

Virginia Wetlands Management Handbook

2nd Edition

Prepared by

Wetlands Program

Virginia Institute of Marine Science
College of William and Mary

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Editor

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INTRODUCTION

This handbook has been compiled and edited for the purpose of serving as a standardized, ready reference for Virginia wetlands board members and the staff persons who support the boards' volunteer efforts. The handbook contains up-to-date copies of laws, guidelines, policies, and informational statements such as Attorneys' General opinions pertinent to wetlands and dune management in Virginia. In addition, technical reports and advisories published and distributed by the Wetlands Program of the Virginia Institute of Marine Science, College of William and Mary are included. Beyond these staples of Virginia coastal management, discussions of the permit process and the respective roles of the Virginia Marine Resources Commission and the Virginia Institute of Marine Science are illuminated. This latter information should be especially helpful to new appointees who wish to familiarize themselves with not only their specific roles as wetland and dune managers, but also with the overall shoreline management process within which the local wetlands boards play an integral role.

One of the primary motivations behind the production of this handbook is the need to institutionalize the experience and technical base accumulated during the near quarter century operation of the wetlands management program, given the necessary turnover involved with a decentralized volunteer management system. The handbook is also designed to be constantly updated and revised. **We urge each person who is issued one of these volumes to aid in keeping the handbook up-to-date by adding all new documents or reports to the appropriate notebook section as they are issued.**

These manuals are being provided to the localities and are intended to be assigned to each staff and board member position. The handbook is to be handed down to his or her successor as each board member or staff person leaves office. **Keeping the handbook updated is of great consequence given the importance of providing accurate and complete resource materials to new board appointees as soon as they assume their positions on the regulatory body.**

ACKNOWLEDGEMENTS

Cover Photograph—The picture of the wetlands, dunes and old Coast Guard station on Cedar Island, Accomack County, was taken by Mr. Walter I. Priest, III, VIMS Wetlands Program. The photograph embodies coastal management by depicting the changing face of the shoreline, wetlands and dunes along with man's presence and his attempts to control the natural system.

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Article 1. General Provisions.

§ 28.2-1300. Definitions.

As used in this chapter, unless the context requires a different meaning:

“Back Bay and its tributaries” means the following, as shown on the United States Geological Survey Quadrangle Sheets for Virginia Beach, North Bay, and Knotts Island: Back Bay north of the Virginia-North Carolina state line; Capsies Creek north of the Virginia-North Carolina state line; Deal Creek; Devil Creek; Nawney Creek; Redhead Bay, Sand Bay, Shippis Bay, North Bay, and the waters connecting them; Beggars Bridge Creek; Muddy Creek; Ashville Bridge Creek; Hells Point Creek; Black Gut; and all coves, ponds and natural waterways adjacent to or connecting with the above-named bodies of water.

“County, city, or town” means the governing body of the county, city, or town.

“Governmental activity” means any of the services provided by the Commonwealth or a county, city, or town to its citizens for the purpose of maintaining public facilities, including but not limited to, such services as constructing, repairing and maintaining roads; providing street lights and sewage facilities; supplying and treating water; and constructing public buildings.

“Nonvegetated wetlands” means unvegetated lands lying contiguous to mean low water and between mean low water and mean high water, including those unvegetated areas of Back Bay and its tributaries and the North Landing River and its tributaries subject to flooding by normal and wind tides but not hurricane or tropical storm tides.

“North Landing River and its tributaries” means the following, as shown on the United States Geological Survey Quadrangle Sheets for Pleasant Ridge, Creeds, and Fentress: the North Landing River from the Virginia-North Carolina line to Virginia Highway 165 at North Landing Bridge; the Chesapeake and Albemarle Canal from Virginia Highway 165 at North Landing Bridge to the locks at Great Bridge; and all named and unnamed streams, creeks and rivers flowing into the North Landing River and the Chesapeake and Albemarle Canal except West Neck Creek north of Indian River Road, Pocatay River west of Blackwater Road, Blackwater River west of its forks located at a point approximately 6400 feet due west of the point where Blackwater Road crosses the Blackwater River at the Village of Blackwater, and Millbank Creek west of Blackwater Road.

