness to pay for each level of consumption, the total willingness to pay for Q_1 of commodity X is the area within the trapezoid defined by OP_2AQ_1 . The individual's consumer surplus, the difference between what they are willing to pay and what they actually pay, is given by the area of the triangle P_1P_2A (shaded area in Figure A.1).

Figure A.1. Measuring ordinary consumer surplus.



As a dollar measure of individual welfare, consumer surplus is not ideal (Mishan, 1981). Hicks (1943) noted that an ideal measure would require that utility be held constant at all points along the demand curve. He redefined the concept using an ordinal system of indifference curves, and showed that there are four measures of the change in a consumer's welfare resulting from an actual or proposed price change. These are all measured behind Hicksian compensated demand curves (utility held constant by varying income).

Compensating and Equivalent Variation are defined as income adjustments which maintain the consumer at particular levels of welfare following changes in prices. Compensating Variation is the amount of compensation, paid or received, that will leave the consumer in his initial welfare position following the change in price, if he is free to purchase any quantity of the commodity at the new price. Equivalent Variation is the amount of compensation, paid or received, that will leave the consumer in his subsequent welfare position in the absence of the price change, if he is free to purchase any quantity of the commodity at the old price. Compensating and Equivalent surpluses are income adjustments which maintain the consumer at particular levels of welfare following changes in quantity restrictions. Compensating surplus is the amount of compensation, paid or received, that will leave the consumer in his initial welfare position following the change in price if he is constrained to buy at the new price the quantity he would have bought at that price in the absence of compensation. And Equivalent Surplus is the amount of compensation, paid or received, that will leave the consumer in his subsequent welfare position in the absence of the price change if he is constrained to buy at the old price the quantity he would have bought at that price in the absence of compensation (Currie, et al., 1971).

The appropriate measure to use in an analysis depends on whether there are exogenous shifts in prices or in quantities and whether the person affected by the change has some moral or legal right to the original or changed condition. Although all four Hicksian measures are theoretically preferred to consumer's surplus, compensating and equivalent variation are generally considered the most relevant measures (Mishan, 1981; and Hanemann, 1978). The two surplus measures are considered too restrictive since they do not allow consumer's to make their own optimizing adjustments in consumption as with the two variation measures.

Benefit cost analysts have traditionally focused on the use value of natural environments. However, the benefits of preserving and maintaining the Cliff Walk will accrue to users and nonusers alike. User benefits arise from the direct (i.e., walking/jogging) and indirect (i.e., picnicking/observing nature) use of the Cliff Walk, and are measured by users' willingness to pay for the level of maintenance necessary to safely support these uses.

Weisbrod (1964) was the first to suggest that when uncertainty is present, a person's maximum willingness to pay to ensure access to an environmental resource may exceed the expected value of consumer surplus. Option value, according to Weisbrod, is "the amount of money economic men who anticipate visiting a recreation site, but are uncertain, and in fact may or may not make a visit, would be willing to pay for the option that would guarantee future access."

Krutilla (1967) suggested that individuals may value a resource even though they know with certainty that they will never personally use the resource in question. There are two such nonuse values: existence value and bequest value. Existence value is the willingness to pay for the knowledge that a natural environment is preserved. Some individuals may derive satisfaction from knowing that certain species and natural environments exist and therefore may be willing to pay something for the preservation of such natural resources. This notion is substantiated by the existence of such groups as: The Audubon Society, The Sierra Club, National Wildlife Federation, etc. Bequest value is motivated by the desire to provide resources for future generations. Bequest value is the willingness to pay for the satisfaction derived from endowing future generations with a natural environment.

