Coastal Zone
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aesthetic resources of the coastal zone

prepared for the:

Office of Coastal Zone Management
National Oceanic and Atmospheric Administration

by

Roy Mann Associates, Inc.
Cambridge, Massachusetts

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1975

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by:
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July 1975

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ACKNOWLEDGEMENTS

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The review and comment of the following individuals is acknowledged and greatly appreciated: Marc J. Hershman (Chapter 3), David G. Pitt (Chapter 9), and Raymond A. Siuta (Chapter 5).

The assistance of the firm of Jones and Jones, Seattle, Washington, in preparing portions of Chapter 2 on aesthetic resource assessment is also greatly appreciated.

Finally, we are grateful for the guidance and cooperation provided by the staff of the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration.

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INTRODUCTION

Purpose

The purpose of this handbook is to guide state coastal zone management agencies in the preparation of planning elements for the delineation and management of coastal aesthetic resources. The handbook presents background information, definitions, criteria, and procedures for aesthetic resource identification and documentation. Procedures for inventorying and mapping are discussed, as are methods and criteria for defining boundaries of geographic areas of particular aesthetic concern and outstanding aesthetic resource areas. Relative merits of major generic methodologies of coastal landscape assessment are identified. Criteria are developed for determining those aesthetic resources which are sensitive to development, and for identifying features of land and water uses and structures which are typically incompatible with specified aesthetic resources.

Finally, means for implementation of state aesthetic resource planning recommendations are identified, including management tools at state, regional, and local jurisdiction levels, and methods by which the public can participate in the aesthetic resource planning process.

This handbook is designed specifically to assist states in meeting requirements for consideration of aesthetic resources under the Coastal Zone Management Act of 1972 (Section 305, Management Program Development Grants and Section 306, Administrative Grants).

Problem Background

The Coastal Zone Management Act of 1972 (CZMA) places specific emphasis on the fact that aesthetic resources in the coastal zone are being threatened, damaged and lost. Although the visual assets of the coastal zone are among its most important resources in terms of its significance to the nation, past state planning efforts for coastal zone management have found it difficult to consider scenic resource protection and enhancement systematically. Few states have, to date, provided the kind of effective scenic resource management tools anticipated in the Act.

A major cause of this problem is the difficulty faced by planners in agreeing on an acceptable method or methods for defining and assessing aesthetic values in the coastal zone. Further, aesthetic values are difficult to measure in quantitative terms; some are amenable to mapping, others are not. Aesthetic assets themselves vary from region to region. Within regions, landscape or shorescape perceptions of individuals, public constituencies, and governmental decision-makers are influenced by home location, cultural background, income, class, recreational preferences, seasonal factors, and the personal or financial stake in the resource area in question. Thus, recommendations for selection of coastal land/water areas for protection or acquisition are difficult to make without bias, and measures for aesthetic safeguards in site selection, site planning, design and landscaping of coastal facilities are often ignored in the face of recommendations which are supported by "harder" data, or simply lost under the pressures of "heavier" interests.

A second aspect of the problem is the institutional difficulty of implementing shoreline appearance and design recommendations. Acquisition programs for scenic protection are extremely costly on a large scale. Regulations including stringent design standards, besides being difficult to pass in state legislatures, often engender legal problems and court actions by affected property owners. Further, states have different attitudes toward aesthetic resource protection; some have already initiated sophisticated planning programs, while others have barely begun to consider the issues.

Therefore, given the concern of the Coastal Zone Management Act with the protection and management of scenic resources, a need exists to assist the states in developing management planning programs by formulating procedures for identifying scenic resources in the coastal zone, for assessing both their intrinsic values and the effects on them of alternative actions, and for presenting practicable management alternatives.

This Handbook is intended to meet this informational need.

Prerequisites for a Management Program Aesthetic Resource Element

If an aesthetic resource element is to be both acceptable and effective, it must:

- Meet the requirements of the CZMA and reflect key related legislation including the National Envirmental Policy Act
- Be comprehensive (to allow for inclusion of all recognizable aesthetic resources in given coastal zone areas and to accommodate varying perceptions and conditions).

- deal with both natural and man made aesthetics and their interrelationships in the coastal environment.
- be consistent as to criteria but flexible in its application to the wide range of actual circumstances within each state.
- be practical in its application both for in-house studies by the designated state coastal agency, other agencies with delegated responsibilities, and use by consultants and subcontractors.
- provide for both meaningful public input, understanding, and participation and for alternatives for timely and constructive public review.
- provide assistance to agencies of the state and its political subdivisions, in identifying precise and workable tools for shoreline appearance and design management.

With specific regard to the statutory requirements of the CZMA, an aesthetic resource element effort must:

- survey, identify, assess, inventory and map aesthetic resources.
- delineate geographic areas of particular aesthetic concern.
- analyze the adverse and beneficial impacts of uses which may possibbly be designated as permissible within the coastal zone, by categories of use and structure as well as by geographic areas.
- deduce from the above, those uses to be considered permissible, with or without conditions, and which might not be permitted, within specific geographic areas of the coastal zone or within the coastal zone as a whole (from the aesthetic resource standpoint).

- deduce, also, which priorities of use and which levels of urgency ought to be keyed to specific resource areas.
- recommend specific areas for aesthetic resource preservation and restoration.
- recommend measures for protection, management, use, development and enhancement of aesthetic resources for each use-area and for each significant class of structures or facilities throughout the coastal zone.

Specific References of Key Federal Legislation to Aesthetic Resources

The following excerpts from several legislative acts highlight those sections which point specifically to the protection of aesthetic resources:

1. Coastal Zone Management Act of 1972

The Act stresses the importance of coastal resources, including aesthetic resources, to the national well-being. Section 302 (b) states:

> The Congress finds that the coastal zone is rich in a variety of natural, commercial, recreational, industrial and esthetic resources of immediate and potential value to the present and future well-being of the nation (emphasis added).

The Act's declaration of policy states in Section 303(a) that it is the national policy "to preserve, protect, develop and, where possible, to restore or enhance the resources of the nation's coastal zone for this and succeeding generations."

The Act also states in Section 303(b) that it is national policy:

> to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic and esthetic values as well as to needs for economic development (emphasis added).

Section 306 of the Act makes administrative grants contingent on provisions in the management program "for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological or esthetic values."

In its November 29, 1973 and August 21, 1974 Guidelines for Management Program Development Grants (15 CFR Parts 920 and 923), the OCZM makes more specific reference to aesthetic resource planning. Section 920.12 includes among the criteria for establishing areas of particular concern:

> Areas of unique, scarce, fragile or vulnerable natural habitat, physical features, historical significance, cultural value, and scenic importance.

Section 923.15 cites "historic, cultural, esthetic and conservation values," and "historic sites" (those listed on the National Register of Historic Places) among those concerns in which there is a clear national interest.

2. National Environmental Policy Act of 1969

Similarly, the National Environmental Policy Act (NEPA) stresses aesthetic considerations in its guidelines for environmental impact statements (EIS), requiring that:

> The Federal government use all practicable means.../to/ ... assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasant surroundings... /and to/... preserve important historic, cultural, and natural aspects of our national heritage... NEPA, Sec. 101(b) (2,4).

In its Guidelines for the Preparation of Environmental Impact Statements, (4 CFR, Part 1500), the Council on Environmental Quality directs that EIS preparation must meet requirements of the National Historic Preservation Act for protection of historic properties listed on the National Register.

NEPA requirements apply directly to many Federal actions which affect aesthetic resources in the coastal zone. In addition to the direct NEPA guidelines, many of these agencies, among them HUD, Department of Agriculture, Department of Transportation, and the Army Corps of Engineers, have developed their own EIS guidelines to respond to specific project impacts within each agency. The state coastal zone planner should refer to these expanded, more detailed guidelines in his development of a coastal management program to determine environmental and aesthetic impacts of specific types of development projects which might be proposed in the coastal zone.

3. Water Resources Planning Act of 1965

The Principles and Standards for Planning Water and Related Land Resources, (Federal Register, Vol. 30, #174, Part III, September 10, 1973, pp. 61-66) of the Water Resources Council states the following reasons for protecting and enhancing special areas within the coastal zone:

> Beaches and Shores: The juxtaposition of attractive beaches, distinctively scenic shorelines and adjacent areas of clean offshore water provides positive public aesthetic values and recreational enjoyment.
>
> Estuaries: Beyond their critical importance in man's harvest of economically useful living marine resources, many estuaries, coves, and bays merit consideration as visually attractive settings that support diverse life forms of aesthetic value and as marine ecosystems of special interest.
>
> Open and Green Space: These are essentially undeveloped, visually attractive natural areas, strategically located where most needed to ameliorate intensifying urbanization patterns.

4. Other Federal Legislation

The Wild and Scenic Rivers Act of 1968 has as its legislative intent the protection of selected rivers of outstanding scenic value.

The Highway Beautification Act of 1965 calls for restriction of signs and junkyards along interstate highways to prevent or remove highway eyesores.

The Historic Preservation Act of 1966 calls for grants to states and localities for protection of historic and cultural buildings and sites.

Other Federal programs which treat aesthetic considerations peripherally and which can be used to fund aesthetic management programs as a part of broader purposes are listed in the Chapter 5 inventory of aesthetic resource management tools.

CHAPTER 1: EXISTING STATE AESTHETIC RESOURCE STUDIES AND PLANS

1.1 Introduction

Historically, aesthetic resources of the coastal zone have been addressed as portions of larger functional studies. States have addressed themselves to the documentation, evaluation, and planning of coastal zone aesthetic resources within the framework of land use or recreation studies or under special studies dealing with specific resources or problem areas. Aesthetic concerns have also been explicitly addressed in efforts such as environmental impact statements, comprehensive river basin plans, other water and related land resource studies, and resource studies by non-governmental bodies.

More recently, planning studies dealing specifically with aesthetic resources have been conducted by several states. Beginning in the late 1960's and continuing increasingly through the present, state planning activities have considered aesthetic resources largely under three general framework types:

- Specific aesthetic resource studies
- Multi-interest studies that address functional activities such as open space, conservation, tourism, and recreation as well as aesthetic resources.
- Comprehensive resource management plans and studies.

A wide variation in scope and magnitude of aesthetic resource plans and studies can of course be anticipated, since each state must build

its planning and resource investigation on its own assessment of information needs, reflecting differing environmental, social, and economic issues.

To gain insight into individual state thinking on aesthetic resource planning, a questionnaire was circulated by the preparers of this handbook to the coastal states and Guam, American Samoa, the Virgin Islands, and Puerto Rico on plans and studies affecting aesthetic resources in the coastal zone.

Table 1-1 summarizes the responses to this aesthetic resource activity survey. The table contains a listing of major aesthetic resource concerns mentioned in thirty plans, studies, and study outlines received from thirty-three state and U.S. Territorial coastal zone planning agencies. Seven of these studies were specifically related to aesthetic resources. Twenty-three considered aesthetics within a functional context, such as recreation or tourism, or within a more comprehensive context, such as environmental protection and coastal zone planning.

A complete listing of these documents is available in the Bibliography. The purpose of this brief listing is to show the different approaches to aesthetic resource planning indicated as being employed by the various states, and the varying emphasis devoted to each element studied.

The survey shows that aesthetic resources have not been specifically studied in the majority of states, and that the largest group of studies which consider aesthetics, either peripherally or directly, have been completed in the years following passage of the Coastal Zone Management Act.

Table 1-1

PAST PLANS AND STUDIES SUBMITTED BY STATE AGENCIES

	Post CZMA	Pre CZMA	Undated	State Authorship	Consultant/ External Agency Authorship	Total
General Titles						
Coastal zone planning	4	4	1	7	2	9
Environmental protection	3	2		1	4	5
Open space/park/recreation	4	2	1	5	2	7
Travel and tourism	2			2		2
Subtotal	13	8	2	15	8	23
Titles with terms specific to aesthetics						
Scenic, historic, cultural	1				1	1
Scenic quality/value	2			1	1	2
Aesthetics and amenity		1			1	1
Appearance and design	1				1	1
Public access to ocean	1				1	1
Visual resources	1			1		1
Subtotal	6	1		2	5	7
Total	19	9	2	17	13	30

Of the seven studies submitted which consider aesthetic resources directly, three stress scenic values as the major area of concern, focusing on outstanding scenic resources and views. Other visual quality concerns, relating to aesthetic resources within the "ordinary" coastal landscape, that is, outside outstanding scenic and viewing point areas, receive much less attention. Non-visual aesthetic qualities such as odors and intangibl factors and the aesthetic aspects, both positive and negative, of man-made development also receive scant attention or are omitted. One study stresses the public access aspects of aesthetic quality, in terms of increasing availability of views and physical entrance points to the shore. The emphasis on access similarly treats only one aspect of the problem.

Four of the studies take a broader view of aesthetic resources, defining the scope of their studies in terms of "appearance and design," "aesthetics and amenity," or "scenic, historic, and cultural resources." These studies are more in keeping with the legislative intent of the CZMA because:

- they expand the definition of aesthetic resources to include both natural and man-made features, positive and negative aesthetic resources, and other non-visual qualities such as noise and odor;

- they include identification of the interrelationships between landscape types and development types, and indications of sensitivity to development;

- they make specific recommendations for aesthetic resource management.

To provide an understanding of the scope of approach (i.e., comprehensiveness versus specificity) taken by various states in coastal aesthetic resource planning, the planning approaches are classified into three categories: 1) exclusive aesthetic resource interest, 2) multi-interest with specific reference to aesthetics, and 3) comprehensive interest.

1.2 Exclusive Aesthetic Resource Interest

States that reap high economic benefits from their aesthetic resources are the ones most likely to undertake planning to specifically preserve their aesthetic resources. States such as Florida and Hawaii and the Commonwealth of Puerto Rico, because their tourist industries depend heavily on shore aesthetics, have been the leaders in conducting such specific studies.

The State of Hawaii performed a study entitled No Ala Hola (Trails for Walking) in 1972. This study concentrates on places with historical, archaeological and legendary interest, and presents an inventory of aesthetic resources along Hawaiian trails.

In the Florida Coastal Coordinating Council's A Plan and Program for Amenities and Aesthetics in the Escarosa Pilot Area, part of a pilot study for statewide coastal zone management, identification and assessment of aesthetic resources were related to recommended state and local actions.

Puerto Rico may have been the first state-level government

unit to plan the preservation of estuarine aquatic aesthetic resources. In 1968, Puerto Rico sponsored a study entitled The Bioluminescent Bays of Puerto Rico. Since the bioluminescent bays are visual as well as economic assets, Puerto Rico's interest is in specific measures for their preservation and use. The case has emphasized the fact that aesthetic resources are not limited to the landward sides of the coastal zone. A second study, Scenic Values in Puerto Rico, (1972), is also singly concerned with aesthetics in the Commonwealth: visual quality, landscape quality, and micro-site quality. As a result of this study, Puerto Rico implemented advanced land use planning and completed maps on land mass zones, scenic coastal routes, and visual quality factors.

1.3 Multi-interest with Specific Reference to Aesthetics

This category may be exemplified by efforts of Virginia, Wisconsin, and Maryland. The Virginia Outdoors Plan of 1974, with state authorship, developed an inventory of landmarks, including scenic rivers and highways, and other historic, natural, and cultural characteristics (interior as well as coastal).

In the same year, a study was performed for the State of Wisconsin, entitled Project Summary Identification, Evaluation and Utilization of Scenic, Cultural and Historic Resources in Coastal Communities. This study identified sites of historic structures and shoreline-related visual and physical patterns reflecting socio-cultural influences. In addition, waterfront restoration and rehabilitation, an aspect often overlooked in aesthetic resource surveys, was addressed.

In the Maryland Chesapeake Bay Study (1972), the chapter "Public Access to and Appearance and Design of Shoreline" explicitly addressed the question of visual impact of development on the shoreline, although the study as a whole was basically concerned with public access considerations relative to recreational needs in Maryland.

1.4 Comprehensive Interests

Often aesthetic resource considerations have been relegated to positions of secondary importance or are largely disregarded when dealt with as components of larger-scope, comprehensive studies. On the other hand, some aesthetic resource components of comprehensive or framework studies have achieved a high degree of articulation and management orientation.

The State of Florida has authored two comprehensive coastal zone planning studies. The Florida Coastal Zone Management Atlas (1973) and Coastal Zone Management in Florida (1971) consider aesthetic factors as a component of the overall coastal zone planning effort. Rhode Island, in its Coastal Resources Management Plan (1972), specifically identifies the value of water resources to aesthetics. Other states have made explicit references to protection of scenic areas and other areas of high ecological, cultural, and historic significance in their Coastal Zone Management Grant Applications. As an example, Illinois in its 1974 CZM Grant Application cites among its work elements the need to "identify and locate all data available on archaeological and historic sites, environmental areas and natural, historic, scenic, cultural, and aesthetic areas located in the

coastal zone." Similarly, Massachusetts seeks to identify areas of "outstanding historical significance, high cultural value, and outstanding scenic importance" as part of its coastal zone management plan.

1.5 Summary

Recent state-level studies of aesthetic resources and resource management, whether conducted independently or as components of comprehensive coastal planning frameworks, appear to have broadened the planner's purview of aesthetics and the role of management in protecting, restoring, and enhancing aesthetic resources in the coastal zone. Supplanting the earlier limited approaches, which concentrated on point resources of unique natural scenic value, the viewing points from which these were viewable, and the presence of blighting factors, such as junkyards, which detracted from them, are the more comprehensive approaches which deal with the complete spectrum of aesthetic concerns. Guided by the provisions of the CZMA, as well as by the Water Resources Planning Act of 1965, the National Environmental Policy Act of 1969, and other relevant federal and state legislation, coastal planning studies can be expected in the future to continue to consider aesthetic resources and resource management on a broad and encompassing scale. This will be naturally expected of management plans funded under the provisions of the CZMA, but it will also be very probable of other, independent studies as well, considering the influence of the comprehensive and systematic CZMA approach. A recent example of a non-CZMA funded study which demonstrates consideration of CZMA concerns is the Shoreline Appearance and Design Planning Element of the Long Island Sound Regional Study, a comprehensive water and related land resources study,

conducted under the coordination of the New England River Basins Commission, under the provisions of the Water Resources Planning Act. The Shoreline Appearance and Design Planning Element identified "areas of special scenic concern" (analogous to the CZMA "geographic areas of particular concern") and considered man-made as well as natural resources, negative as well as positive features, and large-scale facility siting and design factors, all in part out of attention to CZMA provisions. By specifically highlighting aesthetic resources, and requiring a comprehensive, coordinated, and systematic approach, the CZMA has brought into clear focus the socially essential concern for all human, man-induced, and natural activities in the coastal zone that have high aesthetic value, and has ensured that state-level government will take aesthetic considerations into account in future management planning.

CHAPTER 2: DEFINING AESTHETIC RESOURCES AND BOUNDARY DETERMINATION IN THE COASTAL ZONE

2.0 Introduction

The first substantive component of the aesthetic resource planning element is an inventory of coastal zone aesthetic resources. Since many coastal zone management planners may be relatively unfamiliar with landscape/aesthetic concepts and terms, a general review of relevant definitions is given in this chapter. Implications of statutory coastal zone boundary determination and the delineation of aesthetic resource subdivisions for inventory efforts are discussed.

2.1 Inland and Offshore Statutory Boundaries

By law, the coastal zones of marine coastal states extends to the limits of the territorial sea and those of Great Lakes states to specific offshore international or interstate (Lake Michigan) limits.

The territorial sea, defined as extending three miles offshore of the high water line, or other water line as defined by state law, ends well within view of the shore observer. Beyond, federal jursidiction extends to international waters, twelve miles from shore.

Because an observer at sea level may view high offshore objects up to considerable distances (a 130 foot high object approximately fifteen miles from shore will be barely visible) and observers on high shoreland may view even much further beyond the territorial sea limits, it would be clearly useful to extend the coastal zone planning study boundary to the visible horizon, even though in most cases this would be

in federal waters. Any aesthetic planning recommendations and guidelines for the federal offshore zone would, of course, be advisory only.

A key offshore aesthetic concern is the location and appearance of drilling platforms, drillships, and other offshore oil extractive facilities. A brief discussion of alternative guidance measures in this area will be found in Chapter 5.

The same principle of horizon importance holds true for inland boundaries. Where the regional viewshed horizon extends beyond the state-designated coastal zone boundary, the former should be utilized for the purpose of study, even if the boundary designation is final.

In due course, the information gathered through the study process may provide needed data for a decision by the state to revise its statutory or interim coastal zone boundary to encompass additional areas of importance to coastal waters.

2.2 Definitions of Aesthetic Resources and Their Attributes

2.2.1 Natural aesthetic resources

It will be important to the staff coastal zone planner to understand and identify those aspects of natural features which are distinct from ecological or geological aspects, since aesthetic attributes often extend beyond the realm of more tangible bio-physical parameters. For example, "degree of openness" on a coastal plain may cover more than one landform or vegetative zone. Attributes serve to define and identify aesthetic resources and, together with selected assessment criteria, serve in aesthetic resource evaluation. It is also essential to understand the physical characteristics

of resources and their visual characteristics so that determinations can be made as to the sensitivity of resources to development presures.

Each aesthetic resource has an inherent sensitivity or susceptibility to man-made modifications; a full discussion of sensitivities is found in Chapter 4.

Table 2-1 identifies sample attributes of natural aesthetic resources, those features of the coastal zone which possess a distinctive degree of visual unity. They are significant because of their relative uniqueness as well as visual dominance over more ordinary or endemic features of the natural coastal landscape.

Table 2-1

	NATURAL AESTHETIC RESOURCES	
basic categories	specific categories	sample attributes which aid in determining classification as aesthetic resources
WATER BODIES	open bays/ shelf waters	.sandy bottom visible from high vantage points. .broadly-enclosed configuration
	coves	.partially enclosed configuration/partly unseen. .complex shoreline, as with compound coves.
	estuaries/ lagoons	.high degree of closure. .waterfowl, marsh, and tidal (estuarine ecosystem) aspects.
	river mouths	.dynamic movement/ebb and flow of tides, meeting of the waters, dramatic shifts between valley and coastal waters.
	fjord-like inlets/ narrows/guts	.vertical enclosure created by steep walls adjacent to narrow water body. .rocks and shoals visually prominent. .reversing falls.

basic categories	specific categories	sample attributes which aid in determining classification as aesthetic resources
WATER BODIES	streams/rivers	.gradient changes--e.g., waterfalls at fall lines, rapids and shoals. .distinctive channel patterns including: - braided-islands, pools and riffles - looped meander-gentle reverse curves - branched channels
WATER/LAND INTERFACE	breaker zone	.dynamic water movement e.g., breakers on beach water splashing on rocks
	beaches	.unique color or texture- as in white or black sand, gravel, cobbles, coarse boulders, calcareous beaches.
	salt/fresh water marshes	.unified vegetative color and grain. .waterfowl, marsh fauna apparent. .ecosystem function apparent.
	mangrove swamps	.unique vegetation/ecosystem function apparent, e.g., exposed roots. .bird colonies (species specific) nesting in trees.
	inland wetlands	.waterfowl, wetland fauna apparent. .ecosystem function apparent.
	riverine flood plains	.periodic inundations during spring or storm flooding. .flatlands with inundation-tolerant typical vegetation.
	distant islands	.focal points which give variety/complexity to view from shore.
	coral reefs/ other sub-tidal forms	.colorful, sculptural elements.
	spits/bars/tombolos	.narrow land forms surrounded by water--unique, sometimes mystifying.
	alluvial fans/mud flats	.unified color (mud flats) .unique "geometric" form (alluvial fan) with natural transition to water's edge.
	low islands/keys	.unique silhouettes. .insularity from other landforms.

basic categories	specific categories	sample attributes which aid in determining classification as aesthetic resources
LAND FORMS	high islands	.strong focal point.
	headlands	.unique geological formation which often has dramatic form/steep face.
	dunes	.pure sandy surface. .gently rolling/rounded forms accentuated by lack of tall vegetation.
	bluffs/banks	.steep slopes are visually dramatic.
	low plateaus/moors	.soft, rolling forms.
	high plateaus/	.unique flat, usually grassy areas which contrast with rough coastal bluffs.
	arroyos/canyons	.enclosure--sense of place.
	peaks/ridges	.unique silhouette.
VEGETATION	intertidal	.visible ecosystem apparent. .bright green color exposed when tide is out, especially revealed in estuary.
	sand dune community	.colorful and delicate grasses/flowers of low xeric thicket. .pannes/troughs - unique landform and vegetation.
	salt marsh community	.strong vertical stalks and prominent heads of phragmites, cattails. .homogeneous plant masses. .movement of grasses in wind.
	lowlands	.uniqueness, e.g., specimen trees rare species. .croplands - clearly defined edges and texture which serves as a foil to adjacent undifferentiated forest.
	uplands	.grove of canopy-forming trees create filtered light, e.g., locusts on Cape Cod. .color contrast between dark pines and light-leaved deciduous trees. .colors unique to seasonal changes.

SCENIC VALUE ASSESSMENT CRITERIA FOR THE SHORESCAPES OF THE LONG ISLAND SOUND REGION

Topographic Complexity

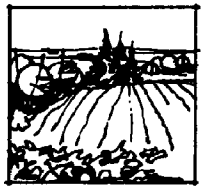
an index of the diversity as well as the relative relief of an area's landforms (vertical qualities)

Shoreline Complexity

an index of the irregularity of the coastal interface between land and water (horizontal qualities)

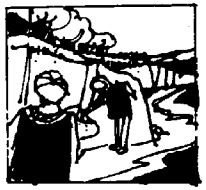
Vegetative Integrity

unity of vegetative species or type forms within a single shorescape viewshed



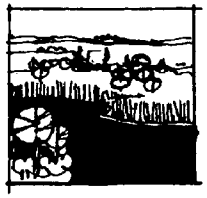
Vegetative Diversity

diversity of vegetative species or type forms within a single shorescape viewshed



Instructive Qualities

characteristics of geological, botanical, or other scientific interest, or which shed light on other qualities of the coastal zone



Color (Hue) Ingredients

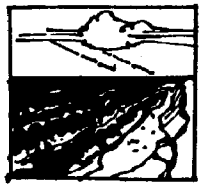
color of natural elements (earth, vegetation, water, sky); a criterion that varies with seasons and weather

Pictorial Composition

canvas qualities; varies with viewing orientation and is a determinant of best viewpoints for given vistas

Vividness

a summary quality which expresses the uniqueness and impressiveness of one or more of an area's other qualities



Shore Dynamics

the visual impressions of tides, currents and weather

Sail/Island Horizons

visual distinctness of islands and rocks as well as sailing activity; depends on viewpoint orientation and distance as well as on temporal factors

Ecosystem Continuity

the visible manifestations of shore ecology, such as marshes, inlets, flats, and barrier beaches seen within a single shorescape viewshed

Near/Far Contrast

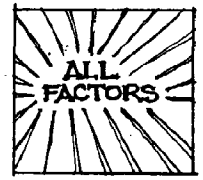
the juxtaposition between foreground or middleground and horizon forms; greatest when the nearer forms are distinct and the horizon forms, beyond water surfaces, are blued by haze and appear two-dimensional

Uniqueness (Scarcity)

an index of value based on rarity; a quality subject to broad interpretation dependent on the experience and expectations of the individual viewer

Endangerment (Issue-Real)

an index of the aesthetic quality of concern for resources facing real or imagined destruction



Sensitivity to Change

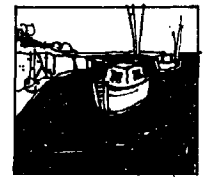
a judgmental indicator of the extent to which a shorescape unit posseses components which would be blocked, overshadowed, replaced, or otherwise damaged by the intrusion of objects or functions of moderate or average magnitude. For purposes of this judging, a standard ten-story residential building has been assumed as a measure of moderate or average magnitude

True-to-Form Rurality

a landscape possessing forms and materials, both natural and man-made, typical of classic, natural, semi-natural or agricultural areas

True-to-Form Townscapes

a townscape possessing forms and materials, both man-made and naturalized, typical of architectural styles characteristic of the region's historically established artifacts.



Human Dynamics

visible manifestations of human activity associated with the coastal zone (e.g., clamming, fishing, shipping, swimming), which are of human scale and interest

Absence of Detractions

freedom from incompatibilities introduced by natural forces (e.g., storm-eroded slopes) or by man (the latter by far the more important factor)

Figure 2-1: Illustrated Scenic Value Assessment Criteria excerpted from LISS Shoreline Appearance and Design Handbook, 1975

2.2.2. Man-made aesthetic resources

Inasmuch as man-made or cultural features of the landscape or waterscape often have important effects on coastal aesthetics, positive or negative and often both, it is essential to carefully identify and assess both the perceivable and intangible qualities of land uses and structures in the coastal zone. The surveys and analysis of land use conducted under other elements of the state's coastal zone management program or under other efforts can be reviewed for relevant data, but it can be expected that these elements will normally yield only limited assistance in the characterization of aesthetic attributes. Independent efforts should be made to accomplish characterization and assessment of land use patterns and concentrations as well as prominent structures or groups of structures as point elements or nodes.