“Vegetated wetlands” means lands lying between and contiguous to mean low water and an elevation above mean low water equal to the factor one and one-half times the mean tide range at the site of the proposed project in the county, city, or town in question, and upon which is growing any of the following species: saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*), saltgrass (*Distichlis spicata*), black needlerush (*Juncus roemerianus*), saltwort (*Salicornia* spp.), sea lavender (*Limonium* spp.), marsh elder (*Iva frutescens*), groundsel bush (*Baccharis halimifolia*), wax myrtle (*Myrica* sp.), sea oxeye (*Bor-*

richia frutescens), arrow arum (*Peltandra virginica*), pickerelweed (*Pontederia cordata*), big cordgrass (*Spartina cynosuroides*), rice cutgrass (*Leersia oryzoides*), wildrice (*Zizania aquatica*), bulrush (*Scirpus validus*), spikerush (*Eleocharis* sp.), sea rocket (*Cakile edentula*), southern wildrice (*Zizaniopsis miliacea*), cattail (*Typha* spp.), three-square (*Scirpus* spp.), buttonbush (*Cephalanthus occidentalis*), bald cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica*), tupelo (*Nyssa aquatica*), dock (*Rumex* spp.), yellow pond lily (*Nuphar* sp.), marsh fleabane (*Pluchea purpurascens*), royal fern (*Osmunda regalis*), marsh hibiscus (*Hibiscus moscheutos*), beggar's tick (*Bidens* sp.), smartweed (*Polygonum* sp.), arrowhead (*Sagittaria* spp.), sweet flag (*Acorus calamus*), water hemp (*Amaranthus cannabinus*), reed grass (*Phragmites communis*), or switch grass (*Panicum virgatum*).

"Vegetated wetlands of Back Bay and its tributaries" or "vegetated wetlands of the North Landing River and its tributaries" means all marshes subject to flooding by normal and wind tides, but not hurricane or tropical storm tides, and upon which is growing any of the following species: saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*), black needlerush (*Juncus roemerianus*), marsh elder (*Iva frutescens*), groundsel bush (*Baccharis halimifolia*), wax myrtle (*Myrica* sp.), arrow arum (*Peltandra virginica*), pickerelweed (*Pontederia cordata*), big cordgrass (*Spartina cynosuroides*), rice cutgrass (*Leersia oryzoides*), wildrice (*Zizania aquatica*), bulrush (*Scirpus validus*), spikerush (*Eleocharis* sp.), cattail (*Typha* spp.), three-square (*Scirpus* spp.), dock (*Rumex* sp.), smartweed (*Polygonum* sp.), yellow pond lily (*Nuphar* sp.), royal fern (*Osmunda regalis*), marsh hibiscus (*Hibiscus moscheutos*), beggar's tick (*Bidens* sp.), arrowhead (*Sagittaria* sp.), water hemp (*Amaranthus cannabinus*), reed grass (*Phragmites communis*), or switch grass (*Panicum virgatum*).

"Wetlands" means both vegetated and nonvegetated wetlands.

"Wetlands board" or "board" means a board created pursuant to § 28.2-1303.

"Wetlands zoning ordinance" means the ordinance set forth in § 28.2-1302. (1972, c. 711, § 62.1-13.2; 1973, c. 388; 1974, c. 297; 1975, c. 268; 1979, c. 524; 1982, c. 300; 1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

Law Review. - For note on purposes and types of wetlands regulation, see 58 Va. L. Rev. 876 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

§ 28.2-1301. Powers and duties of the Commission.

A. The Commission may receive gifts, grants, bequests, and devises of wetlands and money which shall be held for the uses prescribed by the donor, grantor, or testator and in accordance with the provisions of this chapter. The Commission shall manage any wetlands it receives so as to maximize their ecological value.

B. The Commission shall preserve and prevent the despoliation and destruction of wetlands while accommodating necessary economic development in a manner consistent with wetlands preservation.