Environmental assets such as the Cliff Walk are considered public goods. The quantities of public goods are seldom choice variables for the individual (nonexcludable). The level (if quantifiable) of the environmental asset, rather than its price, is exogenous. Environmental assets are often nonrival in consumption and, if congestion effects are negligible, efficient pricing suggests a zero price. This is because the marginal opportunity cost of providing the good to an additional consumer is zero. Under the nonrivalry assumption, the social value of the resource is equal to the sum of the individual's maximum willingness to pay for a given level of the good. The Contingent Valuation method (or willingness to pay survey method) can be applied to measuring both the benefits from the existence of a recreation site (as opposed to it being unavailable) and the benefits from a change in the quality of a recreation site.

The Contingent Valuation Method.

For most pure public goods, environmental goods in particular, markets do not exist. The contingent valuation method is then used as a substitute for the "missing" market; it attempts to value nonmarket goods by asking individuals to reveal their preferences (as willingness to pay) for changes in the level of environmental commodities (i.e., site quality). Given appropriate assumptions, consumers reveal their willingness to pay for nonmarket goods contingent upon a hypothetical market transaction, and answer such questions as "how much are you willing to pay for the preservation and maintenance of the Cliff Walk?" The goal of the contingent valuation method is the establishment of a hypothetical market in an effort to derive values analogous to market prices which can be incorporated into a benefit-cost framework.

The primary advantage of the contingent valuation is its simplicity and directness in questioning or surveying consumers about their valuation of the resource. Researchers can ask direct questions about Hicksian welfare measures rather than having to approximate them from Marshallian demand curves. The scope of its application is limitless as long as the respondents can imagine hypothetical buying situation for the commodity in question such as natural environments, endangered species, and clean air and water. Another advantage of the contingent valuation method is that it allows the inclusion of nonusers in the study. This is useful for measuring intrinsic benefits (i.e., option value, existence value, and bequest value) which are elusive to other estimation techniques. Also, contingent valuation can be used for ex-ante analyses. That is, respondents can be asked to value improvements in site quality before they actually occur. This could be of some use to policy makers in evaluating the effects of current or proposed policies.

Due to the hypothetical nature of contingent valuation surveys, several biases may be observed. Schulze, et al. (1982) identifies six major types of bias: (1) strategic bias, where individuals attempt to influence policy outcomes by over- or under-stating their true willingness to pay; (2) information bias, induced by the lack of, or type of information given to consumers in the contingent market; (3) instrument bias - caused by the process or procedure used to discover preferences; (4) hypothetical bias - the error induced by not confronting the individual with the actual situation; (5) starting point bias - the starting bid tends to anchor the individuals opinion; and (6) sampling, interviewer, or nonrespondent bias. Although contingent valuation studies can potentially contain all of these types of bias, they can be overcome with careful wording of survey questions and the overall preparation and administration of the survey.

Two contingent valuation surveys were conducted, a user survey which involved interviewing users on the Cliff Walk in order to create a user profile, and a resident survey mailed to a random sample of Newport residents. There may be some people who do not use the Cliff Walk, but who value knowing that it exists in case they wish to use it in the future. These nonuser benefits associated with the preservation and maintenance of the Cliff Walk can be accounted for by the resident survey (although, clearly, nonuser benefits are not restricted to Newport residents).

APPENDIX B

CLIFF WALK USER SURVEY

Weather: _____

Location: _____

Date/Time: _____

1. Where is your home town? _____

2. Where did you travel from today? _____

3. Are you here on vacation or day trip? V___ D___

Will you spend your entire vacation in R.I.? Y___ N___

How much time do you plan to spend in Newport? _____

4. Did you come alone or in a group? _____

How many people are in your group? _____

How many are from Rhode Island? _____

How many are from Newport? _____

5. How did you get to the Cliff Walk?

(a) own car (c) public transportation

(b) tour bus (d) other _____

Did you have trouble finding a place to park?

Y___ N___

Where did you park your car?