Patterns or concentrations of uses or structures may be delineated in various ways, including standard land use classifications, and their aesthetic attributes may be identified along gradients of density (i.e., large areas of developed shoreline, specific complexes, outdoor spaces, and individual structures). Further, the relative distribution of open and settled areas, which can have a major impact on the overall visual quality of a coastal zone, should also be delineated. Various means of classifying the coastal zone according to intensity and type of development are in use. They include, for example:

1) The North Atlantic Region Water Resources Study definition of urban series (complete dominance of man-made structures) and suburban series (juxtaposition of complexes of man-made structures and natural landscapes).

   Urban systems are divided into center city, intermediate city, and fringe city; suburban systems are divided into town/farm, farm, farm/

forest, forest/town, and forest/wildland categories.

2) The Long Island Sound Regional Study Scenic and Cultural Inventory definition of:

   a) no development

   b) scattered development - "houses, commercial and institutional structures described as 'scattered' or partially hidden (clustered)."

   c) dense development - "any combination of houses, commercial and institutional structures described as exposed/clustered."

3) The South Coast Regional Commission of the California Coastal Zone Conservation Commission definition of:

   "Urban - I: highly urbanized areas with extremely intensive use of land...

   Urban - II: less intensive use of land with comparatively smaller structures, or scattered large structures...

   Urban -III: still less intensive areas which have some feeling of openness and fairly low structures...

   Suburban - III: ...areas which have more openness than Urban III...

   Suburban - II: ...areas which have still more openness and mostly one-story structures...

   Suburban - I : areas with big lots or scattered houses on open land and undeveloped open land..."

4) The definition of "use-and-structure classes" in <u>A Plan for Michigan's Shorelands</u> (<u>not</u> ranked according to impact):

   a) Beach activity (including beach structures)

   b) Green space use (including agricultural structures)

   c) Urban/low impact

   d) Urban/high impact

   e) Recreation harbors

   f) Commercial ports

   g) Shore structures

Whichever system is adopted for the identification, inventorying, and categorization of man-made or cultural features, it will be important to provide some indication of the aesthetic qualities which typify each class. An indication of density or size of settlement alone will not be sufficient to pinpoint its aesthetic impact and significance. Furthermore, the inventory classifications should be devised to be easily useful in the evaluation of aesthetic qualities, and from there to management recommendations for each.

Of particular importance with regard to the aesthetic characteristics of man-made features in coastal areas is the incidence of point elements which may distract the eye and disrupt the visual integrity of a coastal landscape or, in other cases, provide enhancing focal points. Examples of such elements are scattered utility poles, abandoned pilings, piers, lighthouses, and off-shore oil rigs. Linear elements, such as roads and transmission corridors, may also disrupt and devalue scenic shorescapes; some linear elements, however, may complement or enhance coastal rhythms.

In addition, special attention should be given to urban and suburban water-edge appearance and design characteristics. This subject is complex, because of the great diversity in architectural design and site usage of urban and suburban areas, but must be recognized as meriting equal status to other aesthetic resource subject areas under the terms of the CZMA.

Finally, features of the "ordinary" landscape, both natural and man-made, should be acknowledged and adequately considered in the inventory process. Though perhaps not as significant as highly scenic areas or nodes, the aesthetic resources of the "ordinary" landscape contribute to the general scenic resource base, and are the resources on which adverse impact is most

exposed to the coastal community. Management recommendations relative to "restoration" and "enhancement" as well as "protection" will be readily applicable to "ordinary" or "common" coastal landscapes.

2.2.3 Qualitative attributes of aesthetic resources

In the identification of aesthetic resources in the coastal zone, the planner will need to analyze qualitative distinctions in addition to listing the quantitative supply of elements which serve as the shoreline resource base. Qualitative values include consideration of the overall aesthetic contribution of these elements, both positive and negative. Aesthetic values may include consideration of such parameters as visual distinctiveness or vividness of the elements present (which may result from their relative prominence, contrasts due to irregularity in form, line, color and pattern, and the diversity of elements present), visual integrity or intactness, i.e. freedom from encroachment, intrusion, eyesores or deficits that result from nonconforming development or human abuse, and compositional harmony or unity of the overall shorescape, man-made elements included.

The impacts of less tangible or intangible aesthetic resource values may also be noted, such as the relative contribution of such factors as:

odors, pleasant or unpleasant
noise, pleasant or unpleasant
air quality
water quality
general atmosphere
seasonal changes
tidal changes
diurnal changes

Intangible factors are often important as they "color" or influence the overall aesthetic experience of the shorescape user.

Grouped together, the components of the attributes described above may be listed in this manner:

Vividness or visual distinctiveness

topographic expression
shoreline complexity
landmarks
vegetative pattern diversity
waterform expression
wildlife visibility
man-made elements
human dynamics

Intactness or visual integrity, absence of detractions

level of development
human intrusion (litter, overcrowding, wear and tear)
encroachment (eyesores, deficits)

Unity or visual harmony

pictorial composition
harmony between man-made and natural shorescape setting

Further factors which weigh significantly in the assessment of aesthetic resources are those contributed by the specific natural setting or cultural and historical meaning of shoreline resources. Illustrative examples are:

- scarcity (uniqueness)
- fragility (sensitivity)
- historicity (true to form rurality, townscapes, landmarks)
- educational value (instructive qualities)
- threat of loss (endangerment)

All of the above (discussed in greater detail later in this handbook) are important to consider relative to decisions on permissible use, geographical areas of particular concern, and other elements of program management.

2.3 Criteria for Area Subdivisions

In order to clarify the relationships between aesthetic resources of the coastal zone and the physiographic, ecological, and man-made resources of the coast, the state planner must initially subdivide the study area into meaningful units for aesthetic resource analysis. To serve most effectively, the same areas should also be capable of use as management units with little or no adjustment of borders. The purpose of classifying coastal subdivisions for coastal aesthetic resource planning is to differentiate shore units within which commonalities of view may be identified. These units will serve as a study base within which aesthetic qualities can be assessed, and subsequently serve as managerial units under existing political subdivisions. It should be noted that the Coastal Zone Management Act emphasis is on "wise use of the land and water resources of the coastal zone" (Sec. 303(b)), i.e. implicitly requiring an understanding and management approach for aesthetic resources in all coastal zone lands and waters, and not for selected scenic resources alone. The "inventory and designation of areas of particular (aesthetic) concern" (Sec. 305(b)(3)) required by the CZMA can be achieved systematically through the prior development of base data and identification of integral landscape entities, as discussed in Chapter 3 and Chapter 8.

Many systems for classification and division of the shoreline are possible. They may be based on climatic conditions, morphological characteristics, hydrology, biotic resources and ecological relationships, visual characteristics, land uses, and political boundaries. But four elements are commonly drawn upon in the delineation of visual units: 1) physiographic

or morphological characteristics, including topographical relief and gradient and shoreline configuration, 2) vegetation, 3) cultural characteristics, and 4) boundaries of governmental jurisdictions.

Whichever basis is selected, areal delineation of integral landscape subdivisions should be accomplished for all lands and waters within the coastal zone as a whole, both within the coastal viewshed and within any remaining portions of the statutory coastal zone which fall inland of the coastal viewshed limit. (One approach to distinguishing priorities between coastal viewshed and interior portions of the coastal zone may be to define the former as the First Priority Resource Zone and the latter as the Second Priority Resource Zone (see A Working Paper on Aesthetics and Amenity in the Escarosa Coastal Zone Pilot Management Area, Florida Coastal Coordinating Council, 1971).

2.3.1 The Concept of Viewshed

The Regional Viewshed

The areal demarcation of aesthetic resources within the coastal zone should be supported by the identification of both regional and local viewsheds (viewing "basins"). The regional visual basin or coastal viewshed may be defined as the visible watershed of natural landforms and man-made elements (up to distant high ridges or other regional inland horizons) as viewed from all points of aesthetic concern to the regional coastal community. Under this definition, highway corridors, coastal valleys, and communities serving shore-bound travellers may serve as points from which the regional viewshed boundary may be determined.

The coastal viewshed perimeter may fall at considerable distances from the coast itself. In Oregon, the coastal zone boundary, established by state legislation as the watershed divide of the Cascade Mountain range, also constitutes in many areas the "regional viewshed". The Oregon coastal zone boundary reflects a number of major considerations such as drainage and erosion as well as aesthetics, but aesthetics is well served by it.

The watershed divide or first major change in relief may not be suitable for aesthetic resource analysis or management in other circumstances, however. In some subregions of the Gulf coast, for example, significant topographic rises occur only well inland of what may reasonably be considered as the coastal zone. In other coastal areas, the first significant topography may be too close to the coast. The watershed divide of glacially deposited Long Island in Nassau and Suffolk Counties of New York, for example, lies at the crest of the bluffs of the island's north shore. Most aesthetic resources other than the beach-bluff associations themselves are found south of the divide. The Long Island Sound Regional Study Shoreline Appearance and Design Planning Element therefore delineated the regional viewshed well inland of the divide in this area in order to include the farmlands, woods, villages, and streams which are found within view of the major shore parallel road system (Routes 25, 25A) which acts as the armature of travel and aesthetic experience for coastal zone users in this area.

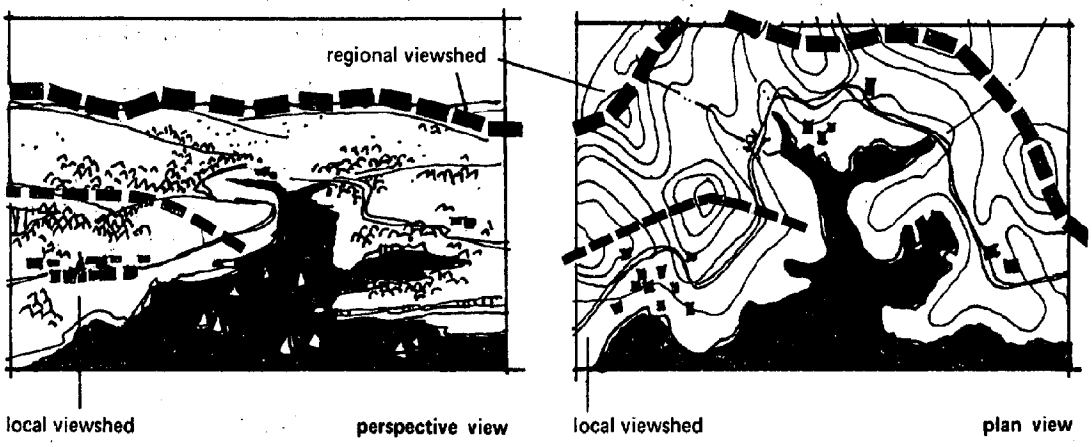


Figure 2-2: Local and Regional Viewsheds within the Coastal Zone
Excerpted from the LISS Shoreline Appearance and Design Handbook (1975).

The Local Viewshed

The selection of viewpoints from which to construct the viewshed of a local shorescape unit within the regional viewshed may be determined by consideration of four basic criteria:

1) Viewing population--Residents living within view of the shorescape unit may have very different vantage points and viewing habits than transients through or visitors to the shore. Areas of shorescape frequented by all viewing populations should be considered for viewpoint selection, including all potential areas from which the shorescape is likely to be observed.

2) Viewer Position--All vantage points, from elevated headlands to the water's surface, must be considered. The following are three typical conditions of view orientation:

   a. Observer Superior (looking down upon the shorescape from an elevated position)

   b. Observer Normal (looking across the shorescape from a vantage point at approximately the same elevation)

   c. Observer Inferior (looking up toward a vertical headland from the water's surface).

3) Viewer Distance

   a. Foreground Views - observer present along or up to 1/4 mile from shoreline

b. Middleground Views - observer 1/4 to 3 miles from shoreline

c. Background Views - observer more than 3 miles distant from shoreline.

4) Viewer Speed and Visual Contact Duration--These are considerations applicable to observers traveling by land, by boat, and by airplane within viewing distance of the shorescape unit and may influence viewpoint selection.

Methods for viewshed construction or landscape sight-line analysis have been developed by a number of investigators (Litton [1973], Jones & Jones (1973, 1974), Roy Mann Associates (1975)). See Chapter 9 for further discussion.

Viewing Points

Although highly scenic areas and nodes, and the ordinary scenic landscape as well, may generally be seen and appreciated from a large number of points within the regional or local viewshed, the full public benefit of important vistas may not be secured unless adequate provision is made for the protection or enhancement of viewing points from which they may be appreciated. Existing undeveloped viewing points may occur along and within highway and road rights-of-way, on public properties, and on commercial and institutional properties open to the public.

Potential viewing points include those on private property which cannot easily be surveyed and evaluated; these constitute the greater part of coastal zone viewing opportunities, and in light of continuing land use changes, offer future potential for public access. Although potential vistas and viewing points may be hidden by urban patterns, intervening topography, or tree masses, they should be inventoried to the extent possible and evaluated, since future development or redevelopment may create new

and important opportunities for protection, restoration, or enhancement of such latent resources. (This is implicitly required by the Coastal Zone Management Act, which related the finding of Congress that "the coastal zone is rich in ...aesthetic resources of immediate and potential value to the present and future well-being of the nation." (Sec. 203(b), emphasis added).

Roads, highways and transportation corridors are other important sources of potential views. Typification of road landscape can be mapped to include graphic summaries of the characteristics of alignment, the type of views possible, the vegetative closure, and other factors. A particular stretch of roadway, because of its unique alignment and the character of views from it, may be considered an aesthetic resource in itself.

Examples of viewing points (existing) and some reasons for their landscape importance are:

1) Islands and peninsulae	panoramic and cycloramic views of open water and shorelines; unique aesthetic resources of the coastal Zone.
2) Shorelines:	immediate opportunities for views over the water or back to inland horizons.
3) Overlooks and high points:	opportunities for public access to views and aesthetic experiences, often combined with tourist, outdoor recreational facilities.
4) Shore roads, railroads, and bridges:	the main opportunity for most access-to-shore views.

5) Upper shoreland transportation corridors:	"captive views" for drivers and passengers. In general, opportunities for views from or through corridors are not planned or designed. Nevertheless, these views are a common daily experience for many coastal zone users, and are of recreational and tourist importance for others.
6) Institutional lands:	more limited opportunities for public access to views, often confined to users of the institution concerned.

Specific criteria for the selection of viewing points for management action include:

1) Quality of the views: This consideration is paramount in establishing priorities for viewing point acquisition and for priorities of use in intervening areas between viewing point and view. Questions to be answered include:

   -What is the nature of the view, in terms of uniqueness, diversity, color, and other criteria, as defined by the selected inventory and assessment system?

   -Is the type of view considered to be of great interest to the public?

   -Have preference studies supported this finding?

2) Access to the views: The importance of this consideration is self-evident. Questions to be answered include:

   -Is the viewing point on public land, or is access possible through easement or fee simple acquisition?

   -Is the viewing point within or adjacent to an existing public right-of way?

   -Does the right-of-way have a scenic road designation?

   -Is notice of the viewing point now provided by signage or other indicators?

   -Is convenient access to the area provided from highways or feeder roads?

3) Detractions: Many views of excellent quality are marred by detracting factors such as fences, transmission lines, towers, or tall structures. Questions to be answered include:

   -To what extent do the detractions damage the view experience?

   -Are they easily screened or removed?

2.3.2 Borders based on physiographic and morphological (landform) characteristics

Every view of the shorescape, whether fortuitous--as with anyone discovering attractive qualities of a distant landform, or intentional--as with a boater scanning the shore for navigational landmarks, establishes an aesthetic relationship between the viewer and the entire coastline within the continuity of the horizons. The viewer also may be concerned with the coast beyond the horizons to the extent of the viewer's interest in or familiarity with the region. For the project planner, review official, or concerned citizen, coastline relationships are also important with regard to site selection and design of structures that are visible for any significant distance. For anyone interested in coastal resource planning, the area relationships along the shore are important for inventory, evaluation, and decision-making purposes.

For these reasons it is important to "map" the shore in a way that the aesthetic qualities of the coast are interrelated with its functional (e.g. shipping, sailing, town development) and its geopolitical (e.g., port jurisdiction, town and county limit) patterns. This can best be done by delineating divisions between coastal areas on the basis of landform, which is essentially the fundamental frame of the coastline.

Shoreline Configuration

Shoreline configuration is a major morphological quality which must be taken into account in all coastal zone inventory and assessment efforts. The National Estuary Pollution Study (1970) identified

the relationship between shoreline configuration and estuarine processes as "Similarities in structure which reflect similarities in water movement, water quality, and ecology." The N.E.P.S. classification comprised ten categories:

1) smooth shoreline without inlets
2) smooth shoreline with inlets
3) smooth shoreline with small embayments
4) indented shoreline without islands
5) indented shoreline with islands
6) marshy shoreline
7) unrestricted river entrance
8) embayment with only coastal drainage
9) embayment with continuous upland river flow
10) fjord

The importance of shoreline configuration lies in the relative exposure or closure of view created by shore landforms. A straight shoreline will allow perception of structures at distances along the shore to the limit of view (horizon). A complex shoreline (compound coves, for example) will create containments of view within individual segments. Structures can be hidden from general view when sited judiciously within complex shore configurations--except, of course, to viewers within the same segment.

Coastal Profile or Gradient

An important dimension of the coastal zone environment exists across or perpendicular to the coast and can be defined as a series of zones or tiers. Subdividing the coastal zone in this manner is useful in determining coastal zone inland and offshore visual boundaries and for indicating the interstices between shorelines most directly affected by tides and storms, and upper shorelands. It will also be instrumental in determining numerous aesthetic relationships between topography, hydrology, vegetation, and structures and uses.

Several systems for identifying zones differentiated by gradient perpendicular to the coast have been developed, at varying levels of detail. Examples are the National Estuary Study definition: offshore, shore and estuary, and coastal upland; and the Long Island Sound Study Scenic and Cultural Inventory definition: shoreline, interior and background. There are other equally valid definitions.

1) The offshore tier can best be described, in terms of aesthetic resource concern, as extending from the water horizon to the spring low tide line. Small offshore islands are included, but the intertidal zone is generally excluded. This definition is useful because all forms and processes integral aesthetically with open estuarine or coastal waters may thus be grouped together.

   The second division, the shore and estuary tier, is best defined as extending from the spring low tide line to the shore erosion limit line. This tier encompasses all of the visual attributes of beaches, dunes, marshes and mudflats, headlands and primary bluffs, and other components of the shore with which it is aesthetically (and often ecologically) related. The shore erosion limit line is used in the definition rather than record or storm high water because the crests of many bluffs peak high above record water marks and yet are an integral part of the shorescape edge. Sand dune systems also extend inland of and higher above record high water lines, yet are more a part of the shore aesthetic resource base than of the upland, particularly because of their association with coastal storm and wind movements, and with beach sand landscapes.

   The upland tier, or upper/shoreland tier, may be defined as extending from the shore erosion limit line to the limit of the extent of shore view impact. This tier encompasses lands and water upland of tidal or shore erosion influence.

The Great Lakes Shoreline may require modified tier definitions because of its variant character. A Plan for Michigan's Shorelands (1974) used the terms offshore, shoreline, and upper shoreland tiers. According to this scheme, the offshore tier extends from the two mile limit to the lower edge of the wet beach; the shoreline tier extends from the lower edge of the wet beach to the crest of the nearest enclosed terrain, or

where terrain is flat, to the inland edge of the flood-prone shore; the upper shoreland tier extends from the upper edge of the shoreline tier to the inland limit of the shoreline corridor.

Table 2-2 displays comparative planning efforts which have classified landforms and topographical divisions within the coastal zone according to their tier location between offshore and upland points.

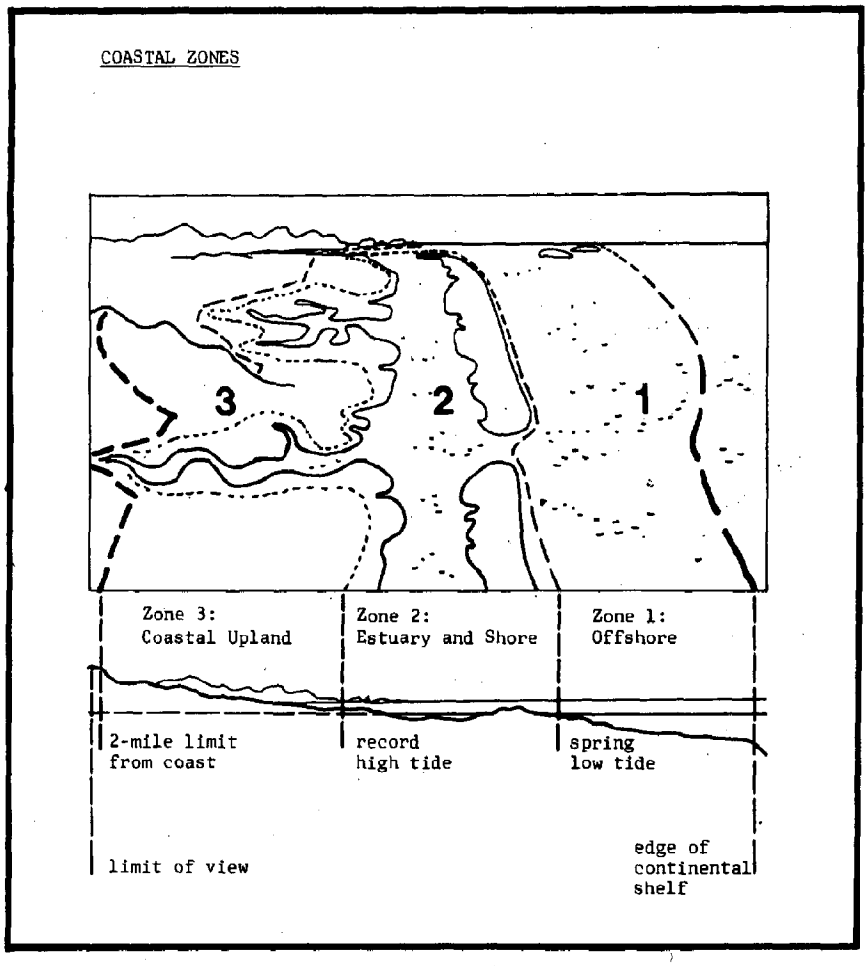


Figure 2-3: Coastal zones (tiers) as defined by the Estuarine Landscape Survey and Analysis, National Estuary Study, 1970

The Coastal Region and Subsidiary Units

- Coastal Units and Reaches: The coastal zone can be easily subdivided along the shoreline on the basis of visual and landform criteria. Coastal landscape (or shorescape) units are units between major headlands or other prominent landforms or, along very flat and unchanging shoreline, between semi-distant changes in beach, dune, surf or other coastal form perceivable from a significant viewing point. Headlands and high points on the shore act as guides to the eye. Some are dramatic and serve as landmarks; some are associated with hazards (such as near-shore rocks that are part of a shoreland geological formation) and are often the sites of lighthouses or beacons. In any case, they provide closure--a sense of partial containment--for the view of the coastal landscape that one may perceive from the shore or from a boat or island near the shore. In almost all cases a complete landscape between semi-distant landforms can be perceived.

The shorescape units aggregated between major headlands or prominent landform changes along the coast constitute a subdivision intermediate in scale between the shorescape unit and the subregion. The National Estuary Study, A Plan for Michigan's Shorelands, and the Long Island Sound Study have defined such subdivisions as coastal reaches.

Distinguishing the individual units of the shore along the coast will have value in identifying the near horizons (established by headlands or other high features) which set off or enclose a particular viewing basin or viewshed of local importance.

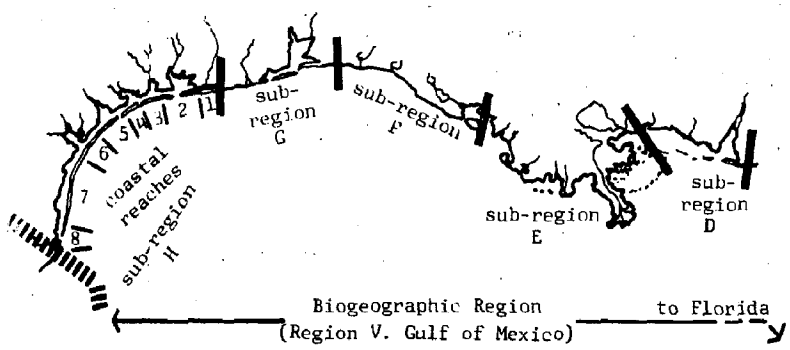
Such units will also approximate physical entities of the coast (embayments, estuaries, island groupings, etc.) within which other coastal

SOURCES	National Estuary Study (1970)	Long Island Sound Regional Study Scenic & Cultural Inventory (1974)	North Atlantic Region Study (1974)	Calif. Coastal Zone Conservation Commission Appearance & Design Report (1974)	
TIERS	Offshore: Offshore Shelf - Near Shore	Shoreline: Beach, Rocky Shore, Marsh, Bluff, Inlet	Coastline: *Embayed* Rocky Cliffs, Linear Rocky Shores, Marsh or Sand Bar, Sand Beach & Bluff	Natural Shoreline: *Open* Beaches, Dunes, Bluffs, Headlands, Coastal Shelves, Islands, Lagoons & Estuaries	Developed Shoreline: Village Waterfront, Urban Waterfront
	Estuary & Shore: Sandy Shore, Rising Edges, Flatlands, Tidelands, Estuarine Waters	Interior: Flatland, Rise, Hill, Bluff	Flat Lands		
			Undulating Lands	Natural Upland: Coastal Terraces, Arroyos & Canyons	
	Coastal Upland: Low Upland, Rising Upland, Upland Horizon	Background: Flatland, Ridge, Hill	Steep Hills		
			Mount AINS		

TABLE 2-2: SHORELINE TIER COMPONENTS

zone management considerations are easily identified.

Table 2-3 displays part of a preliminary shoreline classification system for the west coast of the United States: one biogeographic coastal region is identified and is subdivided into nine subregions and twenty-two reaches. The boundaries between coastal reaches are determined primarily on the basis of coastal physiographic or landform characteristics, using a system similar to that of McGill (1958), accompanied by investigation of more detailed topographic coastal maps. The coastal reaches are aggregated into subregions on the basis of geographic proximity and morphologic similarity or dynamic interdependence



Unit	Major Determinants
I. Biogeographic Region (e.g. Middle Atlantic)	. climate . regional geomorphology
A. Sub-region (e.g. Long Island Coast)	. land-water configuration . surface land-form . vegetation
1. Coastal Reach (e.g. Fire Island)	. differentiation within the sub-region . land-water configuration . surface land-form . vegetation
a. Coastal Association (e.g. Narrow Bay, including offshore waters, barrier beach, bay, marshes and upland)	natural interrelationships between adjacent land, water, and vegetative forms

Figure 2-4: Hierarchy of Coastal Subdivisions.
Excerpted from the National Estuary Study (1970)

Table 2-3 Shoreline Classification

BIOGEOGRAPHIC COASTAL REGION	BIOGEOGRAPHIC COASTAL SUB-REGION	COASTAL REACH	SOME SELECTED SHORELINE CHARACTERISTICS
NORTH-WESTERN PACIFIC COASTAL REGION	A. San Juan	1. Birch Bay/ Chuckanut Bay	Glaciated complex depositional plain and complex mountains, large and small estuarine bays, irregular shoreline, offshore islands.
		2. San Juan Islands	Glaciated complex mountains and hills, glacial deposition plain, abrupt cliffs and beaches, intricate and irregular shoreline, many bays, unique complex islands.
	B. Puget Sound	3. North Puget Sound	Glacial deposition plain, abrupt cliffs and beaches, intricate shoreline, many bays.
		4. South Puget Sound	Glacial deposition plain, abrupt cliffs and beaches, intricate shoreline, many bays, harbors and inland lakes, Seattle.
	C. Strait of Juan de Fuca	5. Port Angeles/ Dungeness	Glaciated complex mountains, narrow depositional plain, unique spits and small bays, abrupt cliffs.
		6. Neah Bay/ Agate Beach	Glaciated complex mountains, narrow depositional plain, smooth arcing shoreline, cliffs and beaches.
	D. Pacific/Olympic Mountains	7. Olympic Uplands	Glaciated complex mountains, large upper shoreland lake (Lake Ozette), sea stacks.
		8. Olympic Lowlands	Complex hills, sea stacks.
	E. Grays Harbor/ Willapa Bay/ Columbia Inlet	9. Grays Harbor	Broad alluvial plain, large estuarine bay enclosed by spits.
		10. Willapa Bay/ Long Beach	Narrow alluvial plain, large enclosed estuarine bay parallel to shore, sand spits.