C. The Commission shall manage all unappropriated marsh or meadowlands lying on the Eastern Shore of Virginia which remain ungranted pursuant to the provisions of § 41.1-4.

D. In order to perform its duties under this section and to assist counties, cities, and towns in regulating wetlands, the Commission shall promulgate and periodically update guidelines which scientifically evaluate vegetated and nonvegetated wetlands by type and describe the consequences of use of these wetlands types. The Virginia Institute of Marine Science shall provide advice and assistance to the Commission in developing these guidelines by evaluating wetlands by type and continuously maintaining and updating an inventory of vegetated wetlands.

E. In developing guidelines or regulations under this chapter the Commission shall consult with all affected state agencies. Consistent with other legal rights, consideration shall be given to the unique character of the Commonwealth's tidal wetlands which are essential for the production of marine and inland wildlife, waterfowl, finfish, shellfish and flora; serve as a valuable protective barrier against floods, tidal storms and the erosion of the Commonwealth's shores and soil; are important for the absorption of silt and pollutants; and are important for recreational and aesthetic enjoyment of the people and for the promotion of tourism, navigation and commerce. (1972, c. 711, §§ 62.1-13.1, 62.1-13.4, 62.1-13.17; 1982, c. 300; 1990, c. 811; 1992, c. 836.)

Cross references. - As to application of the Open-Space Land Act to wetlands. see § 10.1-1700.

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article assessing the adequacy of Virginia's water policy, see 14 Wm. & Mary L. Rev. 312 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973). For comment on nonpoint pollution control in Virginia, see 13 U. Rich. L. Rev. 539 (1979). For article, "The Unresolved Structure of Property Rights in the Virginia Shore," see 24 Wm. & Mary L. Rev. 727 (1983).

Article 2. Wetlands Zoning Ordinance and Wetlands Boards.

§ 28.2-1302. Adoption of wetlands zoning ordinance; terms of ordinance.

Any county, city or town may adopt the following ordinance, which, after October 1, 1992, shall serve as the only wetlands zoning ordinance under which any wetlands board is authorized to operate. Any county, city, or town which has adopted the ordinance prior to October 1, 1992, shall amend the ordinance to conform it to the ordinance contained herein by October 1, 1992.

Wetlands Zoning Ordinance

§ 1. The governing body of _____ acting pursuant to Chapter 13 (§ 28.2-1300 et seq.) of Title 28.2 of the Code of Virginia, adopts this ordinance regulating the use and development of wetlands.

§ 2. As used in this ordinance, unless the context requires a different meaning:

“Back Bay and its tributaries” means the following, as shown on the United States Geological Survey Quadrangle Sheets for Virginia Beach, North Bay, and Knotts Island: Back Bay north of the Virginia-North Carolina state line; Capsies Creek north of the Virginia-North Carolina state line; Deal Creek; Devil Creek; Nawney Creek; Redhead Bay, Sand Bay, Shipps Bay, North Bay, and the waters connecting them; Beggars Bridge Creek; Muddy Creek; Ashville Bridge Creek; Hells Point Creek; Black Gut; and all coves, ponds and natural waterways adjacent to or connecting with the above-named bodies of water.

“Commission” means the Virginia Marine Resources Commission.

“Commissioner” means the Commissioner of Marine Resources.

“Governmental activity” means any of the services provided by this _____ (county, city, or town) to its citizens for the purpose of maintaining this _____ (county, city, or town) including but not limited to such services as constructing, repairing and maintaining roads; providing sewage facilities and street lights; supplying and treating water; and constructing public buildings.

“Nonvegetated wetlands” means unvegetated lands lying contiguous to mean low water and between mean low water and mean high water, including those unvegetated areas of Back Bay and its tributaries and the North Landing River and its tributaries subject to flooding by normal and wind tides but not hurricane or tropical storm tides.