(a) Memorial Blvd./Easton's Beach

(b) Cliff Avenue

(c) Narragansett Avenue

(d) Ruggles Avenue

(e) Other _____

6. If parking were restricted near the Cliff Walk would you be willing to pay \$3.00 to park your car in town and take a shuttle bus to and from the Cliff Walk? (There would be no additional charge for the bus). Y___ N___

7. Is this your first visit to the Cliff Walk? Y___ N___

How many times during the past year did you visit the Cliff Walk? _____

8. Was the Cliff Walk your primary reason for coming to Newport today?

Y___ N___

9. How did you hear about the Cliff Walk?

- (a) Friend/Relative
- (b) Magazine Article/Promotional Brochure
- (c) Other _____

10. What attracted you to the Cliff Walk?

- (a) Like to walk
- (b) Ocean view
- (c) Mansions
- (d) Other _____

11. Do you know how far it is to walk the entire Cliff Walk?

Do you know how far you will be walking? _____

12. Would you expect a ride back to where you started after reaching the end of the Cliff Walk? Y___ N___

13. Did you expect to find:

- (a) Concession/Souvenir stands Y___ N___
- (b) Restrooms Y___ N___
- (c) Benches/Rest stops Y___ N___
- (d) Other _____

14. In an attempt to establish a management plan for the Cliff Walk several issues have been identified. I am going to read you a list of issues and would like you to indicate whether or not they are of concern to you.

- (a) Parking Y___ N___
- (b) Trespassing on private property. Y___ N___
- (c) Trash Y___ N___
- (d) Width of the Cliff Walk. Y___ N___
- (e) Fences along the Cliff Walk. Y___ N___
- (f) Erosion. Y___ N___
- (g) Lighting in tunnels. Y___ N___
- (h) Other _____

15. How would you rate the overall condition of the Cliff Walk?

- (a) Excellent (c) Fair
(b) Good (d) Poor

16. Do you feel that the Cliff Walk is safe for walkers?

Y___ N___

Would you be willing to pay \$1.00 per visit to help cover the cost of necessary improvements to the Cliff Walk to make it safe? Y___ N__

17. Do you feel that the Cliff Walk should be expanded to provide for additional uses? Y___ N___

Would you be willing to pay \$2.00 per visit to help cover the cost of improvements for safety as well as additional uses? Y___ N__

18. Suppose that a non-profit organization were established whose sole purpose was to preserve and maintain the Cliff Walk. Would you be willing to donate \$5.00 per year to belong to such an organization? Y___ N___

APPENDIX C

CLIFF WALK RESIDENT SURVEY

ONE IMPORTANT PURPOSE OF THIS STUDY IS TO LEARN MORE ABOUT THE WAYS THAT NEWPORT RESIDENTS USE THE CLIFF WALK, AND YOUR BELIEFS ABOUT THE PRESERVATION AND MAINTENANCE OF THE CLIFF WALK.

1. Please estimate the number of times you visited the Cliff Walk during the past year. _____
2. What percent of your visits are made during the:
Spring _____ Summer _____ Fall _____ Winter _____.
3. For what reason(s) do you visit the Cliff Walk? (Circle each letter that corresponds to your reasons.)
 - (a) LIKE TO WALK
 - (b) OCEAN VIEW
 - (c) MANSIONS
 - (d) OTHER (PLEASE SPECIFY) _____
4. Do you know how far it is to walk the entire Cliff Walk? _____
5. How do you usually get to and from the Cliff Walk?
 - (a) OWN CAR
 - (b) PUBLIC TRANSPORTATION
 - (c) WALK
 - (d) OTHER (PLEASE SPECIFY) _____

When you drive, do you normally have trouble finding a place nearby to park your car? Y___ N___.

If parking were restricted near the Cliff Walk, would you be willing to pay \$3.00 to park your car in town and take a shuttle bus to and from the Cliff Walk? (There would be no additional charge for the bus.)
Y___ N___.

6. In an attempt to establish a management plan for the Cliff Walk several issues have been identified. Below is a list of issues. Please indicate whether or not they are of concern to you.