BIOGEOGRAPHIC COASTAL REGION	BIOGEOGRAPHIC COASTAL SUB-REGION	COASTAL REACH	SOME SELECTED SHORELINE CHARACTERISTICS
NORTHWESTERN PACIFIC COASTAL REGION		11. Columbia Inlet	Narrow alluvial plain, very large estuarine bay, sand spits.
	F. Northern Oregon	12. Tillamook	Complex hills, rocky points and sea stacks, small bays.
		13. Nespelem	Complex hills, coastal dunes, small spit-enclosed bays, sea stacks.
		14. Newport	Complex hills, small twisted estuarine bays.
	G. Central Oregon	15. Yachats	Complex hills, unbroken rocky headland shoreline.
		16. Florence/ Reedsport/ Coos Bay	Complex hills, coastal dunes, small long twisted bays, upper shoreland lakes.
		17. Bandon	Complex hills, coastal dunes, very small inland lakes, sea stacks
	H. Southern Oregon	18. Point Blanco	Complex hills and mountains, irregular shoreline, sea stacks, shallow lagoons.
		19. Rogue River	Complex mountains, irregular rocky shoreline, Rogue River inlet, sea stacks.
	I. Siskiyou Klamath Mountains	20. Pt. St. George/ Crescent City	Narrow alluvial plain, backshore dunes, estuarine bays and inlets, redwoods and complex hills inland.
		21. Klamath River	Complex hills, small inlets, redwoods, sea stacks.
		22. Eureka Bay	Narrow alluvial plain, large and small bays, spits and coastal dunes, grasslands and complex hills inland.

Upland Units

Shoreline topography, and the immediate upper shoreland topography with which it is most closely related, should provide the best basis for shoreline aesthetic resource unit delineation. In interior portions of the coastal zone, however, ideal topographical boundaries may not be in prominent evidence, or topographical unit boundaries may not coincide with those of the shoreline units. Boundaries in such areas may be based partly on other parameters besides topography: forests and large marshes, or stabilized land use and cultural features.

Biogeographic Region:

1) Biogeographic Region: Major physiographic regions of the United States coastal zone have been identified in a number of studies. The National Estuarine Pollution Study defined them simply as "combinations of environmental conditions characteristic of various parts of the coastline" (NEPS, p. 83). Ten U.S. biogeographic regions were identified by the National Estuary Study, Appendix D: Estuarine Landscape Survey and Analysis (after the system defined by the U.S. Fish and Wildlife Service):

I.	North Atlantic	The NES Appendix D attempted to depict at the regional scale, significant shoreline and upland land form, land/water interface characteristics, settlement cover, biotic resource zones, public lands, and industrial and power sites--factors which exert major influences on the regional landscape.
II.	Middle Atlantic	
III.	South Atlantic	
IV.	Caribbean	
V.	Gulf of Mexico	
VI.	Pacific Southwest	
VII.	Pacific Northwest	
VIII.	Great Lakes	
IX.	Alaska	
X.	Hawaii	

2) Biogeographic Subregion: The subregion is defined by further climatic and geographic distinctions and regional physiography appears as a factor. The National Estuary Study identified forty-one subregions within the ten biogeographic regions and listed their major landform characteristics.

The continuum of the coastline also suggests the recognition of tangible relationships between small, easily perceivable units and the overall region. The National Estuary Study thus further distinguished smaller divisions than the subregion ("coastal reach" and "coastal association") (See Fig. 2-4). The value of recognizing a hierarchy of coastal geographic relationships is that the coastal zone planner may more effectively communicate the important roles climate, littoral processes and land forms play in subregional and local coastal issues.

Subdivisions of the coastal zone may be determined by large scale or regional considerations within a given state: watershed divides, climatic variations, and jurisdictional boundaries, or combinations of these three determinants.

A majority of past coastal studies have been geared to the biogeographic subregional scale: e.g., San Francisco Bay, Grand Traverse Bay, Long Island Sound, Tampa Bay, Boston Harbor. This scale is in fact the more useful study and managerial scale; the biogeographic region as a whole, however, may serve as a useful analytical reference for placing climatic, wildfowl migration, and other macro-patterns in proper perspective.

2.3.3 Vegetation as a Border Determinant for Coastal Units

Vegetation is a significant determinant of aesthetic value in the coastal zone. It is also a significant border determinant in the delineation of such resources as coastal marshes (cf: speciation requirements in Connecticut and Maryland). As a rule, therefore, where vegetative zonation coincides with major landform distinctions, vegetation is a valid criteria for landscape unit delineation. However, this system is not flawless where vegetative edges exist independent of landform edges, as vegetation may disappear or be modified as a result of development or natural phenomena.

Watershed and sub-watershed divides and other high landforms are preferable as criteria for subdivision delineation, particularly since such delineations will concur with basin water quality and other management unit boundaries.

Exceptions are mangrove swamps and large, convex estuarine marshes where enclosing landforms are not in evidence and these vegetative resources are viewable as the sole or major morphological entities above the horizon or water line.

Parameters to be considered in mapping vegetation include magnitude of cover and species visual qualities. It is thus useful to document the percentage of a given landscape under permanent vegetation and to assign evaluations to individual vegetational qualities. Maps can be used to delineate the former, and notation should be made of color, density, height, scarcity and similar characteristics.

2.3.4 Borders Based on Land Use Patterns and Jurisdictional Units

Human settlement patterns and land use characteristics are often extremely significant aesthetic determinants in the coastal zone, but seldom can serve in lieu of landform characteristics as landscape border determinants. The dynamic qualities of land use and jurisdictional boundaries inhibit their utility as delineators of aesthetic resource units over time. For example, the visual edge between cultivated and non-cultivated lands in semi-arid or arid zones may be dramatic, but the edge may be elsewhere the following year or growing season. Similarly, the boundaries of residential or industrial use zoning districts or other land use entities may change with time.

Using land use patterns as only secondary determinants of borders is, therefore, desirable although exceptions may be usefully made, as for example, with raised highway alignments or bridges in flat coastal lands, since such features are more or less permanent parts of the landscape and play an important role as both viewing platforms and view basin limits.

In light of both the desirability of linkage to political subdivision boundaries and the necessity of careful analysis of aesthetic resources within integral view limits, the following guideline may be applied: in the study phase of coastal zone aesthetic resource management planning, landscape/shorescape subdivisions should be delineated primarily on the basis of coastal morphology and view limit considerations. Following analysis, evaluation, problem definition, and recommendation for development, reconciliation of shorescape reaches and units with political or jurisdictional subdivisions should

be made if needed. (It may be pointed out that the real test of a management entity is how feasible the management recommendations are that apply to it, regardless of its boundaries.)

CHAPTER 3: GEOGRAPHICAL AREAS OF PARTICULAR CONCERN

3.0 Introduction

The Coastal Zone Management Act establishes that the national policy is to "preserve, protect, develop, and where possible, to restore or enhance" the resources of the coastal zone. The Act, under Section 305(b)(3), requires that the state's management program include "an inventory and designation" of the zone's resource areas, which, as with the designation of permissible uses in the coastal zone under Section 305(b)(2), will aid the state in establishing priorities for use and management throughout the zone but especially in the designated areas.

The Guidelines take care to point out that geographical areas of particular concern are likely to encompass not only areas of significant natural value or importance, but also areas that have been developed and require special attention ("transitional or intensely developed areas") or are especially suited for intensive use or development. As noted in other references in this Handbook, aesthetic resource factors and evaluation criteria will be only one of many sets of considerations before the state in determination of areas of particular concern. These factors and evaluation criteria are discussed below.

3.1 Utilization of Basic Inventory and Analysis

The inventory and analysis defined under Section 923.12 ("permissible uses") is essentially the same basic inventory and analysis that will

serve all evaluative and definitive sections of the state's management plan, as discussed in Chapter 7. In order to enable the inventory process to provide aesthetic data input suitable for assisting in the identification of possible geographical areas of particular concern, visual and other aesthetic analysis criteria must be developed in advance of both the field inventory and secondary source inventory efforts conducted by the coastal zone management program staff.

3.2 Types of Geographical Areas of Particular Concern

General definitions and identification criteria for areas of particular concern are presented below under each of the terms cited in 15 CFR 920.13.

3.2.1 General Concern

The following three types of areas are those listed in the introductory paragraph of Sec. 920.13 as general categories of areas of particular concern:

- Areas of significant natural value or importance

  Definition: 1) Areas which contain landforms, waterforms, exposed geology, vegetational forms, and/or fauna of visual and intangible impressiveness; or 2) areas which, in areal terms, are largely unmodified by man-made structures or activities.

  Identification elements: Presentation should include 1) a statement of the visual and intangible impressiveness of each major element; 2) a statement indicating the maximum degree of modification which may be tolerated by the area's aesthetic resource elements without significant adverse or irreversible impact.

- Transitional or Intensively Developed Areas

  Definition: Areas where reclamation, restoration, public access and other (remedial) actions may be needed. Transitional areas are those which are approaching intensive development. In each case, landscape and shorescape visual qualities are implicit.

  Identification elements: Because of the great diversity of circumstances inherent in this group, criteria will perforce need to be flexible and responsive to individual conditions. In general:

  1) Areas of reclamation or restoration concern are those which have experienced serious detrimental modification of land form or vegetational form and which possess potential for recovery of such form, or are developed lands which have experienced serious detrimental changes in surface or architectural qualities.
  2) Areas of public access concern are those in which physical barriers (e.g., buildings, expressways, private ownership) prevent visual as well as physical barriers to approaches to the water's edge.
  3) Other remedial action concern includes concern for enhancement. Areas in which this exists are generally those where negative intrusions (use, structures) or deficits (low quality visual entities) may be ameliorated through improved landscape design.

- Areas especially suited for intensive use or development

  Definition: Areas in which aesthetic damage resulting from intensive use or development is either avoidable or will not affect adjacent areas of higher aesthetic resource quality.

Identification elements: Because of the diversity of terrain circumstances, and the primacy of development as an objective in this category, criteria for expression of aesthetic concern here should address the question of whether designation of the area for development without controls on performance standards for improved siting and design will produce unavoidable detrimental aesthetic impacts on adjacent areas of higher aesthetic resource quality.

3.2.2 Specific Concern

The two elements described below are grouped together as a single "natural value" type of area of concern, of a total of eight listed under Sec. 920.13.[1]

- Areas of scenic importance

  Areas are those which rank high on a scale of aesthetic evaluation, systematically assessed. Scenic areas ought to be delineated along the viewshed (horizon topographical) boundaries within which

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1. The other seven, within which aesthetic resources may also be of important concern, are: 2) Areas of high natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being; 3) Areas of substantial recreational value and/or opportunity; 4) Areas where developments and facilities are dependent upon the utilization of, or access to, coastal waters; 5) Areas of unique geologic or topographic significance to industrial or commercial development; 6) Areas of urban concentration where shoreline utilization and water uses are highly competitive; 7) Areas of significant hazard if developed, due to storms, slides, floods, erosion, settlement, etc.; and 8) Areas needed to protect, maintain or replenish coastal lands or resources, such areas including coastal flood plains, aquifer recharge areas, sand dunes, coral and other reefs, beaches, offshore sand deposits, and mangrove stands.

an integral landscape (local or greater area) can be defined. Buffer areas should be included, as should areas of common natural landscape quality where scarce or essential qualities contribute to the larger unit's aesthetic integrity.

- Areas of unique, scarce, fragile, or vulnerable natural habitat, physical feature, historical significance, and cultural value
  Closely associated with areas of scenic importance in the aesthetic sense (and defined together with them under Sec. 920.13) these areas are each typified by significant intangible aesthetic, as well as tangible and visual factors. Proximity of these areas to areas of scenic importance should be recognized by the planner as a weighting factor favoring their designation as areas of particular concern.

3.3 Procedural Considerations in the Designation of Areas of Concern

Since eight possible types of areas of particular concern may be identified, area delineations under individual elements (e.g., industry, recreation, housing, scenic resources) must be considered preliminary delineations until:

1) An assessment of probable impact is completed.
2) The area designation is reconciled with the determination of permissible uses required under 305.
3) The preliminary delineations are reconciled with each other and the state's determination of priorities of use for specific areas of the coastal zone.

legend:

- study area boundary
- subregion boundary
- a preserve open shoreline
- b preserve woodland/farm/green space
- c increase view/public access/shores, islands
- d constrain building on sensitive heights/ indented shores
- e open up dense built-over shores
- f protect townscape/historic assets
- g enhance harborsides
- h limit/relocate industrial uses from shore
- i set back development/ameliorate scarred areas on bluffs
- j rehabilitate urban landscape
- * outstanding scenic asset
- 3 shorescape unit
- reach
- scenic upland
- scenic shoreline
- townscape
- viewshed
- deficit/ intrusion/ eyesore
- C areas of special scenic concern
- 6 text (atlas) reference

Fig. 4-1 Preliminary delineation of geographical areas of particular aesthetic concern expressed in non-CZMA terms.

Figure 3-1: Preliminary delineation of geographical areas of particular aesthetic concern expressed in non-CZMA terms.

A full discussion of 1) and 2) is to be found in the following chapter, which will also cover final designation of areas of particular concern or of specific areas for preservation and restoration.

A fuller elaboration of item 3) in the present context, however, is essential to a clear understanding of the role of aesthetic resource planning in the overall management of the coastal zone.

Whereas reconciliation of conflicting preliminary delineations for physical uses (for example, for housing, air transportation, and recreation) requires, by and large, a selection of one use over others, reconciliation of uses with aesthetic resources requires superimposition rather than substitution. That is, if housing is to be introduced into an area that has also been identified as an area of particular aesthetic concern, the concern for aesthetics in the area can be maintained and can be translated into beneficial management through judicious site selection, site planning, and architectural and landscape design controls.

Similarly, where industrial use is granted highest priority and a designation of particular concern, other uses may be precluded, but aesthetic concern can be maintained and superimposed upon the designated area in the form of design performance standards or other conditions of use permissibility.

Proper superimposition of this kind may, in many cases, allow <u>enhancement</u> of coastal zone areas. Enhancement, a stated objective of the Act, can be accomplished in such instances as the re-use of completed spoil disposal islands or the redevelopment of existing ill-designed depot and warehouse areas.

Nevertheless, it should be stressed that reconciliation will not normally offset to a satisfactory degree the disruptive effects of new uses and structures introduced into areas of high aesthetic value. Where areas have been accorded a preliminary delineation as an area of particular aesthetic concern, the probability is high that the area would include scenic assets, natural or man-made, with which the compatibility of proposed new uses and structures may be less than satisfactory. The state planner should therefore proceed with special caution to review compatibilities and suitabilities of proposed uses and structures, as well as the sensitivities of the aesthetic resources in question to probable impact, in instances where conflict of preliminary delineations occurs.

3.4 Designation of Specific Areas for Preservation or Restoration

Section 306(c)(9) of the Act calls for state management programs to make provision for "procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological, or aesthetic values."

In delineating resource areas as being suitable for preservation or restoration, the planner is simultaneously identifying them as areas suitable for designation as geographic areas of particular concern. The Guidelines require this in Sec. 923.16(b)(1), by stating that, effectively, all areas designated according to such procedures, standards and criteria "shall also be considered as areas of particular concern."

Some such areas may be landscapes that are identified separately, or at later stages, outside the key areas of particular concern. Other areas may be landscapes meeting eligibility criteria for

preservation or restoration and identified as integral units within areas of particular concern, of any category. For example, an area of particular concern, identified as an "area of urban concentration where shoreline utilization and water uses are highly competitive" (see Sec. 920.13(6)) may still contain within it a reach of shoreline that is worthy of preservation or restoration. Such landscape components should be identified for possible designation and be granted due consideration as preservation or restoration areas.

The tools themselves--preservation and restoration--are significant instruments for stabilizing and recovering aesthetic quality in the coastal zone. Preservation is self-explanatory; elaboration devolves mainly on legal and institutional procedures, which are explained in Chapter 5. Restoration, on the other hand, as does the related tool of enhancement, requires more careful attention to specific landscape design, architectural standards, and interrelated methods for aesthetic rehabilitation.

CHAPTER 4: ENVIRONMENTAL IMPACT, PERMISSIBLE USES, AND POLICIES OF USE

4.0 Introduction

The three elements of the heading of this section are strongly interrelated. An assessment of the probable environmental impacts of specified uses on aesthetic resources is an essential prerequisite to the determination of use permissibility. Impact assessment vis-a-vis specific geographic areas of the coastal zone is also vital to decisions on whether, in certain areas, conditions should be attached to use permissibility or use ought to be excluded altogether. Lastly, knowledge of both environmental impact of uses, and of the suitabilities of specific geographic areas for given uses, will guide the planner toward determining priorities of use, final designations of geographic areas of particular concern, and the designation of specific areas for preservation and restoration.

4.1 Environmental Impact and Use Permissibility

A key responsibility of the State, under Section 305(b)(2) of the Act, is the development and application of a procedure for definition of "permissible land and water uses within the coastal zone which have a direct and significant impact upon the coastal waters."

15 CFR 923.12 states that this requirement should be divided into two distinct elements:

1) A determination of those land and water uses having a direct and significant impact upon coastal waters.

2) An identification of which such uses the State deems permissible.

Although water quality, biological/ecological, and physical/chemical effects are the impacts which come first to mind, "direct and significant" aesthetic impacts may also result from land and water uses and from the appearance of other aesthetic qualities of structures employed in such uses. For example, residential finger-canal construction may directly cause significant sedimentation, turbidity and color change in estuarine waters. An oil blow-out could directly cause significant slicking and fouling of coastal beaches and shores. Each of the above effects have direct and significant aesthetic impacts on coastal waters in addition to the ecological effects with which they are perhaps more ordinarily related.

Even where ecological effects are not at issue, the appearance of objects, structures, or activities of a land or water use may possibly cause direct and significant aesthetic impacts on coastal waters. For example, oil-drilling platforms within view of a prime scenic beach might be considered such an impact by many beach users.

Therefore, for each permissible land or water use defined, the State should identify aesthetic effects that, upon analysis, could be found to be of "direct and significant" impact upon coastal waters.

It is apparent from the example of the drilling platform and beach users that analysis must be carefully conducted to allow the State to reliably substantiate findings on the significance of impact and avoid

charges by one or another coastal interest of undue bias. 15 CFR Sec. 923.12 calls for "operational terms that can be applied uniformly and consistently" and requires four management program components, at a minimum, which perform the task of permissible use and impact definition. It is important to note that Section 923.12, in requiring the components described below, makes it clear that natural and man-made coastal resources in general, i.e., throughout the coastal zone, and not merely coastal waters alone, must be assessed before a State can definitively identify all uses of these resources which may have a direct and significant impact upon coastal waters, and of these, which uses may be deemed permissible.

4.2 The Scope of Impact Analysis

In order to identify those uses which have a "direct and significant impact upon coastal waters," the State is required by the Act to analyze "existing, projected and potential uses" as to the level and extent of their impact, be it adverse, benign, or beneficial, intra-state or interstate. (15 CFR 923.12(b)(1)).

Although the State is required by the Guidelines to develop an operational definition of "direct and significant impact" as a task of the management planning program overall, analysis of the impact on aesthetic resources should not be restricted to those uses which have a direct and significant impact on them. The guiding principles for aesthetic impact analysis should instead be grounded in the Congressional findings of the Act which state that "special natural and scenic characteristics are being damaged by ill-planned development that threatens these values" (Sec. 302(f)).

and in the Act's declaration "that it is the national policy to preserve, protect, develop, and where possible, to restore or enhance the (aesthetic, in this instance) resources of the Nation's coastal zone" (Sec. 303(a)). Detailed analysis of the effects of uses on aesthetic resources even though they may not be recognized as "direct and significant impacts on coastal waters" is vital to an avoidance of "ill-planned development."

Indirect impacts should also be carefully studied. Intangible effects, cumulative effects, and effects which materialize only over the long-term are often among the indirect impacts of uses and structure emplacement on aesthetic resources.

4.3 Land and Water Capability and Suitability

In determining which land and water uses may be deemed permissible (of those which have been shown to have direct and significant impact upon coastal waters) Section 923.12 requires that a State should base decisions upon evaluation of the best available information concerning land and water capability and suitability. The objective method chosen for such evaluation should include the components described below.

The distinction between the two operative terms is important: capability is the inherent capacity of a land or water resource to produce or sustain defined benefits or uses; suitability is the appropriateness of a use or structure to a resource. For example, a soil type of agricultural capability Class II has a higher crop-productive capacity than one in Class III, whereas in terms of suitability for road construction or wildlife conservation, the same soil type may be subject to slight, moderate, or severe

limitations (system employed by the U.S.D.A. Soil Conservation Service).

4.3.1 Aesthetic Capabilities

Here the planner must take care. Agricultural capabilities are easily amenable to measurement; developmental capabilities are relatively the same; food producing capabilities in estuaries and marine environments are becoming increasingly responsive to measurement. In each of these three areas capability implies a transfer of energy, or a change of state, between the latent resource and what it may produce. However, since aesthetic resources are actually the perceivable characteristics of land and water resources, there generally is no gap between what they are, in a latent state, and what they "produce". What they appear to be, in other words, is what they are valuable for. Important exceptions exist: the qualities of resources that are amenable to restoration and enhancement are those characteristics which lie below the level of their full potential.* For example, a filled and abandoned shore area, despoiled and littered with discarded items, would have a very high enhancement capability, possibly a restoration potential (if removal of fill were feasible) and possibly a potential for other beneficial and major alterations.

With the above in mind, the planner will see that the most obvious assessment system for determining capabilities of aesthetic resources is one which measures the gap between aesthetic resources as they exist and what they could be if afforded wiser management. The terms which best reflect the range of possible gaps are:

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* Refer to the discussion of eyesores, intrusions, and deficits, in Chapter 2.

Capability Class I: no alterations in resource appearance desirable

Capability Class II: enhancement desirable

Capability Class III: restoration desirable

Capability Class IV: major alterations (aesthetic development) desirable (e.g. development of a marred area as parkland)

Since this level of analysis is best applicable to specific resource situations (e.g., "headlands: Sachem Head") rather than broad generic classes (e.g., "headlands") the planner should make sure that the resource inventory is either geographically specific (i.e., actual locations) or, at the minimum, a compilation of specific sub-categories of resources found within the State's coastal zone. (e.g., "scenic, rocky headlands; wooded headlands with low density single homes," etc.)

In reviewing aesthetic capabilities, the following should also be considered:

1) Is the aesthetic resource renewable?

The renewability of most aesthetic attributes is welded to the renewability of the resources of which they are part. If a marsh is filled, the aesthetic quality of the marsh is ended. In some cases, however, a distinction can be made. Forests, for example, are renewable resources in a silvicultural sense; but if a forest is clear-cut, its aesthetic quality is ended, at least for the current generation of aesthetic users of the region.

2) Under what conditions will the renewable resource have the capability for sustained and undiminished yield?

At a certain point, environmental modification will diminish the aesthetic "yield," or satisfaction, derived from any given resource.

Consensus on where this point lies may be hard to find, because of the wide differences of view on the desirability of preservation vs. development. Interspersing of mobile homes in a woods-and-open fields shoreland may seem quite aesthetically desirable to some people, particularly to mobile home owners. A relatively objective assessment can be made, however, if "sustained and undiminished yield" is interpreted to mean continuation of the same aesthetic qualities, modified only by changes harmonious with them.

4.3.2 Aesthetic Sensitivities

To evaluate use suitabilities, a clear understanding must be obtained of the sensitivities of aesthetic resources to the functional, structural, operational, architectural, and site aspects of the existing, projected or potential uses or structures under consideration. Hydrographic, topographic-morphological, vegetational, and other visual and non-visual aesthetic characteristics of the resources must be studied.

Example 1:

Natural Resource	Aesthetic Attributes	Aesthetic Sensitivities
Shoreline, undulating	openness shore rhythm	sensitive to siting of uses and structures which are close to shore and interrupt rhythm and views or which are high and interrupt views of distant skyline from significant viewing points

Example 2:

Man-Made Resource	Aesthetic Attributes	Aesthetic Sensitivities
18th-19th Century town harbor	highly varied roof geometrics and silhouettes, intangibles related to architectural and historic interest and preservation, human and work (fisheries, maritime) dynamics	sensitive to siting of large, flat-roofed buildings or space gaps which interrupt continuity or homogeneity of defined area

A fuller presentation of selected attributes which determine aesthetic resource sensitivity to development is given in Table 5-1.

Table 4-1

NATURAL AESTHETIC RESOURCES AND SENSITIVITY TO DEVELOPMENT

Basic Categories	Specific Categories	Attributes which determine Sensitivity of Development of Aesthetic Resources
WATER BODIES	open bays/shelf waters	.openness of views to horizon creates high sensitivity to structure emplacement, such as drilling platforms.
	coves	.partial closure creates arena-like environment in which the prominence of structures is magnified.
	estuaries/lagoons	.aesthetic integrity of visible ecosystem defines extreme sensitivity to development. .surrounding topography is visually prominent from water's edge.
	river mouths	.view to and across river mouth is possible from many viewing points. Massive structures may block views.
	fjord-like inlets/ narrows/guts	.dramatic bordering of passage by landforms defines high sensitivity to development.
		1 of 3

NATURAL AESTHETIC RESOURCES (2)

Basic Categories	Specific Categories	Attributes which determine Sensitivity to Development of Aesthetic Resources
WATER BODIES	streams/rivers	.visual integrity of stream defines high aesthetic sensitivity to development for other than water-related structures. .wide floodplains and erodible banks limit development possibilities.
WATER/LAND INTERFACE	breaker zone	.maximum impact of wave erosion creates extreme sensitivity to structural emplacement.
	beaches	.sweep of view. Beach dynamics, and pristineness of sand or "graded" quality of beach materials create extreme sensitivity to development.
	salt/fresh water marshes	.unique vegetational systems and integrity with tidal influence, physiographic forms.
	mangrove swamps	.unique vegetational system and dramatic wildness.
	distant islands	.visually prominent from land and water.
	coral reefs/ other sub-tidal forms	.unique forms
LANDFORMS	high islands	.extremely visible from shore and water.
	headlands	.highly visible from shoreline; man-made structures stand out in silhouette from shore-line observer points, or because of contrast against rocky background.
	dunes	.vegetation fragile, intolerant of trampling. .dune-trampling, housing construction, and other dune crest usage will destroy wind-formed aesthetic.

2 of 3

Basic Categories	Specific Categories	Attributes which determine Sensitivity to Development of Aesthetic Resources
LAND FORMS	bluffs/banks	.prone to man-caused erosion .visually prominent from beach, offshore.
	low plateaus/ coastal plains	.low, even vegetation makes these areas highly sensitive to visual impact of structures.
	high plateaus/ coastal terraces	.openness & height provides high visibility, especially from roads on ridges. .edges of high plateaus at coastline are highly visible from beach and are erosion-prone.
	arroyos/canyons	.ridges which enclose space are visually prominent from floor.
	peaks/ridges	.heights are extremely prominent from most points in the viewshed below.
VEGETATION	intertidal	.visibility of integral components of ecosystem creates high sensitivity to development.
	sand dune community	.vegetative community highly fragile to human use and development.
	salt marsh community	.vegetative community highly fragile to human use and development.

3 of 3

4.3.3 Analysis of use and structure suitabilities

To be able to utilize knowledge of resource sensitivities in the determination of use impact and suitability, an analysis of the aesthetic effects and design constraints and variables of existing, projected, and potential uses, and the objects, structures, and activities typical of them should be prepared. Analysis of aesthetic effects will provide a direct ba-

sis for an impact assessment and determination of use permissibility, while analysis of design constraints and variables will yield answers on whether alternatives and measures exist which can help to avoid detrimental aesthetic effects.

Figure 4-1 illustrates how data relating to the siting and design of large-scale facilities can be displayed, flowing from an analysis of the architectural, engineering, and operational constraints of uses and structures to an identification of planning and design variables and recommended guidelines.

Uses and structures of similar aesthetic impacts on shoreline types may be grouped together as "use-and-structure" classes. Two examples of this type of general suitabilities matrix are shown below.