(a) PARKING AND SAFETY OF PARKED VEHICLES.	Y___ N___
(b) TRESPASSING ON PRIVATE PROPERTY.	Y___ N___
(c) TRASH ALONG THE CLIFF WALK.	Y___ N___
(d) WIDTH OF THE CLIFF WALK (Is it of adequate width for walkers).	Y___ N___
(e) SAFETY (Is there adequate fencing to provide safety for walkers)	Y___ N___
(f) EROSION.	Y___ N___
(g) LIGHTING IN TUNNELS.	Y___ N___
(h) OTHER (PLEASE SPECIFY). _____	
7. How would you rate the overall condition of the Cliff Walk?

(a) EXCELLENT	(c) FAIR
(b) GOOD	(d) POOR

8. Do you feel that the Cliff Walk is safe for walkers? Y___ N___.

Would you be willing to pay \$1.00 per visit to help cover the cost of necessary improvements to the Cliff Walk to make it safe?
Y___ N___.

9. Do you feel that the Cliff Walk should be expanded to provide for additional uses? Y___ N___.

Would you be willing to pay \$2.00 per visit to help cover the cost of improvements for safety as well as additional uses? Y___ N___.

10. If a non-profit organization were established whose sole purpose was to preserve and maintain the Cliff Walk, would you be willing to donate \$5.00 per year to belong to such an organization? Y___ N___.

What is the most that you would be willing to donate each year to such an organization? _____

11. What part of the year do you live at your Newport address? (Circle one number that best describes your answer).

- (a) ALL YEAR
 (b) DURING ALL OR PART OF SUMMER
 (c) OTHER (PLEASE SPECIFY) _____

12. Do you rent or own the residence at your Newport address?

- (a) RENT
 (b) OWN

13. How long have you lived in Newport? _____

14. What category comes closest to your family income before taxes in 1986? We ask this only to verify that all income groups are represented in our sample. Please include your spouses income if you are married. (Circle the answer that best describes your income in 1986).

- (a) LESS THAN \$5,000 (d) \$15,000 to \$24,999
 (b) \$5,000 to \$9,999 (e) \$25,000 to \$49,999
 (c) \$10,000 to \$14,999 (f) \$50,000 or more

15. Who do you feel should have responsibility for the preservation and maintenance of the Cliff Walk?

- (a) CITY OF NEWPORT
 (b) STATE OF RHODE ISLAND
 (c) FEDERAL GOVERNMENT
 (d) PRIVATE ORGANIZATION
 (e) OTHER (PLEASE SPECIFY) _____

16. Any additional comments about the Cliff Walk?

APPENDIX D

METHODOLOGY USED FOR ESTIMATING TOTAL WILLINGNESS TO DONATE.

Responses to the willingness to donate question were analyzed using a methodology outlined by Hanemann (1984;1985), which relates the statistical logit model (see Fomby, et al., 1984) to the underlying utility theoretic model of individual behavior. In making decisions about whether or not to purchase a certain bundle of goods, the individual seeks to maximize the utility obtained by a particular bundle of goods, subject to the constraint imposed by his budget. Individuals are assumed to prefer higher levels of maintenance of the Cliff Walk (or site quality) to lower levels, and to be willing to donate something to have the condition of the Cliff Walk improved over the current level. By asking people to reveal their willingness to donate for preserving and maintaining the Cliff Walk it is possible to obtain a theoretically accurate measure of benefits.

Individual's are assumed to obtain utility from the preservation of the Cliff Walk, and from money income. In addition, individual's preferences are believed to vary systematically with changes in observable attributes such as: visits to the Cliff Walk, whether or not the individual is a property owner (and hence pay property tax), and whether or not the individual feels the Cliff Walk is currently in good condition. To represent willingness to donate for the preservation and maintenance of the Cliff Walk the variable j is introduced, where $j=1$ if the individual is willing to donate, and $j=0$ otherwise. Income is denoted by Y , and other observable attributes on the individual which may affect his willingness to donate are denoted by the vector t . The mean value of the individuals' utility function might therefore be written $v(j,Y;t)$.

Respondent's were asked if they would be willing to donate a specific amount, \$5.00, for the preservation and maintenance of the Cliff Walk. The individual is assumed to know which choice (i.e., \$0 or \$5.00) maximizes his utility, but to the investigator, the individual's response is a random variable whose probability distribution can be described by:

$$\begin{aligned} P_1 &= \text{Pr}[\text{individual willing to donate } \$5.00] \\ &= \text{Pr}[v(1,Y-5.00;t) + e_1 > v(0,Y;t) + e_0] \\ &= \text{Pr}[v(1,Y-5.00;t) - v(0,Y;t) > e_0 - e_1] \end{aligned}$$

and

$$P_0 = 1 - P_1$$

where e_1 and e_0 are random error terms. If we let $w=e_1-e_0$, and let F_w be the cumulative distribution function of the standard logistic variate, then the probability of willingness to donate may be written:

$$P_1 = F_w(\Delta v) = (1 - \exp(-\Delta v))^{-1}$$

where

$$\Delta v = v(1, Y-5.00; t) - v(0, Y; t).$$

In order for the outcome to be interpreted as a utility maximizing choice, the arguments of $F_w(\cdot)$ must take the form of a utility difference, Δv . We first postulate a functional form for $v(j, Y; t)$, $j=0,1$, and then evaluate the difference Δv . The functional form used was

$$v(j, Y; t) = a_j + B \ln(y)$$

where the vector t has been suppressed.

$$\begin{aligned} v &= (a_1 - a_0) + B \ln(Y-5.00) - B \ln(Y) \\ &= (a_1 - a_0) + B \ln(1 - 5.00/Y) \\ &\approx (a_1 - a_0) - 5.00/Y \end{aligned}$$

The statistical discrete choice model becomes $P_1 = F_w(a - B(5.00/Y)) = (1 + \exp(-(a - B(5.00/Y))))^{-1}$

Once the response probabilities, P_1 and P_0 , are defined, the coefficients, a and B , are estimated using the maximum likelihood method. The likelihood function we maximized had the form

$$L = \prod_{n_1} 1/(1 + \exp(-\Delta v)) \prod_{n_2} (\exp(-\Delta v))/(1 + \exp(-\Delta v))$$

where n_1 and n_2 are the number of respondents who answered "yes" or "no" to the willingness to donate question, respectively. From this result we obtain the response probability function. The integral under this function provides a measure of the change in welfare associated with an improvement in the condition of the Cliff Walk.

ESTIMATION RESULTS:

The following equation was computed for a change in the condition of the Cliff Walk (t -statistics in parentheses).

$$\begin{aligned} \text{WTD} &= 0.469 - 1282.900(5.00/Y) + 0.067 \text{ VISITS} \\ &\quad (1.30) \quad (-1.82) \quad (2.73) \\ &\quad + 0.506 \text{ OWN} + 0.298 \text{ GOOD} \\ &\quad (1.56) \quad (0.85) \end{aligned}$$

$$\text{Pseudo-R}^2 = 0.10 \quad \text{Likelihood ratio} = 101.95$$

The dependent variable (WTD) can be interpreted as the logarithm of the odds in favor of a certain outcome (i.e., that the randomly selected individual will be willing to donate for the preservation and maintenance of the Cliff Walk. The likelihood ratio given by our results (101.95) is greater than the critical value at the .005 level of significance, therefore, we can reject the null hypothesis that all of the coefficients, other than the intercept are equal to zero. The pseudo- R^2 in our results is considered reasonable.