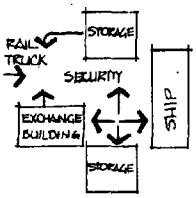
A generalized level of analysis is the minimum the State should undertake. It will adequately serve, in conjunction with other resource

facility class: ports

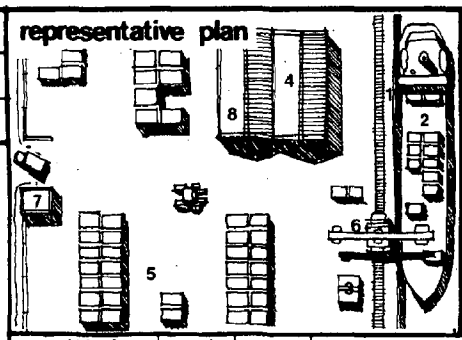
type: container

example capacity: 2 BERTHS

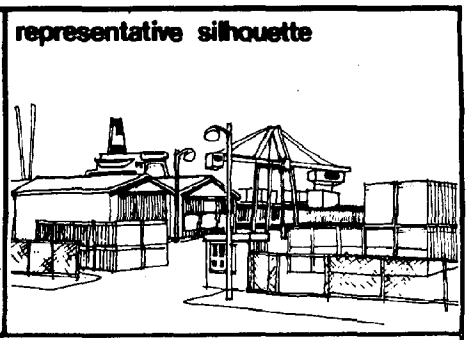
process



representative plan



representative silhouette



	central components	critical dimensions horizon.	critical dimensions vertical	prominent structures	typical material	remarks
1	CONTAINER BERTHS	800-900'	8-12'	gantries	concrete wood	← Berth length and depth depend on size of ships serviced and on maneuvering requirements.
2	CONTAINER SHIPS	700-800'	prominent	superstructure	steel	← Some ships have on-board cranes, but most use the more efficient on-shore gantries.
3	CONTAINERS	20-40'	8'	—	steel	← Containers usually 8x8 with lengths of 20, 30 or 40 feet. No one standard used to date.
4	CARGO EXCHANGE BUILDING	500'	20-30'	•	conc,wd, steel	← Need min. 120,000 sq. ft./berth, 100' around bldg. for trucks.
5	UPLAND STORAGE	15-30 A/berth'		containers	concrete	← Area needs depend on container size, stacking method, rate of movement. Can be reduced by use of multi-story container storage bldg.
6	DOCKSIDE GANTRIES	50'	150'	entire	steel	
	ancillary components					
7	OFFICE BUILDING	variable	variable		steel concrete	← Height variable, depending on needs of port. A tower often built to survey area.
8	EQUIPMENT MAINTENANCE BUILDING	70'	50'		steel concrete	
9	PERIMETER FENCING			security bldg.	wood	← Fencing required by OSHA standards and security needs. ← Entrance to port through gate/guard house complex.

notes

1 Port lighted for night-time operation; lights of 400 watts on 110 ft. poles. Intended to provide adequate coverage at minimal cost.

Figure 4-1: Container Ports
Excerpted from LISS Shoreline Appearance and Design Handbook, 1975

use impact considerations, to guide decisions on which uses may be designated as permissible within the coastal zone and what regulatory standards would be suitable to keep uses so designated from diminishing the aesthetic "yield" of affected resources.

If the State conducts aesthetic resource analysis in greater detail, it will improve its capability to identify specific resource areas where conditional permissibility should be established, as well as aid in identifying areas of particular aesthetic concern, areas that should be

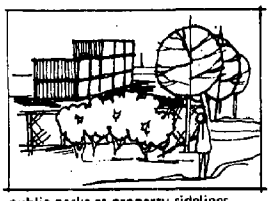
CONTAINER PORTS

Constraints and Variables

Although container traffic can be handled by general cargo ports, the efficiency potential of storing cargo in pre-packaged units cannot be realized without specially designed facilities. These facilities consist of quay-type wharves with aprons, gantries (special dockside rail-mounted or rubber-tired cranes), straddle carriers to unload and move the containers, and a large upland area in which containers are sorted and stored. Also found within the port area are a cargo exchange building for filling and unloading containers, an office/administration building, lighting units, security houses and fencing. The amount of upland area required depends upon the size of the port, the size of the containers typically handled, whether stacking (to two or three layers) is to be used, and whether open-area storage or multi-story facilities are to be adopted. The space needed for open-area storage can range from 15-30 acres per berth. There are limits to the extent this space requirement can be reduced since containers cannot generally be stacked more than two high without substantially increasing the sorting time. Alternatives include the construction of computer-run multi-story buildings which could house up to five times the number of containers in open storage in comparable space. Initial costs of such an automated facility are high, but where waterfront land is scarce, their construction may be environmentally desirable, if not economically advantageous.

Recommended Guidelines

1. Reduce the area requirements of container ports by constructing multi-story storage buildings.
2. Consider siting and design of sheds and other structures which have more structural, graphic, and color interest than most typical warehouses near roads and other public areas.
3. Provide ample screened space within the complex to adequately accommodate rigs waiting for loading/unloading.
4. Employ earth-mounding and tree plantings at public edges to enhance the relationships between the port and surrounding areas. This can be of particular use to soften monotonous lines of stored cargo containers.
5. Shield and direct lighting away from residential and other public use areas wherever possible. The high intensity elevated "bomb" type lights should be avoided in favor of more localized lighting systems.
6. Provide easements for public viewing and access to the waterfront at the sidelines of the container port, in accordance with security and safety regulations.
7. Review existing OSHA regulations to determine whether modifications to allow sideline access to the waterfront can be made more effective.

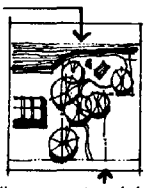


public parks at property sidelines give visual access to ports, careful screening lessens visual impact

vertical storage lessens land coverage

trees and shrubs screen

public viewing



security at sideline easement needed

designated for preservation and restoration, and other elements as described in Section 923.13 through 923.17.

4.4 Decisions on Use Permissibility

The impact, compatibility, and suitability analyses described above are intended to serve as the basis for defining permissible uses, specifically:

* which can be reasonably and safely supported by the resource
* which are compatible with surrounding resource utilization, and
* which will have a tolerable impact upon the environment.

Some uses will, of course, pass the above test; others will be lacking in one respect or another.

Suitabilities can also be readily assessed and displayed in matrix form and should be addressed both at the generic level for application to broad state policy guidelines and at the specific, locational level for guidance on actual local conflict resolution and individual shorescape unit management. The suitability distinctions displayed in Table 4-2 are hypothetical and presented for the purpose of illustration only.

Table 4-2

USE AND STRUCTURE SUITABILITIES

Example 1: Generic Level/Use and Structure Suitabilities

	Uses			Structures		
Resources	extensive	moderate	intensive	small	medium	large
beaches	H	L	L	M	L	L
terraces	H	H	M	H	H	M
marshes	M	L	L	L	L	L

Assessment Key: H = High suitability; M = Moderate suitability; L = Low suitability

Example 2: Specific Level/Use and Structure Suitabilities

	Uses				Structures			
Resources	Swim Recr.	Hiking Recr.	Resid.	Comm.	Small Shed	Small Resid.	Resid. Group	Mfg.
Shorescape Unit # 180 (Northville)								
.beach	H	L	L	L	L	L	L	L
.bluff face	-	M	L	L	L	L	L	L
.bluff crest (100 yards)	-	H	L	L	L	L	L	L
.beyond bluff 100-200 yards	-	H	H	L-M	H	H	M	L

Assessment Key: H = High suitability; M = Moderate suitability; L = Low suitability

Because of the high diversity of capabilities of land and water resources to sustain given uses (e.g., an industry could locate in a pre-existing industrial area without inflicting any aesthetic harm, but could not do so in a salt-marsh) the State's definition of permissibility may be "correlated with the nature (including current uses) and location of the land on which the use is to take place."

In other words, uses that are permissible in general through the coastal zone may be either excluded from those areas where resource utilization violates one or more of the test criteria cited above, or made conditional upon the adoption of measures by the resource user to mitigate or avoid aesthetic damage to the resource to the maximum possible degree. For example, in a sensitive upland terrace within view of a coastal highway and backed by middle-distance mountain ridges, the definition of residential use permissibility may be made dependent upon regulations or standards that blend existing and projected construction into the surrounding topography. Architectural, massing and other design and site planning standards can also be made conditions upon which a permissible use may be approved in an aesthetically sensitive resource area.

Height, setback, foreground vegetation projection, and other <u>performance standards</u> of this kind may be effective--from the singular standpoint of aesthetics--in mitigating the visual impact of various uses and structures in specified areas of the coastal zone. When interrelated with the impact analyses conducted for thermal-biotic, chemical, ecosystem effects of such uses in the area studied, a comprehensive view may be arrived at as to whether--in that particular sector of the coastal zone--they

should be permitted, not permitted, or permitted under specified conditions of use.

4.5 Policies of Use

4.5.1 Final designation of concern areas

The synthesis of findings in the vertical, or special study efforts conducted under the C Z. management planning framework (that is, aesthetics, fisheries, mining, land use, and others) will constitute the prelude to a review of the preliminary delineation of geographical areas of concern indicated by each of the study participants. The resulting final designations of geographic areas of concern will presumably constitute best trade-offs or beneficial reconciliations of divergent findings.

Although, as noted earlier, the likelihood exists that reconciliation can open the door to severe incompatibilities in areas of particular aesthetic concern, policies may be adjusted when this occurs to compensate in some measure for the possible threats to scenic or related values. For example, where previously the intended priority of use would have been preservation, adjustment to a priority for commercial use would stress protection through rigorous architectural codes and zoning ordinances, enhancement through site improvements and landscaping, restoration through careful amelioration of any areas disfigured by project construction, and general management through careful monitoring by local and state officials of numerous other factors.

4.5.2. Specific areas for preservation and restoration

Much of the subject matter of this section has already been dis-

cussed under the sections which deal with geographic areas of particular concern.

It should be emphasized, however, that the two categories, "specific areas" and "areas of particular concern" may be, but are not necessarily congruous. An area of particular industrial concern, for example, may include a pocket of scenic headlands or marsh which can be designated for preservation--or restoration.

Summarized briefly, representative examples of the specified area category would include:

- Scenic resources
- Viewing points/overlooks
- Non-scenic resources of high aesthetic value
  - historic sites, structures, and areas
  - archaeological sites
  - cultural focuses
  - scientific, geologic, floral, and faunal resources

4.5.3 Ranking according to immediacy of need

In terms of aesthetic resources, the management terms identified in the Act take the following order of urgency:

Preservation of aesthetic resources	(normally
Protection of aesthetic resources	descending
Restoration of aesthetic resources	order of
Development or enhancement of aesthetic resources	urgency)

4.5.4 Excluded Federal and Trust Lands

Although Federal lands are excluded from the implementation program of the State's management plan, advisory recommendations on the aesthetic assets or problems of Federal properties could be easily transmitted and should be welcomed by the agencies in question, particularly where en-

hancement, restoration and protection of resources on the edges of such properties are matters of concern.

4.5.5 The national interest in the siting of facilities

According to Sec. 306(c)(8) of the Act, states must allow "adequate consideration of the national interest in the siting of facilities which are other than local in nature."

This implied definition of facilities used here is quite broad; the term facilities can mean everything from power plants and oil refineries to large commercial marinas. The original intent of Congress was to ensure that power plants and other facilities of national importance would not be unreasonably excluded from the coastal zone by local governments opposed to them.

On the other hand, the Act does not compel the overriding of local authority in instances of reasonable posture, nor does the Act constitute facility siting legislation. The clause is essentially permissive, simply asking for "adequate consideration of the national interest." Obviously, too, the national interest could be identified as indicating preservation of prime scenic resources, whereas many facilities, including power plants, might be more correctly classified as regional, rather than national interest. Moreover, feasible alternative sites exist for many large-scale facilities, often well inland of shoreline areas of particular concern.

Lastly, even where the national interest is invoked in decisions to site a facility within a given area of the coastal zone, it is also in the

national interest, as expressed in the congressional findings of the Act, to preserve, protect, enhance, and restore aesthetic resources. Thus facilities sited under such auspices should also be subject to whatever conditions of use, construction and operation can ensure the highest sustained yield of the identified resources.

CHAPTER 5: DEVELOPING AN AESTHETIC RESOURCE ELEMENT IN THE COASTAL ZONE MANAGEMENT PROGRAM

5.0 Introduction

The state planner can use this chapter in developing methods for managing aesthetic resources in conjunction with other elements of the coastal zone management program. He may choose to treat aesthetic resources as a separate planning and management element, or to include recommendations for aesthetic resources with other components of the program such as land-use or environmental protection. In either case, the framework developed here should guide the aesthetic resource management program.

Traditionally, protection and enhancement of aesthetic resources have been tied to the achievement of broader land-use or environmental objectives with the exception of historic preservation and highway beautification legislation. Furthermore, courts have been reluctant to uphold aesthetic controls unless some broader public purpose is served.

The Coastal Zone Management Act, with its expressed concern for aesthetic resource protection, provides such a broadened purpose by singling out coastal areas for comprehensive planning and management. Thus, aesthetic controls which are specifically geared to the goals of a state coastal zone management program are likely to be considered acceptable by legislatures and, quite possibly, also by the courts.

Aesthetic controls are commonly interwoven with other forms of development controls (i.e., zoning, subdivision regulation, or sign control). The tasks of this chapter, therefore, are to extract applications for aesthetic

resource management from existing broader tools, to identify ways in which aesthetic control can be incorporated into new tools, and to indicate how these controls can be effectively implemented as part of an intergovernmental management program. Further, legal problems which might arise as a result of the administration of such tools will be investigated, and guidelines presented for avoiding these problems in new legislation.

5.1 Definition of Goals and Objectives

Within the context of the declaration of national policy in Section 303(a) of the CZMA, an aesthetic resource management program could contain the following general policies or sets of goals:

- To preserve and protect existing aesthetic assets, both natural and man-made;
- To restore and enhance the visual quality of areas which are currently either aesthetically deficient or of neutral scenic value;
- To develop future aesthetic resources and prevent aesthetic deficits, particularly in the case of new development.

The policy goals of preservation or protection are an obvious starting point in an aesthetic resource management program. Areas of high aesthetic value, which among others include natural areas, historic areas, and special viewing points, should be preserved and protected where appropriate.

Restoration of areas of low or no particular scenic quality is a more complicated goal. It covers a range of actions from restoration and rehabilitation of aesthetic assets which have deteriorated over time (such as the commercial core areas of older communities) to the redevelopment of blighted areas (such as abandoned industrial facilities). Restoration of

natural areas, such as tidal wetlands, can sometimes be accomplished by eliminating the pollutant or foreign element and letting ecological processes restore them naturally over time. Enhancement of aesthetic quality in the existing natural and man-made environment involves such techniques as managed cutting and planting of specific plant species, as well as more general land management and landscaping activities.

The development of future aesthetic resources, through architectural and site plan review and other design controls on new development, is also of prime concern in developing a program. The enlightened private entrepreneur understands the importance of good design in making his development more pleasing to the public and thus more profitable; he should therefore be encouraged with special design incentives to take the initiative in such matters when appropriate. New regional-scale public facilities should also be subject to design review controls.

Obviously, within each particular state program, more specific objectives must be developed under each of these general goals. For example, the preservation of scenic natural landscape features and the protection of historically and culturally significant townscapes would be reasonable objectives under the first set of goals, while restoration of debilitated port facilities and rehabilitation of waterfront commercial centers would be likely goals under the second set of policies.

5.2 Selection of Management Tools

To meet the goals and objectives, four principal groups of tools

may be considered in aesthetic resource management planning:

- Acquisition on the open market of fee simple and less than fee simple interests in private property; also, the taking of private property by powers of eminent domain (with compensation duly provided);
- Regulations of land-use and other development activities through the police powers of state and local governments;
- Federal and state legislative standards placed upon the administrative process at the state, regional and local levels of government; and
- Other types of tools, including tax incentives, encouragement of voluntary action, and public education.

5.2.1 Acquisition

Acquisition of aesthetic resources can be accomplished through purchase of selected rights in the designated properties (to protect views or sensitive natural areas) or through outright purchase in fee simple. Section 306(d)(2) of the CZMA requires that agencies responsible for implementing the management program be empowered to acquire fee simple and less than fee simple interests in property (15 CFR, Part 923.25). Purchase of easements, while reducing total costs, is constrained by the difficulties of determining the exact value of those rights to be acquired. Outright acquisition, while incurring the highest costs to governments (or non-profit organizations) produces the highest long term benefits. Costs can be reduced by leasing or selling back the property to private owners with deed restrictions which will insure that sensitive areas are protected or that architectural or site planning controls are applied to future development. If the land is kept in public ownership, however, continuing maintenance and management is necessary.

Under the powers of eminent domain, the taking of private property in fee or in less than fee interests by a state or local government for a public

purpose should probably be considered only as a last resort. If the more normal acquisition process involving a willing seller at an agreeable market price fails, then a forced sale may be required, but only with just financial compensation.

5.2.2 Regulation

Section 306(c)(1) of the CZMA requires some form of state or state-delegated regulatory control over land and water uses in the coastal zone. Police power regulations include traditional and innovative local and state land-use controls which can incorporate aesthetic protection and specific architectural and design controls. Examples of indirect aesthetic control include zoning for coastal flood plains and wetlands. Regulation of this kind, either through direct state controls or through local controls meeting state standards, are two of the alternative implementation frameworks authorized by Section 306(e)(1) of the CZMA (15 CFR, Part 923.26). The effectiveness of police power regulations is constrained by the constitutional and legal requirement of proving public purpose and reasonableness in the regulations in order to avoid a taking of private property without due process of law. Regulations, if stringently enforced through such mechanisms as permits, licenses, hearings, inspections and fines, are likely to achieve aesthetic objectives at lower costs to the government than are incurred through acquisition; however, permanency of the improvements is not insured, since the regulations can be appealed or changed. Furthermore, police power regulations controlling appearance and design may impose rigid minimum standards which ignore landscape variables and lead to monotony and mediocrity in design. This can be avoided if controls, e.g., height and setback requirements,

are flexibly geared to the specific topographic and other aesthetic resource characteristics of the regulated area.

5.2.3 Administrative Review

Legislative standards imposed upon the administrative process deal with aesthetic and environmental values on a case by case basis. Administrative review at the state level is the third alternative framework authorized by Section 306(e)(1) of the CZMA (15 CFR, Part 923.26). Broughton (1972) suggests that administrative review more generally "is the area where the greatest progress has been made to include aesthetics as a primary factor in the decision making process." The use of a range of performance standards, administered by design professionals, either in a single review agency or in separate bodies with review powers, permits a more flexible and sensitive application of the standards to new development projects than is allowed by stringent and specific regulations. However, this process loses force if the design considerations are not given adequate weight in the overall review of any given proposal. (See paragraph 5.4.3 for a further discussion of administrative review.)

5.2.4 Other Legal Tools

The final category of management tools includes various indirect mechanisms for protecting and restoring aesthetic resources, principally the encouragement of voluntary private actions through various governmental incentives. Preferential tax assessments, for example, have been used in many states to preserve agricultural, forest and open lands; similarly, tax incentives and low interest loans can be used to influence industrial location and the improvement of private properties in residential, commercial or

industrial use. For example, tax benefits or advanced capital depreciation might be used to encourage relocation of non-coastal-dependent industries to the interior. In terms of Section 306(e) of the CZMA, these other tools cannot be the sole basis for the management of program implementation; they must be coordinated with any one or a combination of the three alternative techniques for control of land and water uses in the coastal zone, i.e., state criteria for local implementation, direct state regulation, or state administrative review.

With respect to three areas specifically referred to in Section 305(b) of the CZMA (permissible land and water uses, geographical areas of particular concern, and priorities of uses within such areas), all four of the groups of general tools or legal strategies are useful. For example, areas of particular ecological sensitivity may need to be acquired as a public benefit in order to preclude man-made alterations of any kind; scenic easements may be only partially useful in this context. Less sensitive areas, which could absorb non-intensive forms of development, may need to be regulated under the police powers of protecting public health, safety and general welfare. Such regulatory activities may be administered at either the local or state governmental levels, or through some reasonable combination thereof. State administrative review of high priority or large-scale developments, especially as it relates to land and water uses and decisions of more than local significance (i.e., of national, state, or regional significance), is another of the general management tools available. This third legal approach may be particularly useful for aesthetic resource management, since scenic values have traditionally been subject to strict legal and constitutional interpretation, vis-a-vis incorporation into the regulatory concept of preventing a public harm. Voluntary initiatives, public incentives for private entrepreneurs, and special bonus

arrangements in return for quality site planning and design are also comparatively flexible ways to implement the aesthetic resource element in the coastal zone management program.

5.3 Consideration of Potential Legal Problems

In the landmark case of Berman v. Parker, the U.S. Supreme Court in 1954 upheld and modified a lower court judgement concerning the taking of private property in an area planned for urban redevelopment. The District Court had maintained that such a taking was legal and constitutional because existing slum conditions were "injurious to the public health, safety, morals, and welfare" (348 U.S. 26 et seq., 1954). The Supreme Court extended this finding to include not only slums but blighted areas which tend to produce slum conditions, thus legitimizing the urban renewal plan. Under the Fifth Amendment, the property owners involved were paid just compensation for their condemned property. Of particular interest here, the Court also said in Berman v. Parker: "The concept of the public welfare is broad and inclusive. The values it represents are spiritual as well as physical, aesthetic as well as monetary" (348 U.S. 26 et seq., 1954). Thus, within the context of a broader community purpose, aesthetics have been judicially recognized as an issue of concern to the welfare of the public.

Nevertheless, courts have been reluctant to uphold controls solely on aesthetic grounds; some of the reasons are contained in the following paragraphs.

Aesthetic benefits are difficult to quantify and are often placed at a disadvantage when confronted by economic and social interests. On the one hand, economic interests have often negated aesthetic benefits; on the other hand, aesthetic concerns (for example, "protecting a town's character" through large lot zoning) are often challenged for negative social effects (i.e., exclusionary zoning).

Stringent aesthetic controls often limit private property rights without just compensation, subjecting them to challenge under the taking issue--unless necessity, reasonableness, and public interest are adequately proven. If compensation is paid, the market value of scenic property rights is often hard to determine. Courts have tended to subordinate aesthetic interests to environmental or land-use concerns, resulting in approval of aesthetic regulations only when they are linked to a broader public purpose. Many forms of land-use controls which indirectly affect aesthetics have been tested and upheld in the courts over time (e.g., zoning, building codes). The Michigan Law Review (June 1973) notes that fourteen states..." have accepted or indicated that they are receptive to the view that legislation based solely on aesthetic considerations is valid..."; however,..." the plurality view, held by twenty-three states, is that an ordinance based solely on aesthetic considerations is not valid, but that aesthetic legislation is valid if it also serves some other legitimate interest."

Precise standards for arriving at an objective determination of aesthetic benefits have been difficult, if not impossible, to generate, and in fact may not be desirable. As this study demonstrates, the present state of the art seems to indicate that a fine-grained understanding of local landscape and townscape values should be the basis for aesthetic criteria and standards. As aesthetic resource characteristics vary from place to place, criteria and standards may need to be varied from region to region or from locality to locality. Thus, state enabling legislation for aesthetic control should provide for flexibility within limits assuring minimum acceptable protection; arbitrary and capricious aesthetic legislation at any level of government must be avoided for obvious legal and constitutional reasons.

Similarly, the provisions of Section 306(c)(8) which call for "adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature" present challenges in terms of enforcing aesthetic controls. The designation of such types of facilities and the standards used in determining their location must be carefully worded so as not to exclude the application of aesthetic criteria and standards for such facilities. Section 306(c)(8) provides for "adequate consideration" in terms of facility <u>siting</u>, but clearly does not provide any dispensation from other terms of the Act. In other words, it may be determined that a power plant must be <u>sited</u> in a given coastal location, but this will not exempt the <u>design</u> of the facility, its <u>setback</u> from the shore, and other landscape and architectural provisions from adhering to those standards, priorities and policies established by the State or its subdivisions for the area. Some states may even choose to require special design standards for large-scale facilities to compensate for the aesthetic damage that intrusion into the site may cause.

Mandatory standards controlling architectural features are difficult to draft and implement without challenge. The enactment of local standards, under appropriate state guidelines and enabling legislation are recommended in order to effectuate minimum standards. However, as Cerny (1974) notes, "the best procedure seems to be to establish a qualified board to review and approve applications." The universal effectiveness of flexible standards under case by case review procedures should not be expected either.

More generally, Section 305(b)(4) of the CZMA calls upon the states to include a list "...of relevant constitutional provisions, legislative enactments, regulations, and judicial decisions" in their respective management programs; such review is tied expressly to the control of permissible land and water uses within the coastal zone. Obviously, the research and analysis required under this section of the Act will serve to alert the planner to his state's particular legal and implementation problems--and in so doing, he will be in a better position to design a management planning program capable of being administered.

5.4 Segmentation and Aesthetic Resource Planning Elements

States adopting segmented approaches in the preparation of coastal zone management plans will be doing so under Section 306(h) of the Act

> "so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs: Provided, that the State adequately provides for the ultimate coordination of the various segments of the management program into a single unified program and that the unified program will be completed as soon as is reasonably practicable."

As explicated by Policy #7 of the March, 1975 statement of the Office of Coastal Zone Management, "Segmentation of State Coastal Zone Management Programs," the "control or protection of a single use or resource does not constitute segmentation."

Thus, aesthetic resource planning elements by themselves cannot be funded as segmented programs even if they cover the full geographic extent of the state's coastal zone.

Conversely, a management planning program proposed as a segment must not exclude aesthetic resource considerations as expressed in the requirements of the Act, as pointed out in OCZM's Segmentation Policy #2, which states that "All statutory requirements or administrative regulations applying to complete State management programs will apply to segments."

5.5 Allocation of Planning and Management Responsibilities Among State, Regional and Local Levels of Government

Implementation of aesthetic resource goals and objectives should be tied to the management structure established to implement the coastal zone management program in general. Thus, specific aesthetic resource management

tools must be coordinated with any one or a combination of the following general techniques for control of land and water uses within the coastal zone under the provisions of Section 306(e)(1):

(a) "State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;

(b) Direct state land and water use planning and regulation; or

(c) State administrative review for consistency with the management program of all development plans, projects, or land and water use regulations, including exceptions and variances thereto, proposed by any state or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings."

The purpose of this section is to illustrate how planners can meet aesthetic resource management objectives within each of the above three frameworks, with appropriate delegations of responsibility among the state, regional and local levels of government.

5.5.1 State Criteria and Standards for Local Implementation

Under this framework, the state government would have the primary responsibility for developing aesthetic standards and criteria to be used in regulations or administrative procedures at the local level. Regional planning agencies or governmental units (county or metropolitan area governments) could be responsible for reviewing local management programs for compliance with such aesthetic standards. The local governments would have the major responsibility for developing administrative procedures which meet state standards and which, at the same time, are responsive to specific local problems and needs.

In terms of aesthetic resources, this arrangement has the following advantages:

- Local governments can conduct the most detailed and extensive aesthetic inventory field work upon which to base the regulations. Local planners can most easily identify aesthetic assets and deficits, ownership patterns, and priorities for preservation, protection, restoration, enhancement, or development.
- Local planners generally have close relationships with developers and citizens within their jursidictions, and are thus in a better position to negotiate for quality design and site planning modifications.
- Flexible standards at the state level can allow for changes from locality to locality which reflect regional variations in natural landscape and settlement patterns.
- Local governments have a body of existing regulatory and review powers which could be modified to incorporate new aesthetic standards, meaning that extensive new state legislation might not be necessary.

However, the following disadvantages should also be noted:

- Local governments may not care to institute changes in the status quo.
- Local planning and zoning boards may not have sufficient design training and experience to translate state aesthetic criteria and standards into effective review procedures at the local level.
- Aesthetic conflicts may occur at town boundaries as a result of differences between localities, even if general state standards are met.

- State aesthetic standards formulated to be applicable to varying conditions from locality to locality may be too general to ensure maximum aesthetic benefits.

5.5.2 Direct State Planning Regulation

Under this framework the state government would have sole responsibility for aesthetic resource management in the coastal zone. In this case, local and regional responsibilities would be slight, apart from initial input into the formulation of the regulations.

The advantages of this framework in terms of aesthetics are:

- Direct state regulation will ensure that the aesthetic integrity of the entire coastal zone is considered. State inventory work would cover the entire range of coastal zone aesthetic resources at once, making it easier to establish broad priorities for acquisition and regulatory management.
- State agency staffs are usually better equipped professionally to conduct such inventories. The availability of uniform data for the entire coastal zone is a valuable planning tool.
- In terms of location of development, statewide land-use controls in the coastal zone would be more likely to protect critical scenic areas of more than local concern, since the state planner would be less sensitive than his local counterpart to local tax benefits resulting from large-scale development.
- Statewide ordinances including aesthetic standards would encourage uniformity and integrity of appearance and design throughout the coastal zone.

This framework has the following disadvantages:

- It would be difficult to develop precise architectural and design controls for all types of districts in a statewide coastal land-use control program, due to the wide scope of the legislation.
- Such controls, if administered by the state, might be subject to challenges by local citizens or developers, particularly in cases where zoning is changed or restrictions are imposed.
- The statewide controls might cover only areas of particular concern; uncontrolled development in other areas, which are included within the regional viewshed, might be detrimental to coastal zone aesthetic quality as a whole.