OBTAINING A MEASURE FOR CONSUMER SURPLUS

Discrete choice willingness to donate questions were asked because responses were expected to be more reliable than continuous responses (i.e., asking respondents to reveal their maximum willingness to donate). Nevertheless, we do actually want to estimate (or infer) the most the individual would be willing to donate each year for the preservation and maintenance of the Cliff Walk. If the individual responds "yes" when asked if he would donate \$5.00 each year, then we know that \$5.00 is a lower bound on his true willingness to pay. Alternatively, if he responds "no", then \$5.00 is an upper bound on the individual's true willingness to pay. Hanemann (1984; 1985) showed how one can derive estimates of the maximum willingness to donate for an individual with given income, Y , and characteristics t . This is accomplished by postulating a specific, parametric random utility model for the individual. An estimated version of the model can then be used to calculate maximum willingness to donate.

Suppose an individual is indifferent between two situations: one described by the true level of site quality ($j=0$) and income, Y , and the second described by an improved level of site quality ($j=1$) and a reduced income ($Y - C$). That is,

$$v(1, Y-C; t) + e_1 = v(0, Y; t) + e_0$$

The reduction in income, C , referred to as compensating variation, is the maximum amount the individual would be willing to donate to secure the change in site quality and remain at his initial level of utility. Solving the above stochastic equation for C , we obtain a probabilistic expression for the individual's maximum willingness to donate.

$$C = Y - m(v(0, Y; t) - w, 1; t)$$

where m denotes the solution of the utility function for its second argument.

Two possible procedures for estimating maximum willingness to donate are to use the mean or median of the distribution of C . Both of these measures can be estimated from the fitted statistical response model. The mean (C^+) is equal to the expected value of the area under the response probability function

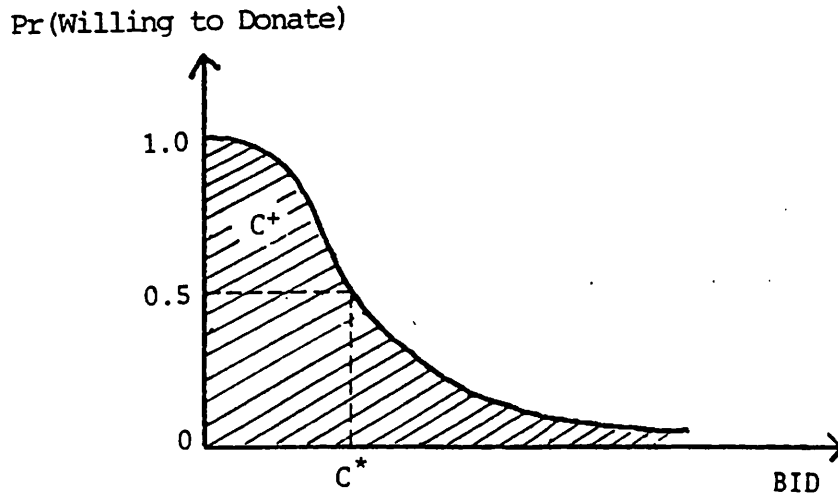
$$C^+ = \int_0^{250} [1 - G_C(\text{BID})] d \text{BID},$$

where \$250 is judged to be a maximum reasonable willingness to donate and G_C is the cumulative distribution function of C (shaded area in Figure D.1), and the median value, C^* , is the value at which the estimated response probability is 0.5.

The willingness to donate for the average Newport family in each income bracket was estimated both as the mid value and as the integral under the fitted response probability function from $\text{BID}=\$0$ to $\text{BID}=\$250$. The resulting willingness to donate values were then multiplied by the number of families in each income bracket (adjusted to reflect 1986 income), as given in the 1980 Rhode Island Census of Population and Housing, to determine the total willingness to donate for each income category. The total willingness to donate for each income category were then summed to give the aggregate benefits to the City of Newport associated with the preservation and maintenance of the Cliff Walk.

The aggregate benefits (or total willingness to donate) for the City of Newport ranged from \$271,065 for the mean value and \$260,680 for the median value. For a city with 6,759 families this translates to an annual donation of about \$40.00 per family.

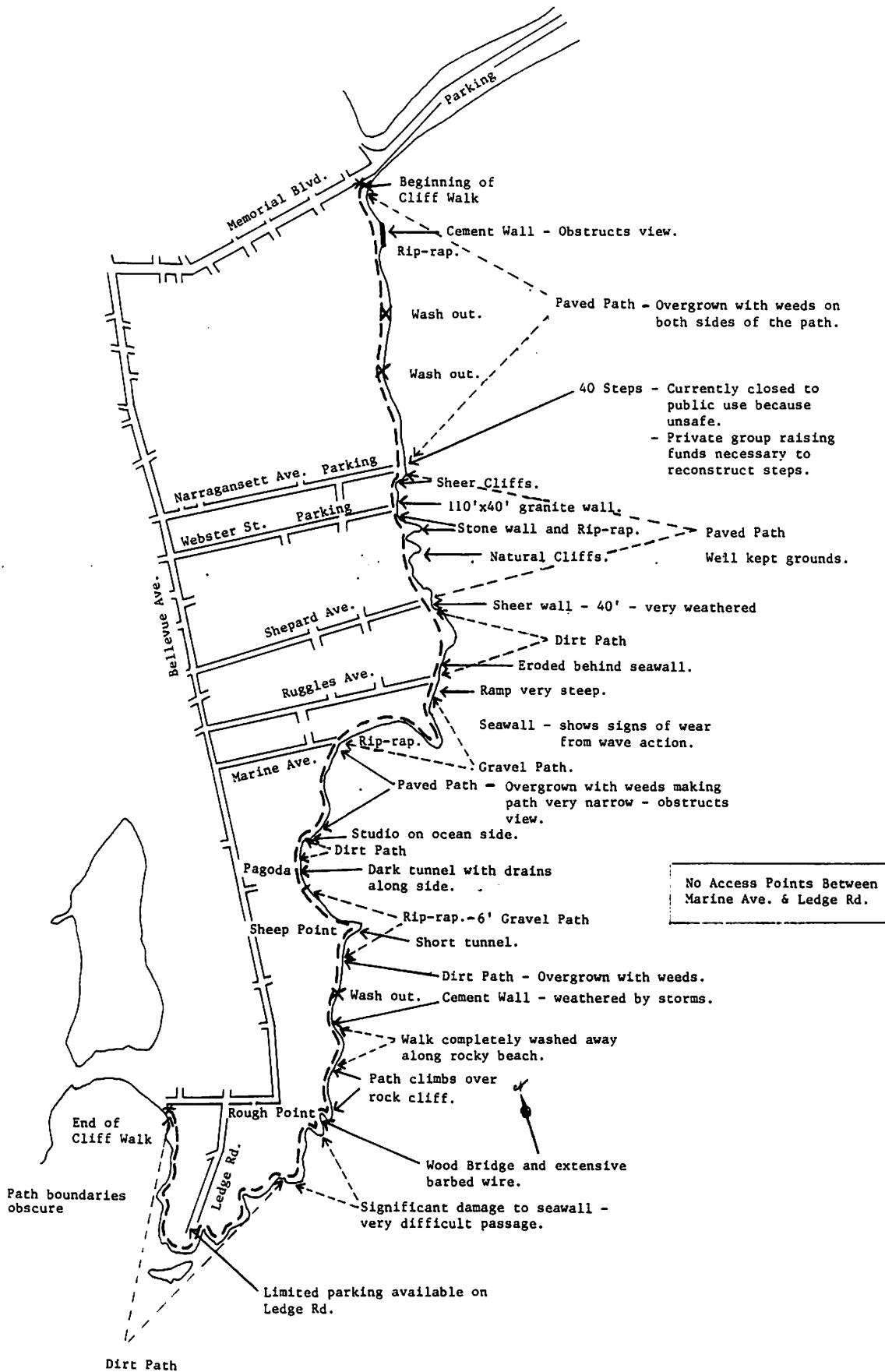
Figure D.1. Measuring Total Willingness to Donate from the Fitted Response Probability Function.