5.5.3 State Administrative Review

Under this framework, the designated state coastal zone management agency would be responsible for review of all local and state projects, proposed land and water use regulations, and private development plans in order to determine their consistency with the coastal zone mangement program. The power to approve or to disapprove such projects, regulations, and plans would be a powerful implementation tool, but would have to be contingent upon public notification and hearings on a case by case basis.

5.5.4 Summary

Obviously, each state program will be structured somewhat differently depending upon its particular planning, legal, and governmental history. Some parts of the country have a strong tradition of local home-rule, which no doubt would lead to an emphasis upon local implementation of a coastal zone management program. Some parts of the country have strong county government, while some have relatively weak or no

county government at all (such as in Massachusetts or Connecticut). Regional planning and management of aesthetic resources in the coastal zone of states with strong counties would probably be feasible, upon the delegation of such a state-wide program to the county level of government. Where no regional or metropolitan government exists, aesthetic resource planning might be done by regional planning agencies, but the actual administration of a management program would have to be left to the state and local levels. Many combinations of the three possible intergovernmental schemes listed in Section 306(e)(1) are possible. Every state has its own strengths and weaknesses vis-a-vis the administration of land-use planning and environmental protection programs; therefore, each state should design its own implementation program for aesthetic resource management within the guidelines set forth in the CZMA.

Examples of the three general implementation frameworks described above in terms of existing state comprehensive planning programs are: (1) Florida as an example of state planning standards with regional implementation through county and local governments; (2) Hawaii as an example of direct state planning and management, with comprehensive land-use controls which amount to state zoning; and (3) Rhode Island as an example of state administrative review of legal permits for all uses and activities in the coastal zone (i.e., to mean high tide).

5.6 Interrelationships Among Program Goals and Management Tools at Various Levels of Government

The following two tables or matrices illustrate the general relationships between the factors described in the preceding parts of this chapter, that is between (1) program goals and the basic management tools, and (2) the general goals and ways to implement them at the federal, state, regional, and local levels of government and by the private sector.

Table 5-1

GENERAL RELATIONSHIPS BETWEEN MANAGEMENT TOOLS AND AESTHETIC RESOURCE MANAGEMENT GOALS

GOALS	TOOLS			
	Acquisition	Regulation	Administrative Standards	Other Tools
Preserve/Protect Existing Aesthetic Resources	Acquire existing scenic areas and easements sufficient for protection, with or without lease-back or saleback arrangements.	Use environmental zoning, architectural controls, setback, dune protection ordinances to control location and appearance of new development; permit system.	Review over exterior changes in designated protection districts.	Use tax incentives to preserve open, agricultural, and forest lands, wetlands, etc.
Restore/Enhance Existing Aesthetic Deficits and "Neutral" Areas	Acquire and redevelop eyesore areas; acquire and let ecological processes restore certain natural areas.	Nonconforming use provisions; stringent enforcement of building and health codes, air and water quality standards; sign control.	Apply review standards to public and private redevelopment projects, and to new facilities which are potential eyesores (i.e., heavy industry).	Encourage private rehabilitation, restoration efforts.
Develop New Aesthetic Resources and Prevent Deficits in New Development	Acquire new open space and park areas, especially in areas of dense settlement.	Require dedication of open space in subdivisions. Zone for open areas. Apply architectural controls to new development.	Use design review process for all new development. Employ professionals to administer standards.	Use bonus provisions, tax incentives for good design, open space provisions.

Table 5-2

PUBLIC AND PRIVATE SECTOR/SUMMARY CONTRIBUTIONS FOR IMPLEMENTING AESTHETIC RESOURCE MANAGEMENT GOALS

GOALS	LEVEL OF ACTION				
	Federal	State	Regional	Local	Private
Preserve/Protect Existing Aesthetic Resources	$ to states and localities for preservation; direct agency activities in national parks, and for maintenance of historic landmarks.	$ to localities; direct acquisition and coastal zone controls, state plans and policies. Agency activities. Tax powers. Review areas of critical concern.	Regional and county plans, and review over development proposals of more than local importance.	Direct acquisition; bond issues, zoning and subdivision controls; building codes. Tax powers.	Non-profit holding actions for conservation purposes; donations of land; land trusts; restrictive convenants; homeowners' agreements; foundation grants.
Restore/Enhance Existing Aestheric Deficits and "Neutral" Areas	$ to states and localities for redevelopment projects. Highway aesthetic controls. Corps of Engineers harbor cleanup.	Regulations governing all coastal zone development; tax incentives to encourage redevelopment.	Technical assistance to localities; regional and county plans.	Regulations (nonconforming use); code enforcement; tax incentives; matching funds for certain state and federal projects.	Voluntary rehabilitation and redevelopment.
Develop New Aesthetic Resources and Prevent Deficits in New Development	$ to states and localities for acquisition and beautification.	$ to localities and direct acquisition and maintenance programs.	Regional planning and design review.	Local acquisition and regulations; design review.	Plan and design for aesthetics through profit-motive and nonprofit actions; donations of land; foundation grants.

5.7 Compendium of Specific Tools

This last section of Chapter 5 comprises a selected, annotated list of programs, laws, and legal powers applicable to the implementation of an aesthetic resource management progaam. Management tools should be carefully selected from those available or possible in a particular state in order generally to preserve, protect, restore, enhance, and develop aesthetic resources in the coastal zone.

5.7.1 Federal Tools*

National Environmental Policy Act of 1969

Environmental Protection Agency sets environmental standards at federal level, and is responsible for review and final approval over environmental impact statements submitted for all projects which involve federal funds. Standards in EIS review include protection of historic sites included in the National Register of Historic Places; general aesthetic compatibility.

Applications to Aesthetic Resource Management

Standards, including aesthetic criteria, for review of possible impacts of federal actions.

Corps of Engineers General Works Projects

Federal assistance in improvements for beach erosion control, flood control, navigation, and related water resources purposes. In order to initiate a large scale project, local interests must first contact their senators and representatives with a request.

Continuing authority Corps projects do not need Congressional approval. Corps has continuing authority for snagging and clearing projects for flood control, small flood control projects, small beach erosion control projects, hurricane, tidal and lake flood protection projects, small river and harbor improvement programs.

Applications to Aesthetic Resource Management

Restoration of blighted areas, continuing maintenance.

*The Coastal Zone Management Act is not included here.

Recreation Facilities at Non-Reservoir Projects

1962 Flood Control Act authorizes the provision of recreational facilities at non-reservoir projects constructed by the Corps of Engineers.

Matching funds up to 50% of project costs for recreational facility development provided. Local government responsible for maintenance of facilities.

Applications to Aesthetic Resource Management

Creation of new scenic areas; provision of access to shore and viewpoints.

Greenspan Program

Federal grants to local governments to acquire cropland for open space/recreation/conservation uses. Grants provided for up to 50% of acquisition costs.

Administered by U.S. Department of Agriculture.

Applications to Aesthetic Resource Management

Conservation of scenic lands; open space preservation.

Land and Water Conservation Fund (1964)

U.S. Department of the Interior, Bureau of Outdoor Recreation

Provides federal assistance to states for outdoor recreation projects.

50% matching costs. Provides for acquisition of "areas with frontage on oceans, rivers, streams, lakes, estuaries, and reservoirs... areas of land and water along scenic highways...outstanding natural areas and nature preserves, among others."

Applications to Aesthetic Resource Management

Conservation of scenic lands; open space preservation.

Resource Conservation and Development Program

U.S. Department of Agriculture, Soil Conservation Service

Initiated, February, 1964

Farmers Home Administration makes resource conservation and development loans to local public agencies or non-profit organizations for water facility improvements, open space, recreation developments, in rural areas. Maximum loan is $250,000 for project costs.

Applications to Aesthetic Resource Management

Conservation of scenic lands; recreation and open space development.

Reforestation Programs

U.S. Department of Agriculture, Forest Service, 1956

Forest land, tree planting and reforestation. State officials and state foresters submit plans to Secretary of Agriculture. Federal government will match state funds for reforestation, only in cases of forest land suitable for industrial wood production.

Applications to Aesthetic Resource Management

Restoration of natural scenic areas.

Historic Preservation

U.S. Department of the Interior and HUD provide matching grants to state and local governments and public and private agencies, for "Protection, rehabilitation, restoration and reconstruction of districts, sites, building, structures, and objects significant to national history, architecture, archaeology or culture." HUD grants under open space program, not currently receiving funds.

Applications to Aesthetic Resource Management

Restoration and preservation of significant man made structures and historic sites.

National Trust for Historic Preservation

This non-federal non-profit organization serves as a national clearinghouse for preservation efforts, especially for advice and help in creating effective organizations for special preservation projects. It was created to receive donations of sites, buildings, and objects significant in American history and culture, to preserve and administer them for public benefit.

Applications to Aesthetic Resource Management

Aid to citizens and local governments in preservation of man made structures and historic sites.

Water Resources Planning Act of 1965

Water Resourçes Countil provides grants to Federal-State river basins commission for development of comprehensive water and related land resources planning. Amounts of grants determined on annual basis; vary from state to state.

Applications to Aesthetic Resource Management

Planning grants; aesthetic criteria used as planning standards.

Highway Beautification Program

Federal funds provided for beautifying federal-aid highways through "control of outdoor advertising and junkyards," and by landscaping and otherwise enhancing the scenery along these highways.

Standards for advertising and junkyards contained in provision of act. Penalties for states who fail to comply. Alternative controls extend within 660' minimum of all federal aid highways, except in industrial and commercial zoned or unzoned areas. Junkyards within 1000' of nearest edge of right-of-way must be either screened or removed.

Funding allocated to states on a percentage of mileage in federal-aid system basis.

Beautification funds are not available for highway maintenance.

Applications to Aesthetic Management

Federal standards for aesthetic regulations along highway corridors (significant impact on coast).

Community Development Act of 1974

U.S. Department of Housing and Urban Development

New law replaces old HUD Open Space Land Program, as well as several other categorical grant programs; consolidation into a single community development block grant program.

100% funds available for the preservation or restoration of historic sites, the beautification of urban land, the conservation of open spaces, natural resources, and scenic areas, the provision of recreational opportunities, and the guidance of urban development.

Application to Aesthetic Management

Conservation of scenic areas; creation of new access to shore areas.

Energy Reorganization Act of 1974

Nuclear Regulatory Commission vested with exclusive control over civilian utilization of nuclear fission. NRC must approve construction and design plans for reactor and all other parts of thermal power plants which involve contact with radioactive matter. Nonradioactive facilities (i.e. turbine generator, coooling water, transmission lines) not subject to NRC jurisdiction.

Prior to issuance of a construction permit or an operating license for a nuclear power plant, NRC is required to prepare an EIS under NEPA.

Applications to Aesthetic Resource Management

Indirect aesthetic benefits; subject to additional state and local review.

Flood Disaster Protection Act of 1973

Administered by Department of Housing and Urban Development.

Provides for insurance for landowners in flood hazard areas in communities which have adopted land-use control measures consistent with floodplain management criteria issued by HUD. Purpose of controls is to reduce likelihood of flood damage in hazard area.

Applications to Aesthetic Resource Management

Requires a local plan; regulates development in shoreline and riverine flood-prone areas.

5.7.2 State Tools

Coastal Zone Management Legislation

Examples

California Coastal Conservation Act (1972)
Connecticut Dept. of Environmental Protection Act (1971)
Florida Environmental Land and Water Management Act (1972)
Georgia Vital Areas Council Act (1973)
Rhode Island Coastal Resources Management Act 1971)

Applications to Aesthetic Resource Management

Permit systems for development can include aesthetic standards as criteria for approval.

Coastal commissions can include design professionals.

Areas of particular scenic concern can be designated and protected.

State control over local decisions insures regional aesthetic compatibility.

Shoreline Zoning

Examples

Maine Mandatory Shoreline Zoning Law (1971)
Minnesota Shoreland Management Act (1969)
Minnesota Surface Use Zoning Act (1969)
Wisconsin Water Resources Act (1965)

Applications to Aesthetic Resource Management

Insures land-use control over all shoreline areas.

Opportunity to include aesthetic guidelines and standards in criteria for approval of local ordinances.

Power Plant Siting

Examples

Connecticut Public Utility Environmental Standards Act (1972)
Maryland Power Plant Siting Act (1971)
New Hampshire Power Plant Siting Act (1969)
Oregon Power Plant Siting Act (1969)
Washington Thermal Power Plant Siting Evaluation Council Act (1973)

Applications to Aesthetic Resource Management

Aesthetic and environmental criteria used as determinants of power plant locations on shore.

Industrial Siting

Examples

Delaware Coastal Zone Act (1971)
Louisiana Superport Act (1972)

Applications to Aesthetic Resource Management

Delaware act prohibits all industry on shore - eliminates major eyesore cause.

Environmental and aesthetic criteria can influence location and design of industries which are allowed on shore.

Non-water dependent industries can be excluded from shoreline locations.

Extraction of Materials/Dredging and Filling

Examples

Illinois Filling and Dredging Law (1911)
Indiana-Landfills in Lake Michigan (1971)
New Hampshire Dredge and Fill Act (1969)
New York Stream Protection Act

Applications to Aesthetic Resource Management

Permit procedures prohibit alterations to aesthetically and environmentally sensitive areas.

Wetlands Protection

Examples

Connecticut Wetlands Protection Act (1969)
Georgia Coastal Marshland Protection Act (1970)
Maine Wetlands Preservation Act (1967)
Maryland Wetlands Act (1970)
Massachusetts Coastal and Inland Wetlands Acts (1965 and 1968)

Applications to Aesthetic Resource Management

Permits required for wetland alteration; deed restriction in Mass.

Uses limited by aesthetic and environmental compatibility criteria.

Setback Controls

Examples

Florida Setback Lines (1970)
Hawaii Shoreline Setback Areas (1971)

Applications to Aesthetic Resource Management

Setback criteria established in terms of aesthetic and environmental concerns.

Preserves open beaches and shoreline.

Combined with height controls, can preserve unobstructed views from water to shore.

Dune Protection/Erosion Controls

Examples

Maryland Shore Erosion Control Act (1970)
Michigan Shorelands Protection and Management Act (1970)
North Carolina General Statutes Section 104B-4 (1972)

Applications to Aesthetic Resource Management

Regulates development on sensitive bluffs, dunes, and in erosion-prone areas.

Preserves vegetation in erosion prone areas; regulates clear cutting on dunes and bluff faces.

Beach Access

Examples

Oregon Beach Access Act (1967)
Texas Open Beaches Act (1959)

Applications to Aesthetic Resource Management

Provides for public use of beaches up to the vegetation line.

State Land-Use Controls

Examples

Alaska Land Act (1969)
Hawaii State Land Use Law (1961)
Maine Land Use Regulation Commission (1972)
Oregon Land Conservation and Development Act (1973)

Applications to Aesthetic Resource Management

Can delineate aesthetic resource areas as conservation or limited development zones.

Can control local regulations with regional objectives in mind.

Sprawl prevented; open space preserved.

Scenic vistas.

Environmental Impact Statement Requirements

Examples

California Environmental Quality Act (1970)
Connecticut Environmental Policy Act (1973) - takes effect in 1975
Maryland Environmental Policy Act (1973)
Massachusetts General Laws, Chapter 30, Sections 61 & 62 (1972)

Applications to Aesthetic Resource Management

Required for all government and, in some cases, private projects.

Aesthetic criteria used in review.

Conservation Departments

Examples

Florida Land Conservation Act (1972)
New York Department of Environmental Conservation (1970)
New York Environmental Quality Bond Act (1972)
New York Outdoor Recreation Development Bond Act (1965)

Applications to Aesthetic Resource Management

Acquisition powers for open space and conservation purposes.

In some cases, registers of critical areas established to guide preservation efforts.

Opportunity to include design professionals in administering agency - environmental conservation responsibilities centralized. Permit granting authority in some cases.

Preferential Tax Programs

Examples

Connecticut
New York

Applications to Aesthetic Resource Management

Open space, agricultural and forest lands preserved.

Historic Preservation and Trusts

Examples

New York
Rhode Island

Applications to Aesthetic Resource Management

Man-made structures preserved and maintained.

Direct aid to localities.

Technical assistance to private citizens in rehabilitation and preservation efforts.

Highway Beautification

Examples

California
Connecticut
New York

Applications to Aesthetic Resource Management

Control over advertising and junkyards bordering on federal and state highways (660' to meet federal standards).

Provisions for scenic highways.

Excess condemnation and scenic easement acquisition powers.

Maintenance (plantings, rest areas) along highways.

Enabling Legislation for Local Governments

Examples

All States

Applications to Aesthetic Resource Management

Permissive legislation; grants communities authority to adopt new types of land-use control ordinances (PUD, cluster, etc.)

Communities granted eminent domain and taxing powers.

Communities authorized to set up conservation commissions, planning boards, design review boards, etc.

State Register of Critical Areas

Examples

Maine State Register of Critical Areas (1974)

Applications to Aesthetic Resource Management

Creates single purpose Critical Areas Advisory Board to advise state agencies as to areas of unusual natural, historic, scenic and scientific interest.

These areas are inventoried and included on a register.

Recommendations to appropriate state agencies made by board as to acquisition priorities.

Provides degree of consolidation in acquisition and protection activities throughout state.

5.7.3 Regional Tools

A-95 Review Process, U.S. Office of Management and Budget

Examples

All states; agencies designated by Governors and Federal Government.

Applications to Aesthetic Resource Management

Regional (state) review over local plans and government projects (EIS).

Aesthetic guidelines and consideration of adherence to coastal plan can be included in criteria for review and comment.

Zoning Review

Examples

Nassau-Suffolk Regional Planning Board, New York State, has review powers over local zoning within 500 feet of city or town boundaries.

Applications to Aesthetic Resource Management

Review over zoning on boundaries of cities and towns, and along highway right-of-ways.

Aesthetic control over uses in fringe areas.

Sprawl control.

Design Review Boards/Technical Assistance

Examples

California Regional Conservation Commissions

Applications to Aesthetic Resource Management

Regional aesthetic impacts considered in review over new development.

Design professionals available to assist localities in review, development of plans and ordinances.

Tax Sharing

Examples

Minneapolis/St. Paul (note: not a coastal example)

Applications to Aesthetic Resource Management

Encourages location of new major facilities to benefit entire metropolitan area or region.

Regional Land-Use Review

Examples

Martha's Vineyard Commission, Martha's Vineyard Island, Massachusetts

Applications to Aesthetic Resource Management

State enabling legislation for six towns on the Island to form new Commission, which has powers to designate "districts of critical planning concern" and to recognize "developments of regional impact," and to review same.

5.7.4 Local Tools (Examples are common in all coastal states)

Zoning

Applications to Aesthetic Resource Management

Traditional zoning ordinances achieve some degree of aesthetic control by regulating locations, densities and types of land-uses in various districts, height and bulk, lot area covered, setbacks from street and other buildings.

Innovative zoning ordinances can similarly achieve aesthetic goals along with land-use control objectives:

Planned Unit Development (PUD) allows for variable densities and housing-types. Provides opportunity for

imaginative site planning and design treatment and for provision of usable open space. Mixed uses allowed within district. Site plan approval tied to performance standards, including aesthetics.

Cluster zoning provides benefits similar to those of PUD's, except that within the designated district the permitted overall density cannot be exceeded, the housing-type cannot be varied, and the use must remain the same.

Shoreline zoning permits only those uses functionally dependent upon shore locations. Architectural and scenic controls can be tied to environmental purposes in such zones.

Floodplain, wetland and conservancy zoning regulate land-uses and development procedures in ecologically sensitive areas.

Agricultural zoning limits uses in designated districts to farming normally of high economic value. Aesthetic benefit is managed open space at no cost to the public.

Aesthetic zoning employs permit procedures to control exterior appearance of new development and changes in existing exteriors within designated district.

Historic district zoning similarly limits changes in exterior appearance and design within designated districts.

Transfer of Development Rights (TDR), a relatively new legal concept, considers property rights as mobile in nature; the difference between density allowed under existing zoning and that actually in existence on any given parcel of land, expressed in suitable units such as square feet of building area, constitutes the unused "development rights" which become the subject of transfer: such rights may be traded in the private market or sold outright to a public TDR agency. TDR is a flexible way to preserve open space or historic buildings on a given site in return for increased density or height on another site within designated zoning districts.

Density bonus similarly offers "credits" for good design, allowing for more intensive land development if larger percentage of usable open space is provided.

"Floating" or unmapped zones turn zoning into an administrative permit procedure. Districts defined in text of ordinance are not mapped; individual developers must apply for development project in a specific location. Can be effectively used to influence industrial location, and other large-scale residential or commercial projects.

Time development regulations place a moratorium on specific kinds of development in a given community. (Such moratoria have been applied to coastal zones in some states as well.) Development permits are not granted until conditions - i.e., presence of utilities and services in area - are met. Used to insure orderly growth of towns and to provide for the public health, safety, and general welfare.

Nonconforming use provisions of zoning ordinances can be used to eliminate unsightly low value uses - signs, junkyards, dumps, etc. through prohibition of enlargement or resumption of a use after destruction or discontinuance.

Subdivision Regulations

Applications to Aesthetic Resource Management

Municipalities can require developers to dedicate land for open space; however, state enabling legislation may require payment for such land at fair market value for subdivision land.

Regulations may govern arrangements of lots and streets.

Regulations can require underground utilities.

Subdivision review process allows for detailed review of site plan and design, generally within only minimum standards under provisions of public health, safety, and welfare.

Deed covenants or bonding, along with site inspections can insure that improvements such as planting, grading, paving, clean-up, etc. are made on property.

Relationships between subdivision layout and adjacent parcels and street system are considered.

Through device of a "developer impact statement," municipality can require developer to submit statement describing effect of development on environment, aesthetics, and municipal services and finances.

Building Codes

Applications to Aesthetic Resource Management

Used to control types of materials, number and size of windows, yard sizes to meet health and safety criteria.

Sanitary Codes

Applications to Aesthetic Resource Management

Require sewer and water line location according to environmental criteria, thus indirectly abetting aesthetic protection.

Controls proximity of development to shorelines by requiring minimum on-site sewage disposal setbacks from water's edge. Percolation/soil suitability requirements aid control of development in wetland or high water table areas.

Architectural Controls

Applications to Aesthetic Resource Management

Can be applied to regulate all aspects of exterior appearance within carefully drawn geographical areas.

Sign Ordinances

Applications to Aesthetic Resource Management

Can regulate height, location, area, materials and coverage of signs in commercial and residential areas.

Can be used to phase-out non-conforming signs.

Design Review Boards

Applications to Aesthetic Resource Management

Can work with planning board in applying aesthetic standards for subdivision and zoning.

Can provide specific assistance to citizens and developers in the use of good design.

Scenic Easement Acquisition

Applications to Aesthetic Resource Management

Involves acquisition of selected rights of property without

outright purchase, thus lowering costs for scenic areas in coastal and other shore areas.

Negative scenic easements can be used to prohibit actions detrimental to aesthetics, i.e., building structures, cutting vegetation, filling marshes.

Positive easements can be used to provide visual access to vistas or shoreline areas.

Relatively permanent and enforceable protection is afforded.

5.7.5 Private Sector Tools (Examples are common in all coastal states)

Restrictive Covenants on Deed Restrictions

Applications to Aesthetic Resource Management

Private means of imposing design standards on development including architectural controls, maintenance and planting requirements and open space and wetland preservation through agreement between property owner and purchaser.

"Run with the land" provisions, thus remain in force regardless of changes in ownership: recorded with title to property in local registry of deeds.

May impose stricter standards than local zoning or subdivision regulations.

Land Trusts Among Neighbors

Applications to Aesthetic Resource Management

Development on properties restricted through private agreements, perhaps in return for reduced assessments.

"Run with the land" provision thus remain in force regardless of changes in ownership: recorded with titles to properties in local registry of deeds.

Homeowners' Associations

Applications to Aesthetic Resource Management

Costs of subdivision improvements borne by homeowner fees--cover maintenance of open space, pedestrian ways, improvements, plantings, etc.

Insures maintenance of residential open space at no cost to town.

Donations of Land

Applications to Aesthetic Resource Management

Landowners receive Federal tax deductions for charitable donations of land.

Can be used to acquire open space and natural areas at no cost to town.

Particularly useful in case of large estates; to be encouraged as an alternative to selling the lands for development.

Holding Actions

Applications to Aesthetic Resource Management

Private organization - primary example is the Nature Conservancy - acquires open lands or natural scenic areas and holds them until local or state government can afford to acquire.

Can be used to save immediately endangered areas without immediate appropriation by town, state, or federal government.

Other Foundation Actions

Applications to Aesthetic Resource Management

Foundations may have direct grant programs influencing preservation and enhancement activities in the coastal zone. For example, the Ford Foundation has recently completed a program of financial aid to municipal conservation commissions in New England for protection programs.

Foundations often sponsor conferences and workshops to bring aesthetic and environmental issues to the attention of the public; i.e., the Conservation Foundation series of regional conferences on state land-use legislation.

Since programs change, agencies must contact such groups periodically to check on possible new programs.

CHAPTER 6: PUBLIC PARTICIPATION MECHANISMS IN FEDERAL AND STATE LEGISLATION AND IN PLANNING PROGRAMS

6.0 Introduction

Public participation in coastal zone management programs is required by law. Section 303 of the Coastal Zone Management Act states, "that it is the national policy to encourage the participation of the public...in the development of coastal zone management programs." The act requires that open public hearings be held prior to any plan approval, with public notice given 30 days prior to the hearing and all pertinent agency material made available for public review during that time. NOAA guidelines for meeting CZMA requirements for qualification for Administrative Development grants under Section 306 go much further in stipulating that the state must notify all public agencies which may be affected by or have any interest in its program, and must provide them with full opportunity for participation in plan formulation. The state must further supply the Federal government with documentation of the agencies contacted and the opportunities for participation they were provided.

The National Environmental Policy Act similarly calls for public involvement. The Council on Environmental Quality Guidelines for preparing environmental impact statements under NEPA require, as appropriate, public hearings with adequate notification and draft statements made available for public review at least 15 days prior to the hearing. As required by NEPA and also by the Freedom of Information Act, the agency preparing the environmental statement must make the statement and all comments on it available to the public.

At the state level, most Section 305 grant applications have cited intended development of citizen participation programs, but few states' laws actually require any specific programs other than public hearings and plan review.

Each state will therefore need to develop its own public participation format, on the basis of Federal law and any specific state legal requirements, and in accordance with the particular goals and policies it wishes to pursue with regard to public and citizen participation. This chapter is intended to guide the state planner in the selection of alternative participatory frameworks.

6.1 Application of Mechanisms to Aesthetic Resource Management Planning

Public or citizen participation mechanisms can be applied to aesthetic resource planning either as independent elements, or in conjunction with public involvement in other planning areas or with the coastal zone management program as a whole. When applied in conjunction with other components, care must be taken not to permit tight agendae which tend to shortchange dialogue on aesthetic needs and answers. Citizen input into aesthetic management is a vital stage of plan formulation, as concern for aesthetic values is a deeply-felt issue among coastal zone residents and visitors. Final plan acceptability by the public may well rest on the coincidence of user aesthetic values with those assumed in plan formulation.

The usefulness of public or citizen participation mechanisms in aesthetic resource planning is discussed below within the framework of the three stages at which citizen input can be employed.

6.1.1 Pre-Planning Stage

Citizen input at the pre-planning stage is extremely important in terms of both public confidence and the recording of bona fide information on resource supply and public demand. Planners can be informed of citizen values and desires at the outset, can plan for further information gathering and value analysis to maximize resource knowledge, and may be better informed as to how to achieve a coastal zone management plan that can optimally satisfy competing conservation and development interests.

Simultaneously, the pre-planning stage can also be used to inform the public of the state planner's preliminary intentions for aesthetic resource management. Citizen cooperation and plan acceptance will be facilitated if a clear understanding of the program is established in this initial planning stage. The planner can show the public what he considers to be the valuable aesthetic resources within his jurisdiction, the issues involved in their protection or the loss thereof, and the alternative ways the state is considering for managing them.

This pre-planning stage ideally should be conducted earlier than management planning efforts in aesthetic resource inventorying, classification, and first-cut assessment.

Tools which can be employed in the pre-planning stage and their key advantages and disadvantages are briefly noted below:

Public Opinion Polls or Questionnaires - Survey public attitudes and values concerning aesthetic resources: able to show user preferences but often response is poor, leading to misrepresentation.

Use of Media - News or feature coverage, including special TV or radio programs with live or post-show response; good medium for describing proposals and measuring possible user preferences and level of concern.

Citizen's Advisory Committee - Formation of advisory groups typically consisting of lay, professional, business, environmental, academic, and community representatives. Facilitate information solicitation, feedback to general public, and aid in later planning and post-planning stages. Possible problem with under-representation of the overall constituency.

Technical or Scientific Advisory Committee - Provides an indirect form of public participation; can be very useful in advising on technical areas of aesthetic resource evaluation during planning stage.

Ad-hoc Conferences or Meetings with Limited Attendance by Mixed Interests - Solicit policy stands from environmental, developer, economic, community, and other interest groups in easily managed exchanges. Gain alternative preference and problem information from key users; some problem resolution may be brought into focus.

Universities - Use of university sea grant programs, or teaching/ research departments to solicit additional information through re-

search projects, preference surveys, and other methods. Good available framework but can only supplement, not substitute for, actual public participation.

Public Meetings - The most suitable approach, as in the planning stage, is direct communication through informal public meetings or forums, conducted with a view towards soliciting information and opinions from the coastal zone constituency on resources of both unique and commonplace aesthetic value, location of eyesores, and other elements eligible for preservation, protection, restoration, enhancement, or development actions. Visual media, including slide presentations, films, videotapes, or analytical presentation boards, should be used to encourage exchange.

6.1.2 Planning Stage

During the planning stage, the citizen may be invited to continue participation either on a slower pace as information provider, or at an increased level of effort to help in actual plan formulation. Here the scope of participation, in terms of numbers, may be narrowed to facilitate working effectiveness, but should fully reflect or represent the coastal zone constituency. Such a constituency may alternately be defined as the statewide public or as the community of the coastal zone alone; the former expresses greater political accountability.

Each of the three alternatives listed below offers the advantage of involving people over a broader scope or greater depth of effort, and encouraging a greater degree of imaginative expression. In each, citizens are encouraged to offer aesthetic planning suggestions in an atmosphere of

fluid give-and-take of citizen and planner ideas. Disadvantages of workshops and charettes are the possibility of insufficient structure, the inherent difficulty of communication on aesthetics, and interpersonal friction. Throughout the planning stage public or citizen representatives working with the planning team must keep in contact with their constituency, reporting activities and findings to them and bringing reactions and new suggestions back to the planners.

A major problem with most forms of citizen input into planning activities is that the citizen participant can only express his or her personal views and those of the organization represented. This can be at least partly answered by providing for as broad a participatory base as possible.

Public Meetings - Large groups of citizens meeting with agency planners to discuss planning alternatives. Participation by officials and legislators can promote constructive discussions. Meetings are ideally scheduled on a multi-community basis.

Workshops - Smaller group meetings centered around specific planning areas, applicable to aesthetic management in terms of specific problem focuses.

Charettes - Intensive problem solving sessions in which citizens are confronted with a planning problem and asked to provide a solution. Quite applicable to the aesthetic area as public's values may emerge through the exercise. Aesthetics may be effectively incorporated into omnibus public meetings; however, separately scheduled meetings, or at the least, separately conducted workshops within omnibus

meetings, should be utilized to make full communication possible in this typically difficult subject area.

The planning stage coincides with the process steps of performing the resource inventory, evaluating identified resources, and determining the compatibility of these resources with resource use and development. In terms of performing the inventory, the general public can be very helpful. Through workshops and meetings citizens can be taught how to determine and document aesthetic resources, offering the planner additional manpower resources to speed the process of aesthetic resource identification. At the evaluation level, user preferences surveyed at the pre-plan stage can be drawn upon as weighting factors applied to the relative importance of resources in terms of citizen use and scenic importance.

6.1.3 Post-Plan Commentary

At this stage the public is provided the opportunity to review the proposed plan and provide further input prior to final plan adoption. The plan timetable should allow sufficient time for meaningful public participation at this point.

Public Hearings - A formal legal procedure in which public presentations on and response to the previously disclosed planning documents are noted and recorded.

Follow-Up Public Meetings - A more informal review procedure in which unlimited free discussion on the plan may take place and graphic interpretations can be utilized more flexibly.

Public Review of Draft Documents - The complete plan draft and all

graphic support are made available for public scrutiny and response. A necessary step. It may not be effective or useful in isolation, i.e., without related public meetings, as the lay public may not understand major details without planner explanation. This measure should therefore be supported by public meetings, either subsequent to or at the time of release and distribution of the plan or plan element.

In the post-planning commentary stage prior to final plan adoption, the public may play two separate roles: on the one hand, it can seek additions, deletions, or other changes to the plan which the planners may not have otherwise provided for, and on the other hand, it may campaign for plan implementation once the final plan meets its satisfaction.

This stage of public participation, although important in itself, is not as crucial for aesthetic management as the two earlier stages. Aesthetic planning really requires good communication between planners and citizens at the early stages, so that citizen values and desires for resource utilization can be accurately identified. If the earlier stages have been built upon meaningful participation, final phase modifications may be incorporated more efficiently and with a wider base of support.

6.2 Minimum Program Acceptable for Aesthetic Planning

A minimum program acceptable for citizen participation would be limited to those tools specifically required by law. Such a program would

consist only of a provision for public review of the plan before final approval, and the holding of a public hearing with advanced public notice.

The primary advantage of such a limited program would be the expediency of work that would be possible in the absence of open public participation. Little planning money would have to be allocated for citizen involvement programs. The time involved in plan formulation could be relatively short and efficiently spent.

However, the disadvantages of this apparently smooth program may come to light during the plan implementation stage. Numerous problems may arise when the public finally reviews the plan. There may be significant discrepancies between the public's perception of aesthetic resources and those assumed by the planner. These could lead to hostility towards the plan if its recommendations did not lead to the preservation and enhancement of those resources which the public values. A serious time lag could develop while planners try to justify their plan to citizens demanding satisfaction. Furthermore, the potential advantages of a lighter staff work load due to citizen and public participation in resource calssification and inventorying would not be available in the minimum involvement plan.

6.3 Maximum Program for Aesthetic Planning

A maximum program for citizen participation would consist of implementing all of the alternative tools outlined above. This may appear

to be a drastic overprovision for public involvement, but its possibility must be considered and the resultant pros and cons evaluated. The program would involve an initial survey of public desires, educational/informational programs to inform citizens of planner goals, workshops to initiate citizen/planner communication, citizen participation in collecting the inventory, professional input into evaluation and compatibility determination, public review and comment on final plan draft, and open public hearings for final plan approval.

The beneficial results of a program of this type would be the preparation of a plan which would fairly represent the desires of the affected communities. The plan would probably go further towards serving the goals for which it was formulated than one written with less citizen input. Acceptance of the plan by the public would likely emerge in a more timely fashion, allowing rapid implementation of stated goals and objectives. In the course of plan preparation, work loads would be lightened in areas where the public could assume appropriate responsibilities.

In the final analysis, the implementation of a high-level action participation program represents a large scale trade-off between more time, effort, and money spent during the primary planning stages with perhaps little additional planning effort required during plan implementation, versus a simpler planning program with the possibility of massive requirements in time, effort, and money for planning revisions during the implementation phase.

6.4 Range of Alternatives Between Minimum and Maximum Programs

The minimum acceptable and high-level action participation programs do not simply represent two alternative choices which the state planner could employ, but stand at the extremes of a wide range of alternative participation programs calling for varying degrees of involvement in each program phase and by different planning groups. The state planner should choose from among the various tools to create a participation program best fitted to the state's particular management framework. Several examples of the range of program types would be:

- Much involvement in the pre-planning stage, with questionnaires, various information media, and informal forums to solicit citizen ideas and values, and little additional input in the later planning stages. This program would offer the advantage of accumulating a foundation of public attitudes on which to base planning activities, but may lead to eventual public dissatisfaction with elements of the final plan which are unfamiliar or contrary to expectations.

- Heavy involvement during the planning stage by lay persons or professionals serving as citizen representatives, but with minimal general public participatory activity. This alternative may maximize capable inputs and committee-agency dialogue, but may appear to the public as too exclusive or elitist an approach.

- An ongoing program of information and feedback throughout the whole planning process, but with no formalized involvement mechanisms

for the public other than comment. Here information would flow freely between planner and citizen, but there would be no guarantee that citizen goals would be incorporated in the final plan.

The planner should keep in mind the fact that the employment of a citizen participation program will always constitute a necessary trade-off between reliance on the planner's capabilities and the political necessities of a democratic society, and between planning process fluidity and plan implementation acceptance and satisfaction.

6.5 Integration of Public Participation for Aesthetic Resources Planning with Other Elements of the Coastal Zone Management Program

As planning for aesthetic resources may or may not be done in conjunction with planning for other problems in the coastal zone, programs for citizen participation in aesthetics planning must be integrated with participation in other problem areas. Care should nonetheless be exercised to preserve a healthy attitude for consideration of aesthetic resources and issues, as other more tangible and apparent problems such as water quality and shoreline erosion may tend to dominate public discussion, media coverage, and questionnaire responses. It is thus important for additional provisions to be made for aesthetic considerations within the overall citizen participation program. Separate sections should be included in omnibus questionnaires and informational programs to discuss aesthetic problems and solicit information and opinion on aesthetic resources and values. Special workshops on aesthetic issues should be held in addition to general public meetings, and

a specially trained professional in shoreline appearance and design should be included on the professional citizen's advisory committee. As aesthetic values are so much a product of individual opinion and desire, it is all the more necessary to ensure that public attitudes are accurately identified and proper attempts made to reflect these attitudes in coastal zone planning recommendations.

CHAPTER 7: AESTHETIC RESOURCE INVENTORIES AND EVALUATIONS - AN OVERVIEW

7.0 Introduction

Under the Coastal Zone Management Act, the state is required to furnish an "inventory of natural and man-made resources" as a part of the greater task of delineating areas of particular concern and defining permissible uses for the coastal zone. Having defined the boundaries of the coastal zone (see Chapter 2), the planner will conduct an inventory of aesthetic resources which will serve as the data base for all subsequent planning elements in this area. The purpose of this chapter is to describe the general purposes and prerequisites of the inventory without entering into the detail of techniques (discussed in Chapter 8) so that the consideration of CZMA requirements in will fall into proper focus.

7.1 Purpose of the Inventory

The inventory requirement is more specifically defined in Sec. 920.13 which states that the inventory "should provide the basic data analysis, and criteria necessary to identify specific geographic areas of particular concern." Clearly, this data will be of equal importance in the definition of permissible uses and the ultimate recommendations for resource use and development. The types of techniques employed in the aesthetic resource program will depend on: 1) the types and scale of aesthetic resources to be inventoried; 2) the evaluation methods used as components of the inventory; and 3) the skills, resources, and time available to those conducting the inventory.

The ultimate task of determining permissible uses as discussed in Chapter 4 will involve: 1) inventorying resource capabilities and suitabilities from an aesthetic perspective and 2) analyzing the aesthetic impacts of resource uses. Designating geographical areas of particular concern as discussed in Chapter 3 will involve 1) identifying areas of significant natural value or importance, areas of a transitional or intensely developed nature and areas especially suited for intensive use or development and, 2) analyzing aesthetic factors in conjunction with other considerations to determine priorities for usage. Both of these major objectives can be satisfied by using data gathered in a single inventory process. Thus it will be important for the planner to develop a flexible set of inventory method components such that any combination of the above objectives can be met.

7.2 Types and Scale of Aesthetic Resources

Aesthetic resources differ from state to state. Therefore, a preliminary step in the inventory process should be to define the scope of the study in terms of the selection of aesthetic resources to be included. An exemplary list of coastal aesthetic resources--natural and man-made--was presented in Chapter 2. The type and scale (e.g., regional or site) will obviously affect the inventory processing, mapping, and presentation techniques to be employed. As the complexity of the study program is expanded, the level of sophistication in collecting, interpreting, and displaying data will of necessity have to increase.

In order for the planner to make meaningful subdivisions of the coastal zone to assist in the inventory, evaluation, and management of aesthetic resources, standards and criteria for the scale and size

of resource units (discussed in Chapter 2) must be established. The criteria for identifying various scales of aesthetic resources should recognize the concept of unity. Regardless of the size of the resource area, or the number of elements in it, there must be a visual cohesiveness to the elements. A useful definition of a measurable unit is "a large physiographic area of land which has common characteristics of land form, rock formation, water forms, and vegetative patterns." (U.S.D.A. Forest Service 1974).

Consideration of the scale of landscape subdivisions (interior, shorescape, viewsheds, and other units) and the implications of their boundaries for assessment, will be important in the inventory process and are fully discussed in Chapters 2, 8 and 9.

While areas of particular (aesthetic) concern must be singled out at the state-wide and regional level on a priority basis, inventory and planning efforts for aesthetic resources in other subsidiary landscape units can be assumed by local authorities and planners on a longer term basis. Documentation and evaluation of aesthetic resources in all coastal zone landscape units should at any rate proceed in a continuing format. Once an aesthetic data base is complete, it will be available for an effective impact evaluation of development proposals submitted for review to state, local and sub-state regional agencies.

7.3 Planning for the Resource Inventory

At the outset, the planner must make several procedural decisions:

1. What method of evaluation will be used? (See Chapter 9)

2. Who will conduct the inventory (skills, training, etc.)? (See Chapter 8)

3. How and when is the public to be consulted and informed? (See Chapter 6)

4. What data collection and collation methods are to be used? (See Chapter 8)

5. What methods of data presentation are to be used? (See Chapter 8)

These questions are presented here to emphasize the interdependency of the several phases of action in planning for aesthetic resources. Early decisions on many of these questions will greatly facilitate the task of the planner in arriving at ultimate recommendations.

7.3.1 Types of evaluation methods

The evaluation methods to be used in the inventory process discussed in Chapter 8 will have to be chosen before the inventory is conducted. Large-scale regional inventories of aesthetic resources will necessitate the utilization of professionally derived evaluation methods. Local or site scale evaluations may be made using either professionally derived or user-derived (i.e. visual preference) methods. Selection of an evaluation method, or combination of methods will in turn determine the types of data needed, the method of collecting and processing information, and the means of presenting evaluations.

7.3.2 Skills, resources, and time

As with most planning operations, the major factors affecting program development in the end will be the skills and training of personnel,

facilities and equipment available, budgetary constraints, and the time allotted for conducting the inventory and evaluations. The degree to which each of these factors will affect program development will vary from state to state; therefore, the techniques discussed in ensuing sections should be viewed in the context of their applicability to individual program needs and constraints.

7.4 Inventory Prerequisites

7.4.1 Coordination with other coastal zone program elements

Since an assessment of aesthetic resources will usually constitute only a component of a more comprehensive Coastal Zone Management Program, the planners conducting the aesthetic resource program element should carefully review other program elements and interrelate the aesthetic resource component with them. Other program elements may include analyses of existing conditions in the coastal zone (e.g., land ownership patterns, demographic patterns, estuarine habitats, and laws and regulations on land and water uses) and projections of future needs in the coastal zone (e.g., housing requirements, recreation needs, industrial needs, mineral resource requirements, and transportation and navigation needs).

The aesthetic resource planner should be particularly aware of the extent to which policies for protection, restoration, or enhancement of scenic areas must be balanced against the need for economic development of selected coastal zone areas. (Indeed, it is the high aesthetic value associated with most coastal areas that induces recreational and tourism development.)

7.4.2 Use of existing maps, data and reports

Maps prepared by federal, state, regional and other governmental and non-governmental bodies should be carefully reviewed to locate data on aesthetic resources which may appear in various forms. Included in this category are sectional maps prepared by the U.S. Geological Survey, charts of the National Ocean Survey (formerly the U.S. Coast and Geodetic Survey), soil maps prepared by the Soil Conservation Service, special study maps of surficial geology prepared for selected areas under the direction of the U.S.G.S. and state geological surveys, land use inventory maps, and others. Lighthouses, LORAN beacons, and other tall structures, for example, will appear on National Ocean Survey charts identified as landmarks. Glacial features such as eskers and kames can be tentatively identified on U.S.G.S. maps (and confirmed on aerial photos).

Studies of various aspects of the coastal zone are usually available on a selected basis, and when aggregated can provide a good deal of useful information relative to aesthetic resource planning. A thorough investigation of previously assembled data should thus be a first order task in preparing an inventory of aesthetic resources.

7.5 Need for evaluating aesthetic resources

In terms of the expressed purposes of the Coastal Zone Management Act, the necessity for evaluating aesthetic resources is clearly implied, i.e., in order for areas of particular concern to be identified for possible preservation, protection, development, restoration, or enhancement, a method for evaluating the aesthetic qualities of coastal resources must be developed which gives full consideration to "ecological, cultural, historic and aesthetic values..." (CZMA Sec. 303(a)(b)). Evaluation of aesthetic resources is essential not only for assessing and assigning value to positive aesthetic attributes, but also for identifying adverse impact factors in areas where "...special natural and scenic characteristics are being damaged by ill-planned development that threatens their value " (Sec. 302(f)). In addition, while the identification of areas of high aesthetic resource value will be a necessary precursor to the designation of areas of particular scenic concern, evaluation of aesthetic resources must also be applied throughout the "ordinary" landscape of the coastal zone, often overlooked in establishing land use policy and control.

7.5.1 The judgement question

Much of the aesthetic resource evaluation completed to date has been based upon the judgement of professionals in design-related disciplines.

As the purpose of aesthetic resource evaluation is to identify resources in the coastal zone which are essential to well-being of all citizens (Sec. 302(d)), the appropriateness of this reliance might be questioned. However, several studies (Craik, 1972, Coughlin and Goldstein, 1970, Fines, 1968, and Zube, Pitt and Anderson, 1974) have suggested that

the aesthetic values assigned to the landscape by professionals are highly correlated with those assigned by the other segments of society. While there may not be complete agreement on resource evaluation, there is at least enough congruence between the professional's judgement and society's aesthetic values to grant the qualified professional a basic credibility, providing that evaluation criteria are systematically and suitably defined.

To illustrate the operation of selected existing resource evaluation methods, Chapter 9 outlines the details of several basic models. It is believed that the coastal zone planner can tailor identified techniques to the scale, intent, and capabilities of his individual programs, using existing methods, without the necessity of conducting further original research.

Prior to discussing techniques, a few words of caution must be stated. When evaluative judgements are made, it is particularly important that the assumptions underlying the evaluations be explicitly spelled out, so that other utilizers and critics of the methods can judge the validity and utility of the methods for their own needs. Secondly, it must be remembered that rating schemes which evaluate aesthetic resources within a given set of landscapes or region are applicable <u>only</u> to the particular set of landscapes studied. In other words, a landscape in a particular region that is evaluated as having aesthetic resources of high value when compared to other landscapes in that region, may not be comparable to landscapes in other regions deemed to have high scenic value. Yet, the aesthetic resources of this landscape may well be unique and highly significant to the immediate geographical area in which they are located.

7.5.2 Applying the methods

While the selection of any of the evaluation methods will largely depend on individual program objectives, available skills, facilities, time, and budgetary constraints, there would be considerable value in combining elements of each of the methods in the development of a coastal zone aesthetic resource program. Since resource-oriented qualitative and quantitative methods, when applied on a regional scale, will rely more heavily on professional judgements, it may be advisable to supplement them with user-analysis evaluations at the site or local level. In addition, user-perception methods provide a mechanism for engaging citizen participation (see Chapter 6) in the evaluation process and can provide a means for publicizing program elements and progress. Also, user-analysis techniques can be used to evaluate controversial landscapes where contradictory judgements have been expressed. On the other hand, user-analysis may be far more susceptible to distortions of inherent value because of the influence of controversy, seasonal recreation desire changes, property ownership, and other physical and temporal factors that distinguish or affect individual preferences.

CHAPTER 8: THE AESTHETIC RESOURCES INVENTORY - METHODS AND TECHNIQUES

8.0 Introduction

An adequate resource inventory is absolutely essential for the planner to be able to decide on ultimate resource use. This section addresses the conducting of the inventory, and discusses in some detail the various survey procedures and their advantages and disadvantages. The planner must choose that combination of techniques which best meets the recognized needs of the state.

8.1 Data Collection Techniques

As mentioned in Chapter 7, there are several methods of collecting information to provide the data base for aesthetic resource management planning. Each one entails a systematic survey of the landscape under study and mapping of relevant observations.

8.1.1 Systematic Observer Surveys

Information derived from systematically based field trips can provide the greatest degree of detail, as well as the greatest quantities of data. A predesigned and pretested standardized field survey form is indispensible in handling this data. Where professionally derived evaluations are desired, they can be made simultaneously with the surveys by trained observers. Otherwise, the recorded information should be confined to the location and descriptive characteristics of aesthetic resources (e.g., dimensions of view, height of structures, etc.) as opposed to qualitative value judgments. Observations should be as consistent and objective as possible within the constraints imposed by

diurnal, seasonal, weather, and activity changes and daily changes in the observer's mood, personality, preference, etc. Survey forms should contain all pertinent information: time of day, date, weather, mode of travel, observer, types of activities occurring in the vicinity of the aesthetic resource, viewing point and the mapped location of the site.

Obviously, moving vehicles will have to be employed to perform field reconnaissance in a comprehensive way. A windshield survey from a car is a practical means for covering a large area. The car and its driver are limited to certain travel corridors, which may omit significant areas in the coastal zone. Views from a boat travelling along the shoreline are also restricted, and detail of upland features is difficult to perceive. Probably neither means for viewing the coastal zone can be used exclusively, but must be supplemented by aerial photography and/or travel on foot to certain coastal sectors.

8.1.2 Eye-level Photography

Eye-level photographs (particularly color slides) are an invaluable tool for documenting shorescape conditions and can effectively streamline the field survey procedure. Although certain elements of the field survey checklist for each shorescape unit should be noted and mapped while in the field (date, time of day, general weather conditions, notable sounds and odors, location on map of viewpoints, identifying pictures taken, etc.), systematic and thorough photographic coverage of vistas and multiple-frame panoramas documenting available land and water paths, routes and viewing opportunities may allow an evaluator to conveniently complete the majority of a checklist by viewing slides. It should be noted that this procedure is most effective when field photography and completion of the

checklist at a later date is carried out by the same person or group, using slides to refresh the observer's memory of the place. Viewing slides of a shorescape taken or assembled in sequence and including views from the upper shoreland, shoreline and from the water allows the evaluator to easily comprehend and respond to the diversity of aesthetic resources present, including seasonal variations if photography is carried out and repeated at different times of the year. Eye-level photography can be a relatively unbiased record of each shorescape's aesthetic condition and an effective tool of communication to others. Used in combination with aerial photography, topographic maps, and remote sensing, photographic documentation of the field survey is an important and invaluable inventory and management tool.

While eye-level photography provides a means for representing the environment as exactly as possible, its utility may be constrained by the selection of viewpoints from which photographs may be taken and unavoidable distortions produced in the photographic images. Despite these minor disadvantages, such photography provides a permanent photographic record of the aesthetic resources, facilitating evaluation of selected sites by trained professionals at any subsequent time. Also, the slides can be used in conjunction with user-derived evaluation methods which elicit perceptual responses from either diverse groups of people or persons from design disciplines.

8.1.3 Sketches and Notes of Visual Impressions

Where time is of less importance and staff trained in graphic skills are available, hand-drawn sketches and written synopses of visual impressions can be used to supplement systematic surveys and photographic recording techniques. If done systematically with consistent format for each

study sub-area, sketches and written notes of visual impressions can approach some degree of objectivity in recording the characteristics of aesthetic resources. However, these methods may require time and may not provide easily compared data as the observer or graphic artist will of necessity have to use subjective judgment in recording visual elements of aesthetic resources. The best use of these techniques is on an a selective basis for critical areas to facilitate communication of data recorded by the other techniques.

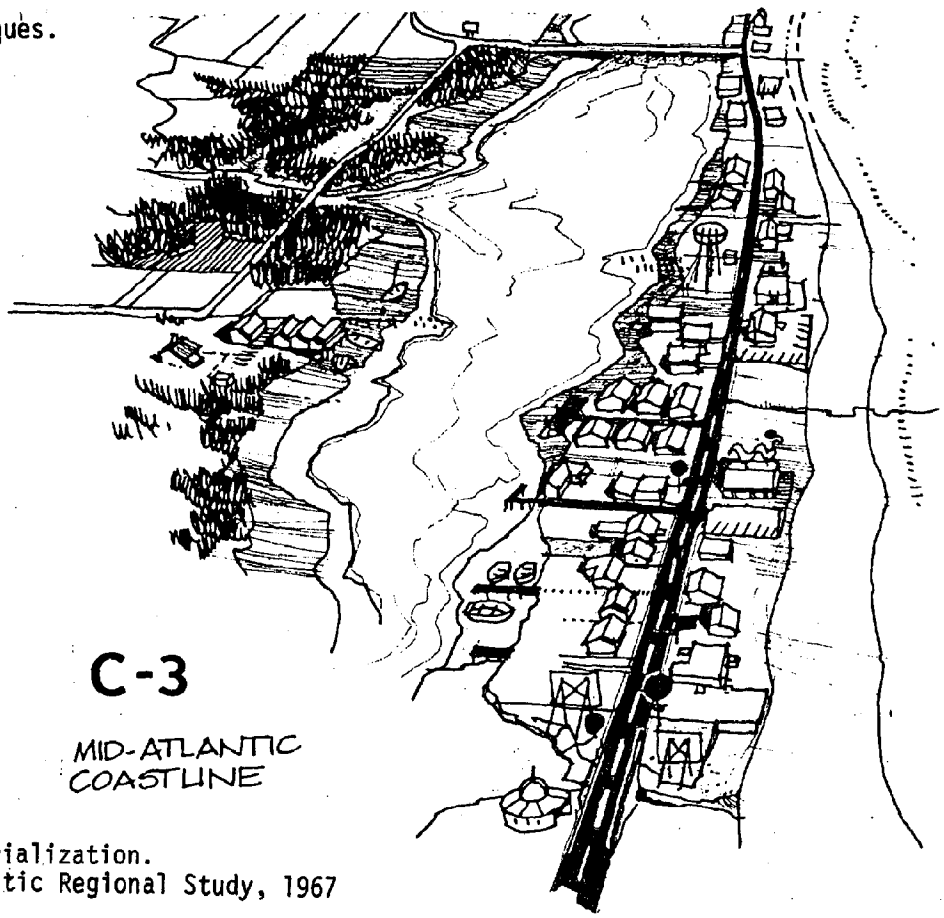


Figure 8-1:
Oblique Pictorialization.
from the Atlantic Regional Study, 1967

8.1.4 Aerial Photography/Remote Sensing

Remote sensing in its broadest sense includes a wide range of techniques for gathering information about objects in the environment by means of external devices generally obtained from the air or from space.

Remote sensors include devices which provide images based on electromagnetic impulses as well as aerial cameras employing various types of photographic film. A number of means may be employed to obtain this data, including conventional or modified aircraft mounting cameras or other equipment such as radar sensors, or orbiting satellites such as those operating under the Earth Resources Technical Satellite program.

The types of information which can be obtained by these devices include coastal morphology, classification of vegetation, and nearshore hydrography, among other data. A distinct advantage of this technique is its ability to inventory and monitor changes in the coastal environment on a systematic basis, through periodic follow-up filming. The following is a short listing of major sensing technologies.

- Black and white aerial photographs. This is the basic tool for recording information of any land surface, including the coastal zone. Photographs in plan view are useful for identifying basic distinctions between man-made features and the natural landscape. Textural and tonal differences can be interpreted to identify objects or landforms with differing sizes, shapes, and patterns. The use of yellow filters on the camera lens can facilitate haze penetration (particularly useful for coastal areas) and increase the tonal contrast of the photos (Way, 1973). Black and white aerial photographs, if overlapped, can produce three-dimensional images when viewed stereoscopically or can be combined on a two-dimensional mosaic.
- Black and white infrared aerial photographs. Infrared photography is primarily useful in enhancing the contrast of the terrain, and in showing a sharp contrast between water and beach. This allows a precise

study of coastal shoreline configuration, and can make clear distinctions in types of vegetation, as between coniferous and deciduous. Since edge characteristics (e.g. at the land-water interface, or at the forest-wetland interface) appear to significantly increase the perceived quality of aesthetic resources by contributing to visual diversity and complexity (Fabos, 1973), infrared black and white photography provides an invaluable tool for locating dominant visual natural and man-made edges when applied on a regional scale.

- Color and color infrared aerial photographs. Color aerial photographs are most useful for investigating underwater features of the coastline, such as water depths, shoal areas, sediment patterns, and such terrestrial qualities as vegetative speciation and ground surface color, qualities which are not specified in black and white photography. Color infrared can be most useful in making distinctions between broad groups of vegetation, and in determining vegetation densities, particularly in sand dune regions and coastal areas (Way 1973).
- Oblique aerial photography. Oblique aerial photography has been less commonly used than black and white, color, infrared techniques and ground level photography, but is potentially an equally effective means of documenting coastal aesthetic resources. Slide photographs can be taken from the air to provide a continuous linear record of the shoreline aesthetic resources which can be viewed for evaluation at subsequent dates. Oblique photography has the advantage of being more easily understood by those unfamiliar with the more technical aerial photographic techniques and can be used as an effective supplemental communication medium. Land uses and shore configuration changes can be monitored as well. Although 35 mm slide photography has

been the most common oblique aerial medium, continuous 16 mm oblique motion picture filming would seem to offer greater advantages, particularly when a sequential series of views is desired.