APPENDIX E

ANNOTATED MAP AND PHOTOS OF THE CLIFF WALK

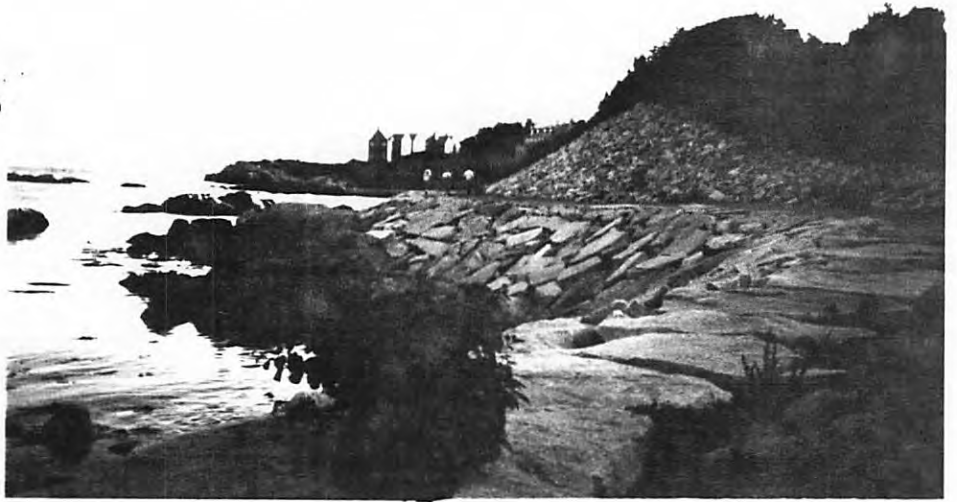
THE CLIFF WALK NEWPORT, RHODE ISLAND





Most recent construction -
Webster Street.

Corps of Engineer rip-rap
near Sheep Point.



Unimproved walkway near
Rough Point.



Washed out walkway between Sheep Point and Rough Point.



Washed out seawall between Sheep Point and Rough Point.

BIBLIOGRAPHY AND REFERENCES:

- Currie, John M.; Murphy, John A. and Schmitz, Andrew. 1971. "The Concept of Economic Surplus and its Use in Economic Analysis." The Economic Journal, Vol (Dec): 749-799.
- Darling, Paul A. 1972. "Rhode Island's Cliff Walk: Its Wild Origins and Bright Future." Yankee, (Nov): 62-70.
- Hanemann, W. Michael. 1984. "Welfare Evaluations in Contingent Valuation Experiments with Discrete Responses." American Journal of Agricultural Economics, Vol. 66, (Aug): 332-341.
- Hanemann, W. Michael. 1985. "Some Issues in Continuous- and Discrete-Response Contingent Valuation Studies." Northeast Journal of Agricultural and Resource Economics, Vol. 14, No. 1: 5-13.
- Just, Richard E.; Hueth, Darrell L. and Schmitz, Andrew. 1982. Applied Welfare Economics and Public Policy. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Krutilla, John V. 1967. "Conservation Reconsidered." American Econometric Review. Vol. 57 (Sept): 777-786.
- Milon, J. W. and Johns, Grace. A Handbook for Economic Analysis of Coastal Recreation Projects, Florida Sea Grant College, Report #45, Food & Resource Economics Department, University of Florida, April 1982.
- Mishan, E.J. 1981. Introduction to Normative Economics. New York: Oxford University Press.
- Schulze, William D.; D'Arge, Ralph C. and Brookshire, David s. 1981. "Valuing Environmental Commodities: Some Recent Experiments." Land Economics, Vol. 57 (May): 151-172.
- Weisbrod, Burton A. 1964. "Collective-Consumption Service of Individual-Consumption Goods." Quarterly Journal of Economics, Vol. 78 (Aug): 471-77.