- Other aerial photography techniques.

  Multi-spectral aerial photography: Through the use of multiple lens cameras and different film and filter combinations, images produced by different wavelength bands can be analyzed to discriminate fine differences between vegetative species and other ground features Hue, brightness, and saturation in each spectral band can be controlled to attain high levels of precision. The technique, however, requires significant expense and technical expertise.

  Infrared imagery: Thermal infrared utilizes distinctions in surface temperatures to record images of land and water characteristics. The technique is thus not particularly applicable to inventorying aesthetic resources, but is more pertinent to studying water and thermal pollution and tidal flushing of water bodies.

  Radar imagery: Radar imagery techniques are primarily useful for mapping coastal morphology and evaluating terrain variations, as radar wavelengths can cut through cloud cover even under the most adverse weather conditions.

Various techniques for obtaining the above aerial photographic data exist, ranging from the sophisticated remote-controlled satellites which orbit the earth, to the relatively primitive technique of hand-held cameras in a low-flying plane (for oblique photography). In the latter case, two observers are generally required so that one can concentrate on photography while the other can make observations on paper of various features.

Aerial photographic techniques obviously lend themselves to the identification of locations of aesthetic resources and land use patterns on a regional scale, and as such must be supplemented by ground reconnaissance if qualitative or quantitative evaluations of aesthetic resources are to be made by trained professionals.

8.2 Data Processing

The field reconnaissance methods discussed above will necessitate the recording and processing of rather large quantities of data, depending on the scope of the investigations undertaken and the level of detail desired. In most cases the data on aesthetic resources will be hand recorded, in a form suitable either for manual processing or for machine processing.

8.2.1 Hand Recorded/Manual Processing Method

Where a generalized review of aesthetic resources or a detailed inventory of the aesthetic resources of a small area (less than a few square miles) is desired, manual processing methods will be suitable. If the units of the coastal zone have been grouped into a few general classes (perhaps due to expediency), then the use of some sort of standardized worksheet matrix allowing for quick checkmarks, simple concise notes, and even field sketches would be the most valuable.

8.2.2 Hand Recorded/Machine Processed Method

Most aesthetic resource inventories are conducted on a larger scale. Furthermore, considering the great potential variation in visual experiences along a given segment of coastline, vast amounts of data may be collected that can be most economically and efficiently processed by high speed computers. A device called an Optical Mark Reader or Scanner

can be used to process information recorded in the field on forms similar to those commonly used in standardized testing procedures (e.g., SAT's). These forms can be rapidly and cheaply scanned with an accuracy equal to or exceeding any other existing method (presuming the simple marking procedure is followed correctly). Specially tailored forms can be designed cheaply, as well. Numerical data is the easiest to record, but remarks can also be recorded and processed. If computer mapping or processing is contemplated, this is by far the better method of recording data.

8.3 Mapping

The state coastal planner must select techniques for displaying inventoried data on aesthetic resources. The basic processes available include the preparation of traditionally used hand-drawn single resource or multiple resource overlay maps and computer printed graphic displays.

8.3.1 Scale

Appropriateness of scale in mapping is a consideration familiar to all regional and state planners. Delineation at the regional, state, and coastal zone level may be effectively carried out at scales of 1:62,500 or 1:63,360 (1" = 1 mile) for gross generalization of evaluated aesthetic resources, on both a tone and point basis (e.g., tones at these scales may represent areas of high aesthetic diversity, shorelines of special interest,

and areas of particular aesthetic concern, etc.; points may represent important viewing points, centers of vistas, cultural and recreational nodes, etc.).

For detailing specific resources, larger scale mapping is generally more desirable. The 1:24,000 scale is the next largest common scale and is highly suitable for resource delineations. Most states would require a large number of maps at this scale for full coverage of their coastlines (in the hundreds); in the event of budget limitations, mapping at this scale might be usefully applied solely to areas of particular aesthetic concern. Other sub-regional scales which are in less common use but are equally valuable are 1:20,000 and 1:40,000 (NOAA/NOS charts).

A common computerized mapping grid cell size is one hectare (1:39,283 scale). Experience has indicated that mapping based on inputs scaled to this area as a minimum unit is suitable for regional and sub-regional delineations, but less effective for detailed delineation than larger scale maps.

8.3.2 Single Resource Maps

The traditional and most commonly accepted technique for presenting results of an inventory of aesthetic resources is to depict each category of items in the inventory on individual maps. Areal data, such as land uses, vegetation types, steepness of slopes, and so on can be represented by lines drawn around various zones which usually have irregular boundaries. This kind of map is called a polygonal or cloroplethic map. The areas within the boundary lines can be differentiated using a numeric or letter code, a tone, or a color.

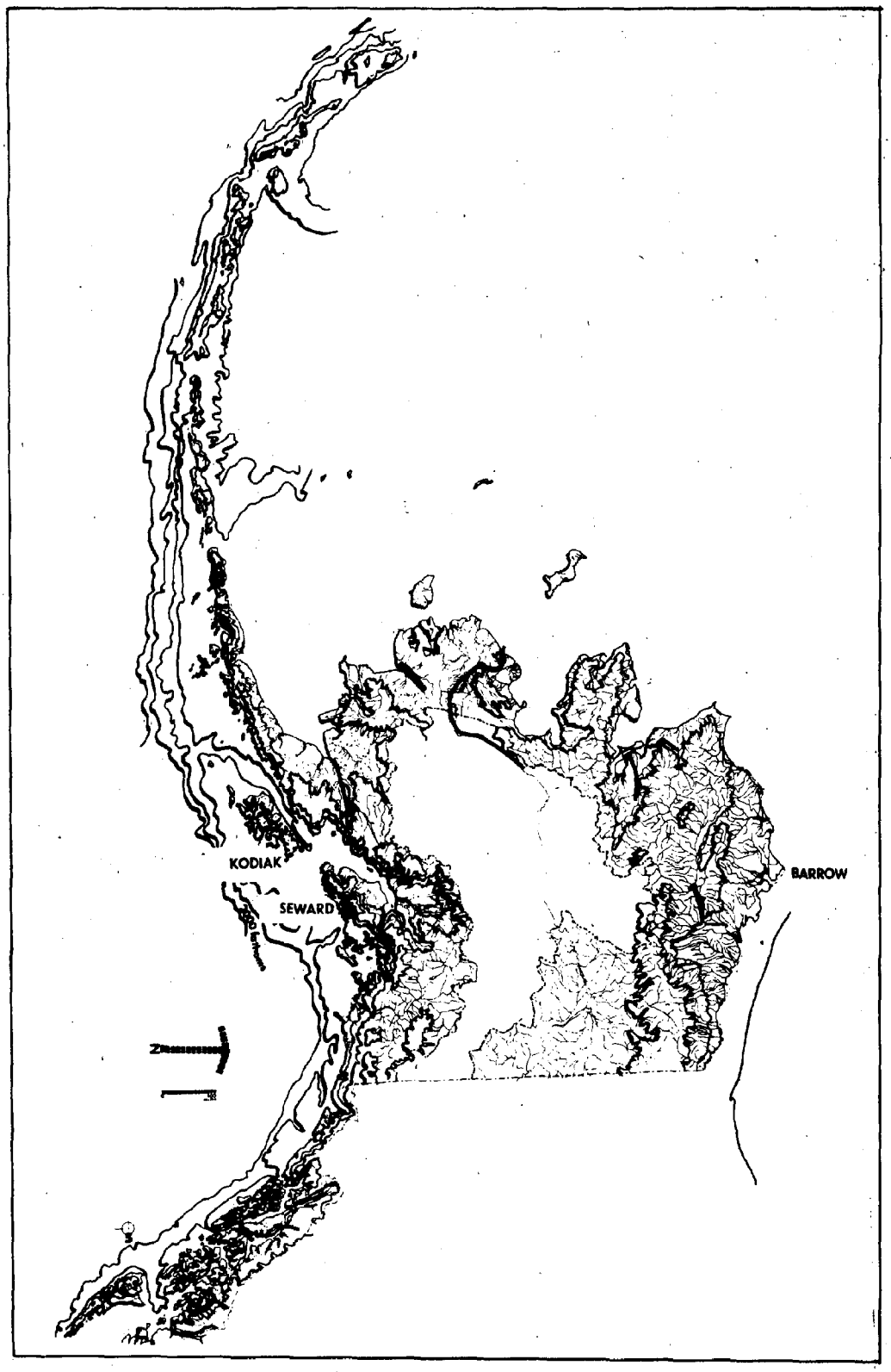


Figure 8-2: A single-resource map. Landform of the coastal zone and continental shelf of Alaska. National Estuary Study, 1970

Examples of land use categories found and mapped in the coastal zone in Maryland include the following:

crop and pasture land	rivers
orchards	reservoirs
deciduous forests (upland and lowland)	bays and estuaries
evergreen forests (upland and lowland)	wetlands
mixed forests (upland and lowland)	beaches
upland brush	bare exposed rocks

Maryland planners have also assembled data and mapped scenic areas and areas with unique or endangered natural features, including particularly fragile ecological systems, wild lands, and "big trees."

Other data representing many localized features of the landscape can be mapped as points or lines on a base map, using various symbols to depict visual landmarks, special geologic and hydrologic features, paths of movement, and significant views and viewing points.

8.3.3 Overlay Resource Mapping

Another type of mapping that has come into common usage is the technique of overlaying single resource maps to display and analyze multiple combinations of resources. This method could be especially applicable to inventories of aesthetic resources where capabilities and suitabilities have been mapped for comparison to existing land uses to determine locations of non-permissible uses. Conflicts can thus be identified where aesthetic resources of high quality are being damaged by ill-planned land uses and development. The delineation of areas of particular concern on such maps, when overlain on existing maps of land use patterns, would facilitate identification of overlapping areas where restoration or enhancement may be needed.

8.3.4 Computer Mapping

Numerous efficient computer graphics programs (e.g., SYMAP) are available to display information gathered in the inventory process. Where field reconnaissance or aerial photo data can be digitized and spatially located on an orthogonal coordinate grid, these programs can map a range of values for any given single variable. However, for the results to be in a digitized, spatially located format, consideration has to be given back in the preparation stages for the recording of data on the field survey form. (Conversion of existing non-digitized results to an acceptable format is extremely inefficient, costly and of dubious value.)

Output most commonly is in the form of line printer graphics. If the use of this type of program is contemplated, research concerning allowable cell size (rarely square) and maximum array size should also be done during the preparation stage.

The advantages of these computerized techniques are that very large amounts of data can be stored and displayed and multiple combinations of data can be mapped for analysis of interrelationships between various resources.

Computer programs also exist to facilitate interpretation and visualization of topographic maps and aerial photos. Programs (e.g. SYMVU, VIEWIT) exist which can delineate viewsheds on topographic maps and produce oblique aerial views of given topographics.

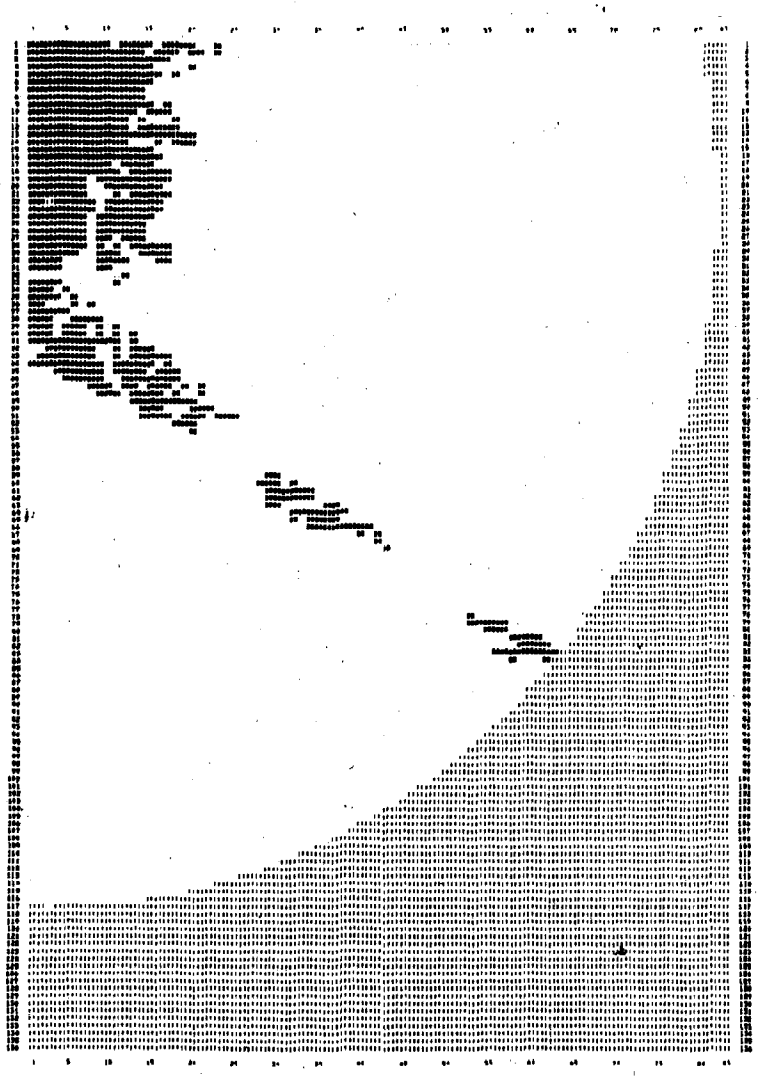


Figure 14—Computerized plotting by VIEWIT program, from a Landscape Control Point at Cache Creek, Jackson, Wyoming. Lines of sight scan the visible area. Data on elevations, by coordinates, are obtained from maps. Each cell in the grid covers 3.1 acres. For each cell, elevation is established by interpolation. The computer produces an overlay that shows the maximum area visible from the LCP.

Figure 8-3: Computer plotted lines of sight.
From Litton, USFS, 1973

8.4 Presentation Aids

8.4.1 Narrative

As with most planning reports, narrative information will of necessity have to be submitted with the mapped material and other graphic information to provide explanatory support and verbal interpretations of the analyses. Since most of the material relating to aesthetic resource assessment is easily communicable in graphic form, the narrative material should consist of short, concise summaries of the inventory and evaluation processes used, together with proper documentation where outside literature has been cited. If information is to be disseminated to the public and agency personnel unfamiliar with the assessment of aesthetic resources, the narrative material will be of invaluable help in relating the methods used and final conclusions.

8.4.2 Matrices and Charts

Where complex surveys of aesthetic resources have been conducted, the use of matrices and charts to display information will simplify and organize the material in a concise manner. Representative examples of field survey checklists, processing matrices and tables, and summary tables and charts of the evaluation findings will reduce the amount of narrative needed. The chart below (Fig. 8-4) illustrates how representative man-made shore landscape types (termed "shorescapes") can be evaluated by reconnaissance staff.

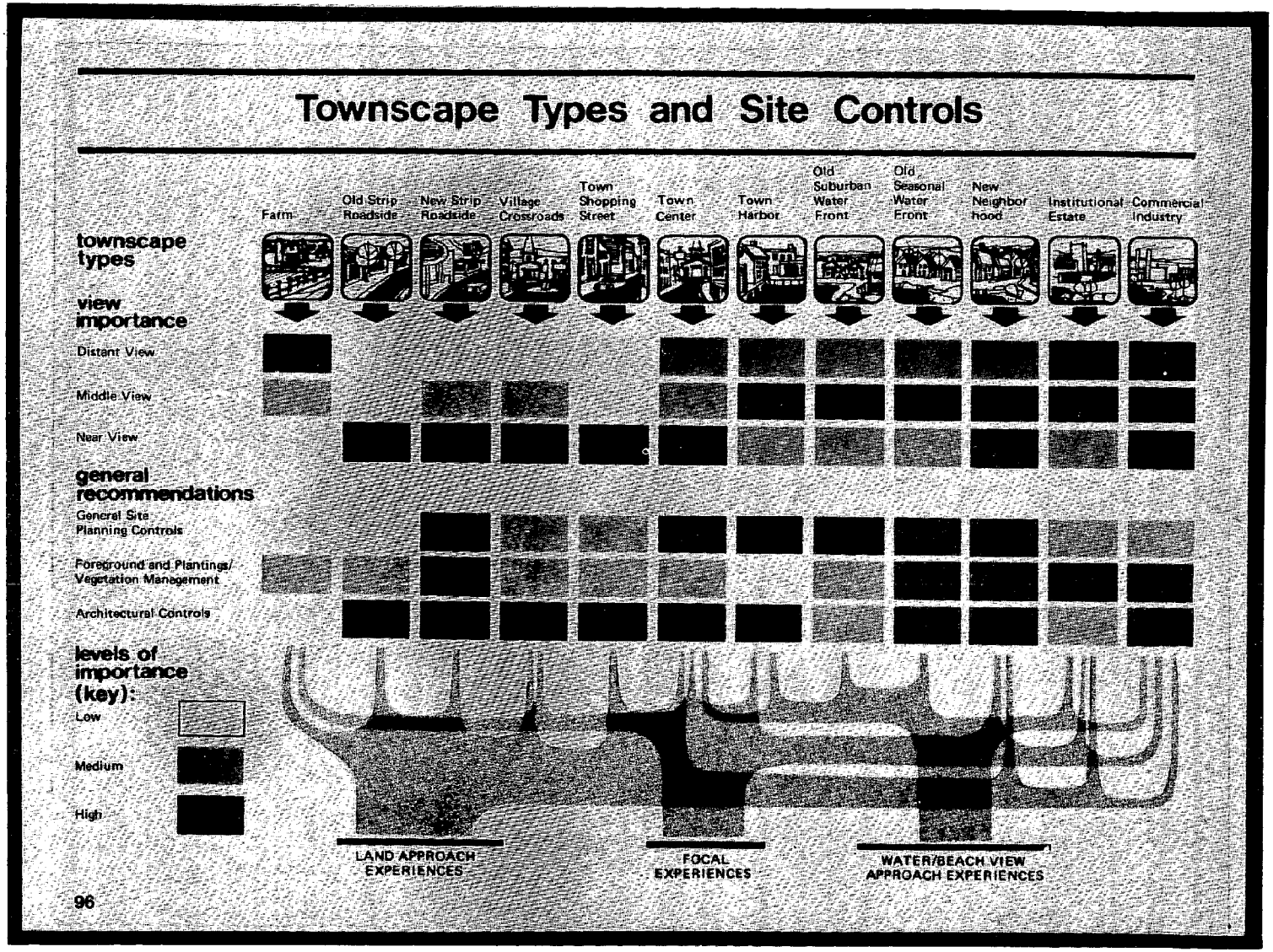


Figure 8-4: Guideline matrix.
Excerpted from LISS Shoreline Appearance and Design Handbook

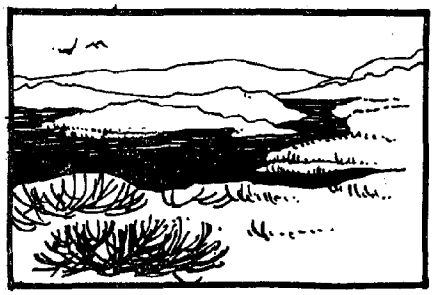
8.4.3 Plan Formats

Where representations of site scale aesthetic resources are needed to supplement the material mapped using the techniques discussed elsewhere in the report, plan view maps can aid in communicating aesthetic resource attributes and evaluations. Plan view maps are particularly essential to analyzing and explaining the spatial relationships of aesthetic resource elements, since the spatial dimensions play significant roles in influencing perceived aesthetic resource value.

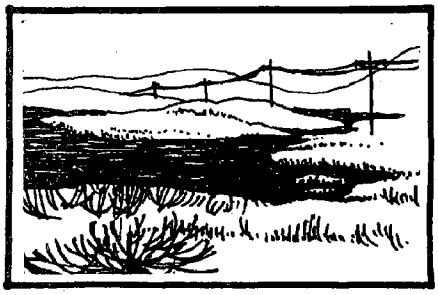
8.4.4 Eye-level pictorialization

In addition to the above mentioned techniques, eye-level pictorialization can be used to explain the concepts and terminology used to evaluate aesthetic resources, as shown in Figure 8-5 below. Simple line drawings or silhouettes will probably offer the most easily communicable media as well as the least time consuming.

(1) Pristine Viewscape, Visual Disturbance Absent



(3) Moderately Little Visual Disturbance/Physical Alteration



(6) High Degree of Visual Disturbance/Physical Alteration

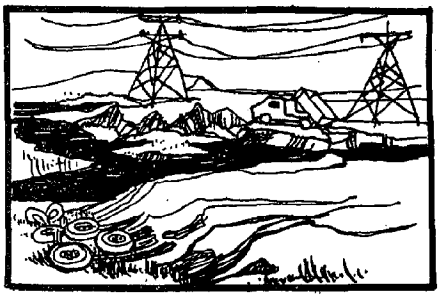


Figure 8-5: Eye level pictorialization adapted from: Jones and Jones, "A Technique for Environmental Decision Making Using Quantified Social and Aesthetic Values: Battelle Pacific Northwest Labs, 1974

CHAPTER 9: AESTHETIC RESOURCES EVALUATION - METHODS AND TECHNIQUES

9.0 Introduction

Chapter 7 gave a brief discussion of the purposes of aesthetic resource evaluation and delineated some of the decisions involved in carrying out such evaluation. This chapter addresses the techniques in greater detail, particularly emphasizing the advantages and disadvantages of professionally-derived vs. user-derived methods of evaluation.

9.1 Professionally-derived Methods

Professionally-derived methods are generally engaged in the assessment of aesthetic resources for either or both of the following purposes:

- to inventory aesthetic resource characteristics singly or in combination with more comprehensive planning goals, e.g., land-use, zoning;
- to determine potential visual impacts resulting from the introduction of man-made structures into natural landscape, e.g., power plant siting.

Within the professionally-derived category, evaluation methods can be either of a quantitative or qualitative nature, depending on the objectives of the evaluator. As implied in the dichotomy of classification, the quantitative methods attempt to assign a numerical value of an ordinal or interval nature to aesthetic resources while the qualitative methods merely seek to establish a rank order between aesthetic resource values. Despite this distinction, it must be emphasized that while the end products of the two classes of methods may differ, both rely on initial qualitative judgments. In other words, the assignment of quantitative values to aesthetic resources will in reality be dependent on qualitative judgments made at the outset.

shorescape analysis																						
shorescape				evaluation																		
reach	unit		patterns	topographic complexity	shoreline complexity	vegetative integrity	vegetative diversity	color (hue) ingredients	pictorial composition	vividness	shore dynamics	ecosystem continuity	near/far contrast	uniqueness	endangerment	true to form rurality	true to form townscapes	human dynamics	absence of detractions	instructive qualities	sail/island horizons	sensitivity to change
	№	name																				
	1	Morningside	Cuspate sandy beaches leading to straight beach with offshore rocks; edge rising somewhat steeply to Burwell Hill; urban development along shore; inland swamps.	▶▶▶	▶	▶▶▶	▶	▶▶▶	▶▶▶	▶▶▶	▶	▶	▶▶▶	▶▶▶	▶	▶	▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶
HOUSATONIC	4	Point Beach	Convex beach backed by some swampland and Merwin Hill; Point Beach highly developed; some sand bars off Pond Point.	▶	▶	▶	▶	▶	▶▶▶	▶	▶▶▶	▶	▶▶▶	▶▶▶	▶	▶	▶	▶	▶▶▶	▶	▶	▶
	3	Bayview	Concave beach at terminus of hummocky peninsula; Meadow Creek drains interior swamplands; Welches Point dominated by rock outcrops and groin development.	▶	▶▶▶	▶	▶	▶	▶▶▶	▶	▶▶▶	▶	▶▶▶	▶▶▶	▶	▶	▶	▶	▶▶▶	▶	▶	▶
	2	The Gulf	Shallow embayment with inlets draining into central portion; town of Milford; offshore islands; extensive swampland adjacent to Bar Island.	▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶	▶▶▶	▶▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶
	1	Nells Island	Braided river mouth and large deep swamp, protected by sand bar and hook; backed by fairly urbanized towns of Rivercliff and Devon; several offshore islands.	▶▶▶	▶▶▶▶	▶▶▶▶	▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶▶	▶▶▶▶	▶▶▶▶	▶▶▶▶	▶▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶▶	▶	▶▶▶▶
Subregion 4 BRIDGEPORT	6	Lordship Beach	Tombolo surrounded by crescent sandy beaches backed by marsh; housing on upper portions and along beach; airport dominant inland feature; offshore rocks toward Stratford Point.	▶	▶▶▶	▶▶▶	▶▶▶	▶	▶	▶▶▶	▶▶▶▶	▶▶▶	▶▶▶	▶	▶	▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶▶▶	▶

Figure 9-1: Analysis and Evaluation Matrix
LISS Shoreline Appearance and Design Handbook, 1975

9.1.1 Qualitative Evaluation Methods

Assuming a particular landscape(s) has been selected for evaluation with the objective of determining a non-numerical ranking of the values of its aesthetic attributes, the following procedural model is normally followed:

(1) Derivation of Qualitative Terms

The initial stage in most of the qualitative evaluation methods involves the development of a set of descriptive terms which can be used to define the aesthetic attributes of the landscape being

shorescape management					
areas of special scenic concern					
units included	atlas Nº	name	assets	deficits	management recommendations
Bayview The Gulf	15	The Gulf Area	Charles Island	Bulk material storage in Milford	Increase access to shores and view in Gulf Beach, Milford Harbor areas; provide access in seasonal housing areas Open up dense seasonal development on shore, particularly in Bayview and Silver Beach areas Manage historic assets in Milford
Nells Island Lordship Beach	16	Nells Island	Nells Island	Bridgeport Municipal Airport Connecticut Light and Power Plant Power lines Bulk material storage	Increase public access and view access to Nells Island area, and to islands in Housatonic River Open up built-over shores in Stratford, along the Housatonic and along the Sound Limit industrial uses on shores of the river

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studied. For example, Litton (1974) uses the terms: "unity, variety, and vividness" to evaluate aesthetic resource elements of water-edge landscapes. In the Long Island Sound Appearance and Design Element (1975), Roy Mann Associates employs qualitative evaluation terms such as those listed below, applicable to coastal aesthetic resources.

Topographic Complexity: an index of the diversity as well as the relative relief of an area's landforms (vertical qualities).

Shoreline Complexity: an index of the irregularity of the coastal interface between land and water (horizontal qualities).

Vegetative Integrity: unity of vegetative species or type forms within a single shorescape viewshed.

Vegetative Diversity: diversity of vegetative species or type forms within a single shorescape viewshed.

Color (Hue) Ingredients: color of natural elements (earth, vegetation, water, sky); a criterion that varies with seasons and weather.

Regardless of the terminology used (most express some form of complexity or diversity), it is extremely important for the evaluator to explicitly define the terms used to minimize vagueness and maximize the objectivity of the evaluation.

(2) Classification of aesthetic resource elements

Following development of a set of qualitative terms, the landscape elements which are believed to contribute to the overall scenic value are then identified and classified for subsequent evaluation by use of the qualitative terms. An example from the study by Litton is provided below, Table 9-1, in which the author identified aesthetic aspects of water in the landscape derived from the interrelationships of water, vegetation, and landform with human use and man-made change.

(3) Application of the qualitative terms to evaluate aesthetic resources

In this step, the two steps above are synthesized to evaluate th aesthetic resource elements of a particular landscape in non-numerical terms, much as "high," "medium," or "low" for each of the qualitative descriptors.

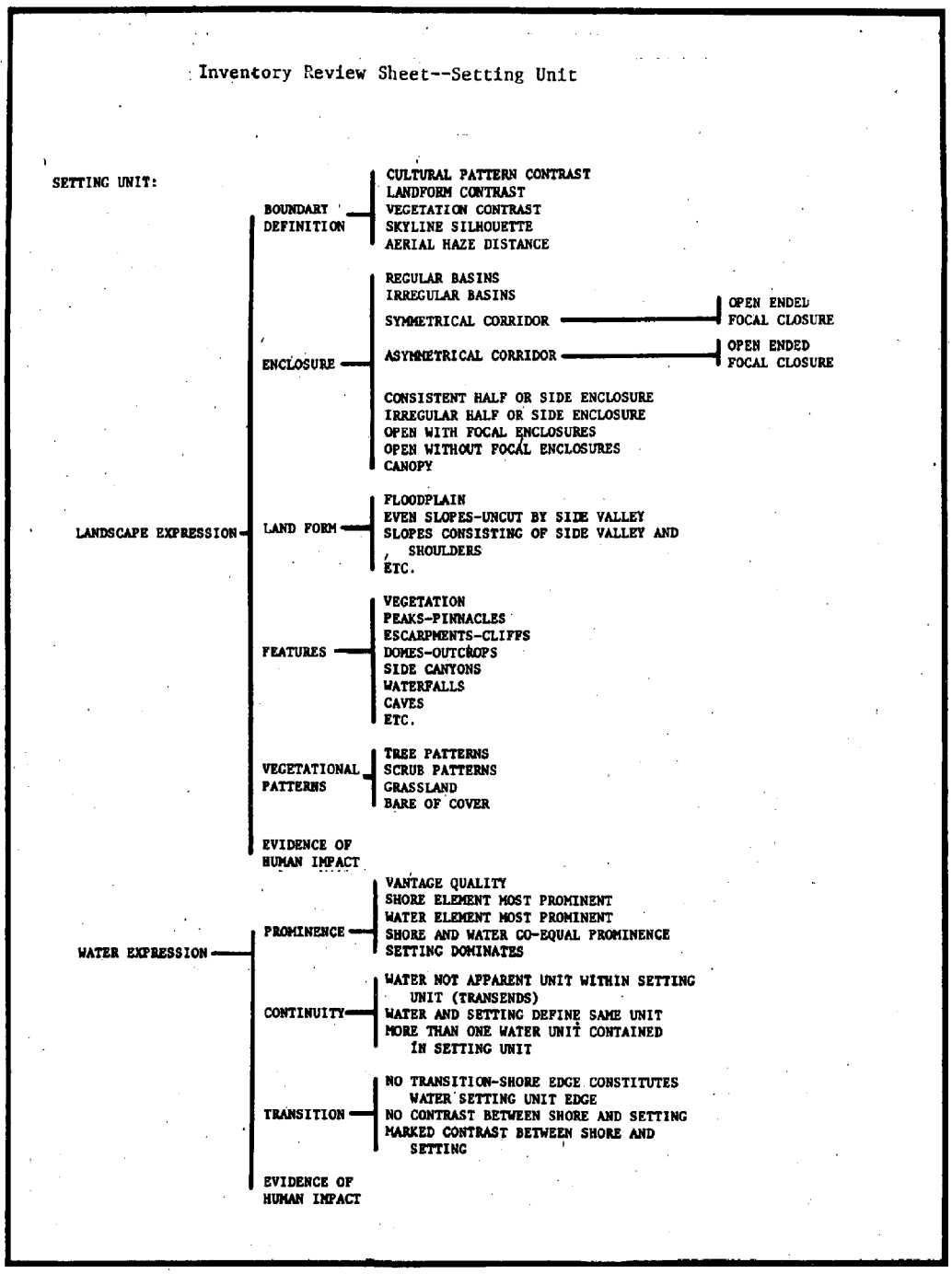


Figure 9-2: Landscape Classification. From Litton et al, Water and Landscape, 1974

Evaluations such as these are most useful for first order analyses of the relative qualities of aesthetic resources when uniform criteria are applied consistently throughout the evaluation process. However, when a more precise ranking on a numerical scale is needed, or when an assessment of the significance of aesthetic resources relative to non-aesthetic factors is required, such qualitative judgments may be less than convincing. The latter are better achieved through the use of the quantitative techniques described below.

9.1.2 Quantitative Evaluation Methods

Quantitative evaluation methods can be either of two types: independent or comprehensive. The independent methods are used when aesthetic resources are appraised independent of non-aesthetic factors. Comprehensive methods are employed when it is desired to compare values of aesthetic resources with non-aesthetic values (i.e., economic, social, or ecological values).

- Independent quantitative evaluation methods

  (1) Derivation of quantitative terms. As with the qualitative methods discussed above, a set of descriptive terms is usually developed to provide for a consistent and rational evaluation of the aesthetic resources of a landscape. For example, Jones and Jones (1974) advocate the use of the basic terms "intactness", "vividness", and "unity" to describe the visual quality of a landscape. These terms, as applied by Jones and Jones in several studies to evaluate the visual impacts of proposed development, are defined below:

Intactness: The intactness of a viewscape is a measure of its apparent degree of natural condition as judged by:
1) its level of urbanization
2) the degree to which encroachment is present

Vividness: The memorability of the visual impression received from the viewscape or its elements; relates to the level of distinction or prominence resulting from contrast to mutual accentuation of diverse viewscape elements. Complementary effects include:
1) definition of the viewscape boundary
2) diversity of spatial enclosure
3) degree of topographic relief
4) diversity of vegetative pattern
5) prominence of natural features
6) prominence of water forms
7) vividness of sky
8) vividness of man-made elements

Unity: The measure of the degree to which individual elements in the viewscape join together to form a single, coherent, harmonious visual unit.

(2) Classification of aesthetic Resource Elements. Classification of aesthetic resource elements is typically undertaken in a manner similar to that discussed above in the qualitative model. Some representative classification schemes from studies by Jones and Jones (1974), Sargent (1967), and Leopold (1969) include:

JONES & JONES Visual Resources of the Platte River Canyon:	SARGENT View Factors:	LEOPOLD Aesthetic Factors of River Sites
Profile and topographic relief	Distance of view	River width
Spatial enclosure	Variety of view	River pattern
Natural features	Depth of view	Bed slope
Vegetative patterns	Width of view	Basin area
Wildlife visibility	Intermittency of view	Stream order
Shoreline features	. . .	Erosion of banks
Waterform expression		Deposition
Manmade elements		Width of valley flat

Subdivision of the landscape into its component elements allows an evaluation to be made which avoids subjective determinations of overall scenic quality in the absence of a rational approach. It is much easier and far more objective to evaluate a landscape piece by piece and then to assimilate the findings into an overall rating, than to attempt to evaluate the landscape in its entirety from the outset.

(3) Application of the qualitative terms to quantitatively evaluate aesthetic resource elements. Once the landscape elements have been classified, each element is then evaluated using the qualitative terms developed above and a quantitative scale.

(4) Combining the ratings into an overall quantitative evaluation of aesthetic resources. Once the individual aesthetic resource elements have been evaluated, a quantitative summation of the scenic value of the landscape being studied can be derived. (This is particularly important for identifying areas of particular concern, designating areas to be restored or enhanced, and determining priorities for use, etc. under the CZMA where aesthetic attributes must be compared between sites.) This step usually involves developing formulas or a set of equations which can be used to assimilate the evaluations of individual aesthetic resource elements into

an overall measure of aesthetic value for the landscape. Two examples are presented below from studies by Research Planning and Design Associates (1970) and Jones and Jones (1974).

Table 9-1

Aesthetic Value Rating Formulas

RPDA	JONES AND JONES
CLV = (SV) (SW) + (UV) (UW)	VQ = 1/3(I + V + U)
where CLV = Combined Landscape Value	where VQ = Visual Quality
SV = Series Evaluation (High 9, Median 6, Low 3)	I = Intactness
SW = Series Weighting Value	V = Vividness
UV = Unit Evaluation (High 9, Median 6, Low 3)	U = Unity
UW = Unit Weighting Value	

- Comprehensive Quantitative Methods.

Other more comprehensive methods have been developed to quantify aesthetic resources so that aesthetic values can be appraised in concert with social, economic, and other environmental values. The independent methods discussed above provide a mechanism for rating one aesthetic resource against another; the comprehensive methods attempt to weigh aesthetic resources against non-aesthetic factors, such as physical-bio-chemical impacts, etc. Because of the difficulty in assigning numerical values to aesthetic factors so that they can be compared to other more easily quantified factors, these types of evaluation methods have not as yet attained the

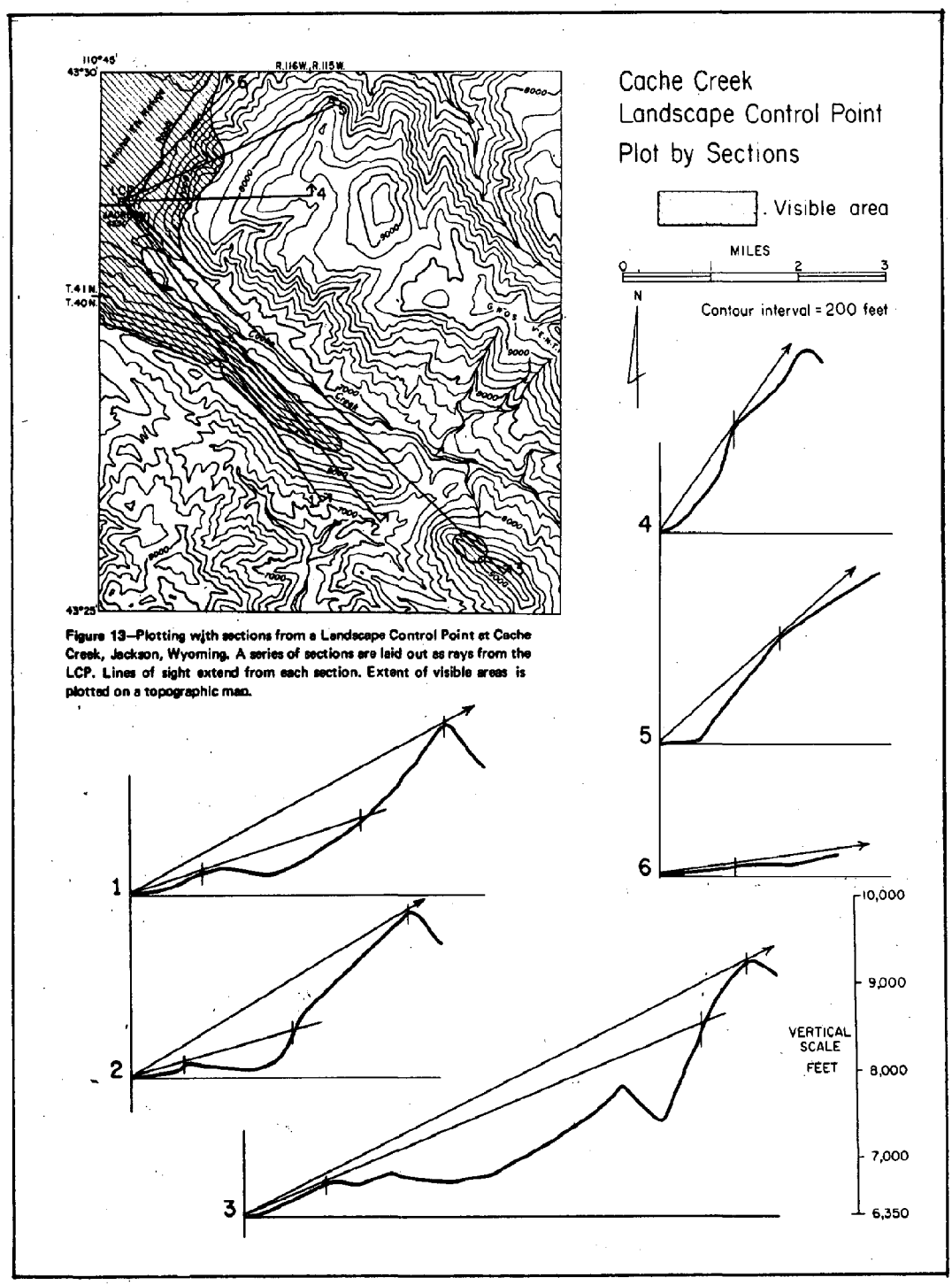


Figure 13—Plotting with sections from a Landscape Control Point at Cache Creek, Jackson, Wyoming. A series of sections are laid out as rays from the LCP. Lines of sight extend from each section. Extent of visible areas is plotted on a topographic map.

Figure 9'-3: Establishing local viewshed perimeters. Such procedures are equally useful in developing detailed knowledge of aesthetic resources in coastal units as part of on-going management planning and in predicting impacts of specific proposed actions. Excerpted from R. Burton Litton, Jr., Landscape Control Points: a Procedure for Predicting and Monitoring Visual Impacts, USDA Forest Service Research Paper PSW-91, 1973.

state-of-the-art attributed to the independent methods. Therefore, no attempt is made here to present an abstracted procedural model. Rather, representative methods are briefly discussed.

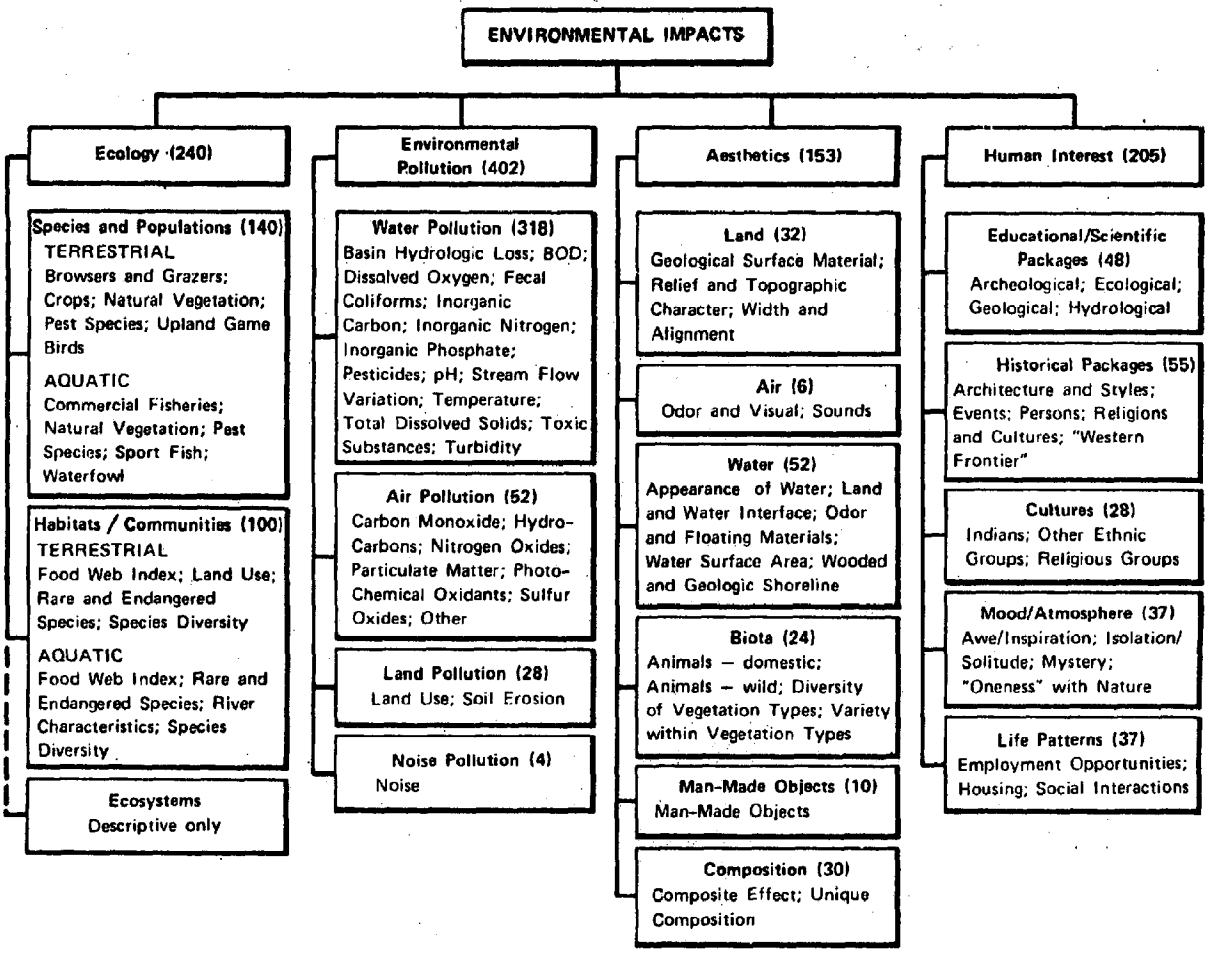
Comprehensive methods are included in the professionally-derived category because they have primarily been developed to evaluate overall environmental impacts of proposed developments or land uses, and because they rely heavily on professional judgments of aesthetic resource quality. In order to appraise aesthetic factors in the context of other environmental, social, and economic factors, aesthetic resources are usually assigned a numerical value indicative of the magnitude of quality of the aesthetic resource itself, and subsequently a numerical value which is a measure of the importance of the aesthetic resource vis a vis the other non-aesthetic factors being considered in the analysis.

One of the more well known systems developed along these lines is the "Procedure for Evaluating Environmental Impact" devised by Luna Leopold in 1971. In this simple, first order impact assessment method, aesthetic resources are sub-divided into: scenic views and vistas, wilderness qualities, open space qualities, landscape design, unique physical features, parks and reserves, monuments, rare and unique species and ecosystems, historical or archaeological sites and objectives, and presence of misfits. Each of these factors is evaluated as to "magnitude" of impact, either positive or adverse, and then as to "importance," i.e., the significance of the aesthetic resource impact relative to other physical impacts. The method, however, relies very heavily on professional judgments

of aesthetic value and considers only first-order, linear relationships between proposed development actions and impacts on aesthetic resource and other environmental factors.

A somewhat more sophisticated system is the "Environmental Evaluation System for Water Resource Planning" developed by Batelle-Columbus Laboratories for the Bureau of Reclamation in 1972 to assess environmental impacts of water resource development projects. As shown in the accompanying figure, Fig. 9-4, potential environmental impacts

Figure 9-4
ENVIRONMENTAL EVALUATION SYSTEM



Excerpted from: Batelle-Columbus Laboratories, 1972

were subdivided into four categories: ecology, environmental pollution, aesthetics, and human interest, which were further subdivided into separate parameters and assigned "parameter importance units" (e.g., aesthetics; land: 32 P.I.U.'s). Each parameter is then evaluated for the landscape under study on a scale from 0, "extremely bad quality," to 1, "extremely good quality" to determine an environmental quality index. The index is then multiplied by its parameter importance value to give a product, which is then summed up in a total environmental impact score for the landscape with and without the proposed development. Thus aesthetic parameters are quantified on a unit scale common to all the environmental parameters so that they can be evaluated accordingly.

Unfortunately this type of quantification of aesthetic parameters relies solely on professional subjective analyses and thus is bound to reflect biases, as noted by the system's authors. The weightings of the parameters, e.g., assigning the P.I.U.'s, is also done rather arbitrarily. However, when viewed in the context of the assumptions underlying these judgments, the method does provide a means for analyzing environmental impact over a wide range of factors including aesthetic factors as well as those more easily quantified.

In terms of their applicability to the evaluation of the aesthetic resources of the coastal zone, comprehensive methods such as those discussed above represent initial steps in the right direction. For instance, due to the extremely sensitive nature of many coastal zone ecosystems and the high real estate values associated with coastal lands, it may frequently be necessary to quantify aesthetic

values so that they can be weighed against other, non-aesthetic values. In this sense, comprehensive quantification of aesthetic resources may be particularly important for determining "priority uses" and designating areas for "restoration" or "enhancement." However, much additional research is needed at present to provide a more empirical foundation for assigning values to aesthetic resources which can be compared to other, non-aesthetic values.

9.2 User-derived Evaluation Methods

In contrast to professionally-derived methods, which are applied to determine inherent aesthetic resource values, user-derived methods are utilized to evaluate aesthetic resources on the basis of user perception or user demands. User perception methods are those which assess aesthetic resources on the basis of evaluations elicited from a selected sample or samples of viewers, often on the basis of analyses of demand (e.g., number of visitor days). As was done in the professionally-derived section, examples from representative studies have been organized into a general procedural model for the first category of methods. The user demand method is then only briefly discussed, as it is generally concluded that user demand methods are less effective for evaluating aesthetic resources.

9.2.1 User Perception Model

Given the selection of a particular landscape to be evaluated, user-perception methods generally conform to the following procedural model.

(1) Pre-determination of Aesthetic Resource Factors Influencing Perceived Scenic Values

The initial stage of the process usually involves using professional judgment to determine the factors and characteristics of aesthetic resources which affect perceived scenic value. For example, several studies have been concerned with the evaluation of aesthetic resources of water-related landscapes in which physical and visual attributes of the landscape were identified as potential influences on perceived scenic quality. Examples of these influencing factors from Morisawa (1971) and Pitt (1973), follow:

Morisawa: Factors Affecting Perceived Scenic Quality of Riverine Landscapes	Pitt: Physical Dimensions of Landscapes Adjacent to Rivers Affecting Perceived Scenic Quality
-vista	-mean height of streambank vegetation
-color	-maximum height of streambank vegetation
-vegetation	-distance between vegetation
-relief	-mean height of vegetation/ distance between vegetation
-serenity	-mean height of valley walls
-naturalness	-maximum height of valley walls
-accessibility	-width of valley floor
-water appearance	-mean height of valley/width of valley
-pollution and litter	-mean slope of valley walls
	-maximum slope of valley walls
	-stream order

In another study, undertaken by Craik (1972), the following landscape dimensions were identified as influencing the perception of scenic qualities:

- -observer position
- -extent of view
- -amount of foreground, background
- -panoramic view
- -direction of lighting
- -vertical enclosure which blocks off line of vision
- -isolated forms
- -surface shape seen as outline
- -focal views
- -cloud character

Pre-determination of these factors or dimensions of aesthetic resources is done to develop a set of hypotheses regarding the effects of these characteristics on perceived scenic value. The hypotheses are then tested for a selected sample of sites and a selected viewing sample to test the correlation between the varying elements and viewer evaluations. Depending on the validity and reliability of these analyses (using standard statistical techniques), the results may then be generalized to predict viewers' evaluation of aesthetic resources of other landscapes.

(2) Development of Rating Scales

Once the elements of aesthetic resources influencing perceived scenic values have been identified, the next step may involve developing a rating scale which can be used to predict how varying combinations and intensities of the factors or dimensions will affect perceived scenic values. Shafer and Mietz (1970) identified the dimensions of eight zones (within a landscape photograph) as the major influences on perceived scenic values and computed the areas and perimeters of the zones

to predict a landscape's preference score.

Other methods of predictive rating include that described in the North Atlantic Regional Water Resources Study (Research Planning and Design Associates, 1970) which were subjected to further testing by perceptual methods, e.g.:

> "Scenic value is a function of relative landform elevation and diversity of land use pattern. As relative elevation decreases in magnitude, diversity of land use pattern increases in importance for the maintenance of high scenic value." (Zube, Pitt, Anderson, 1974)

(3) Selection of a Viewing Sample

In order to elicit evaluative responses of the perceived value of aesthetic resources, samples of design professionals or more diverse groups are typically selected to view the landscape under study. Several studies have been undertaken (Craik 1972; Coughlin and Goldstein 1970; Fines, 1968; Zube, Pitt and Anderson, 1974) to analyze the congruence of expert and non-expert values. Generally these studies conclude that evaluations of aesthetic resource values will exhibit agreement among diverse groups of viewers, with the constraint that ratings be compared for broad ordinal scales, (e.g., high, medium, low) rather than on more specific interval scales (e.g., "rate a landscape on a scale from 1-10"). The selection of the viewing sample will in most cases depend on the time and resources available to the investigator in soliciting volunteers.

(4) Development of View Evaluation Method

Having selected a viewing sample, usually from 40 to 100 people, a method is then devised for viewing the landscape(s) being studied. Vantage points are initially determined from which the landscape is

directly viewed or from which color slides or black and white photographs are taken for off-site viewing. Sketches of the site may also be used, alone or in combination with the above. Zube, Pitt and Anderson (1974) suggest that color photos produce no significant differences from on-site visitation, if care is taken to avoid artificial enframement.

Questionnaires are usually developed to solicit the viewers' evaluations during the viewing sessions. Craik (1972) and others suggest the use of questions which ask the viewer to appraise the landscape on an elemental, evaluative level rather than on a preferential basis, thus avoiding questions which would elicit responses relating to the preferred use of a landscape. "Evaluative" judgments are also representative among a wider cross-section of people and are thus preferred if results are to be statistically expanded.

(5) Findings Analysis/Landscape Ranking

Statistical methods, such as regression analysis or factor analysis are then typically employed to analyze the viewer evaluations in order to correlate actual aesthetic resource characteristics with the evaluations of perceived scenic values. For example, Craik (1972) reached the following tentative conclusions:

a) The sense of vertical enclosure which blocks off the line of vision directly ahead of the observer is negatively related to aesthetic appeal.

b) The degree to which a scene contains a focal view directing the line of vision along a prescribed pathway is positively related to aesthetic appeal.

c) An extent of view greater than three miles is positively related to aesthetic appeal.

d) A panoramic view, either a sweeping or horizontal expanse, is positively related to aesthetic appeal.

e) The presence of clouds is positively related to aesthetic appeal.

The findings may also be used to rank the aesthetic resources in terms of their perceived scenic value, as in the Shafer study (1970) where "landscape preference scores" were used to rank seven landscapes in each of two sets of photographs. Alternatively, the evaluations can be utilized (assuming consensus exists) to substantiate prior professional judgments as to the value of aesthetic resources at a site.

9.2.2 Attractivity Analysis Methods

Another means of evaluating aesthetic resources is to measure the demand for the use of the resource. This technique has been traditionally oriented to recreational resource management, where there is a more easily quantifiable product, e.g., the visitor to a recreation facility. In theory, aesthetic resources are "demanded" by users, thus indicating that the quantity and frequency of visitations to a site should represent to some degree the scenic value of the aesthetic resources. Specific examples of this kind of demand measurement would include counts of visitors stopping at a scenic overlook to observe a panoramic view, or counts of people walking down a particular stretch of beach. Theoretically, those resources which attract more people are more valuable.

While this technique in a sense removes the evaluation of aesthetic resources from an intellectual or judgmental exercise to a more

realistic frame of reference, (e.g., hard physical data: visitor days) there are certain disadvantages to the use of this method. Primary among these is the difficulty in assessing whether the aesthetic resources of a particular site or landscape are affecting user demand more significantly than other variables (e.g., distance, access, fuel availability, cost, publicity, etc.). The relative locations of alternative aesthetic resources may frequently affect the demand for an aesthetic resource to a greater extent than the quality of the aesthetic resource itself.

9.3 Summary

In the foregoing sections, representative aesthetic resource evaluation methods have been presented as conforming to one of five basic organizational models or categories. Selection of any of these existing methods or development of new techniques will depend to a large extent on the objectives of the evaluator and the time, resources, and skills available. However, in order to provide the planner with a list of criteria for developing an aesthetic resource evaluation process suitable to individual program needs and capabilities, a list of basic considerations is presented below:

* Scale: Applicability of the method to a range of landscape scales, i.e., site-local-regional.

* Universality: Applicability of the method to a variety of geographical conditions and aesthetic resource attributes.

* Implementation Requirements:
  a) Need for specially trained personnel and outside expertise;
  b) Need for specialized equipment; computer facilities and sophisticated data collection, processing and analysis techniques.

- Systematicness: Applicability and validity of the theoretical basis of the method; ease with which the method can be applied

- Flexibility: Compatibility of the method with other planning program elements.

- Relevance of the Method to Program Objectives:
  a) Determining permissible uses;
  b) Designating areas of particular concern;
  c) Assessing aesthetic resource impacts;
  d) Determining priorities of use.

Each of the five basic categories of evaluation methods discussed in this chapter will satisfy the above general criteria in varying degrees. The planner should utilize the criteria prior to developing an evaluation method(s) such that individual program objectives, needs and capabilities can be adequately defined.

GLOSSARY: Coastal Aesthetics

Bluff:	A steep landform, generally lying parallel to a shore or river
Captive view:	A view seen from a transportation corridor (street, highway, railroad) which is unavoidable to most travellers
Coastal reach:	Aggregate of shorescape units within recognizable geomorphological divisions
Coastal tiers:	*Offshore:* from the outward limit of regional waters to the spring low tide line *Shore and estuary:* from spring low tide to record high water *Upper shoreland:* from record high water to the limit of the viewshed
Deficit:	An element exhibiting a lack of positive aesthetic quality
Diversity:	The quality of the landscape which expresses variety of forms perceived on land or water
Eyesore:	An element exhibiting gross inconsistency with aesthetic standards
Fragility/sensitivity:	The quality of landscape resources which expresses their susceptibility to value reduction as the result of modification by man
Headlands:	High points on the shore which act as guides to the eye and provide closure to units of shorescape
Intrusion:	An element exhibiting incompatibility with the surrounding natural or man-made environment
Landscape:	The total visible terrain
Mass:	The total expanse and bulk of a structure, including all three dimensions, usually perceived by the viewer from a short distance
Regional viewshed:	The area bounded by those topographical limits most commonly considered inland horizons as seen from resources and settlements acknowledged as of importance to the coastal zone community
Rise:	A shallow landform merging with distant heights
Shorescape unit:	Length of shore visible between headlands from a single point in the near shore zone
Silhouette:	The two-dimensional appearance of a structure as it appears on the horizon
Texture:	Composition and appearance of the building materials of a structure; general appearance and density of vegetation, natural and planted by man
Townscape:	A visually coherent group of man-made structures
Viewpoint:	Point on land or a building from which one or more views of any type can be seen; high priority viewpoints provide access to views of high scenic interest
Viewshed: (local)	Visible shorelands and islands extending up to the distant high ridge or peaks most commonly viewed as the shore horizon by coastal viewers.

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