“North Landing River and its tributaries” means the following, as shown on the United States Geological Survey Quadrangle Sheets for Pleasant Ridge, Creeds, and Fentress: the North Landing River from the Virginia-North Carolina line to Virginia Highway 165 at North Landing Bridge; the Chesapeake and Albemarle Canal from Virginia Highway 165 at North Landing Bridge to the locks at Great Bridge; and all named and unnamed streams, creeks and rivers flowing into the North Landing River and the Chesapeake and Albemarle Canal except West Neck Creek north of Indian River Road, Pocaty River west of Blackwater Road, Blackwater River west of its forks located at a point approximately 6400 feet due west of the point where Blackwater Road crosses the Blackwater River at the village of Blackwater, and Millbank Creek west of Blackwater Road.

“Person” means any individual, corporation, partnership, association, company, business, trust, joint venture, or other legal entity.

“Vegetated wetlands” means lands lying between and contiguous to mean low water and an elevation above mean low water equal to the factor one and one-half times the mean tide range at the site of the proposed project in the county, city, or town in question, and upon which is growing any of the following species: saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*), saltgrass (*Distichlis spicata*), black needlerush (*Juncus roemerianus*), saltwort (*Salicornia* spp.), sea lavender (*Limonium* spp.), marsh elder (*Iva frutescens*), groundsel bush (*Baccharis halimifolia*), wax myrtle (*Myrica* sp.), sea oxeye (*Borrchia frutescens*), arrow arum (*Peltandra virginica*), pickerelweed (*Pontederia cordata*), big cordgrass (*Spartina cynosuroides*), rice cutgrass (*Leersia oryzoides*), wildrice (*Zizania aquatica*), bulrush (*Scirpus validus*), spikerush (*Eleocharis* sp.), sea rocket (*Cakile edentula*), southern wildrice (*Zizaniopsis miliacea*), cattail (*Typha* spp.), three-square (*Scirpus* spp.), buttonbush (*Cephalanthus occidentalis*), bald cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica*), tupelo (*Nyssa aquatica*), dock (*Rumex* spp.), yellow pond lily (*Nuphar* sp.), marsh fleabane (*Pluchea purpurascens*), royal fern (*Osmunda regalis*), marsh hibiscus (*Hibiscus moscheutos*), beggar’s tick (*Bidens* sp.), smartweed (*Polygonum* sp.), arrowhead (*Sagittaria* spp.), sweet flag (*Acorus calamus*), water hemp (*Amaranthus cannabinus*), reed grass (*Phragmites communes*), or switch grass (*Panicum virgatum*).

“Vegetated wetlands of Back Bay and its tributaries” or “vegetated wetlands of the North Landing River and its tributaries” means all marshes subject to flooding by normal and wind tides but not hurricane or tropical storm tides, and upon which is growing any of the following species: saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*), black needlerush (*Juncus roemerianus*), marsh elder (*Iva frutescens*), groundsel bush (*Baccharis halimifolia*), wax myrtle (*Myrica* sp.), arrow arum (*Peltandra virginica*), pickerelweed (*Pontederia cordata*), big cordgrass (*Spartina cynosuroides*), rice cutgrass (*Leersia oryzoides*), wildrice (*Zizania aquatica*), bulrush (*Scirpus validus*), spikerush (*Eleocharis* sp.), cattail (*Typha* spp.), three-square (*Scirpus* spp.), dock (*Rumex* sp.), smartweed (*Polygonum* sp.), yellow pond lily (*Nuphar* sp.), royal fern (*Osmunda regalis*), marsh hibiscus (*Hibiscus moscheutos*), beggar’s tick (*Bidens* sp.), arrowhead (*Sagittaria* sp.), water hemp (*Amaranthus cannabinus*), reed grass (*Phragmites communis*), or switch grass (*Panicum virgatum*).

“Wetlands” means both vegetated and nonvegetated wetlands.

“Wetlands board” or “board” means a board created pursuant to § 28.2-1303 of the Code of Virginia.

§ 3. The following uses of and activities in wetlands are authorized if otherwise permitted by law:

1. The construction and maintenance of noncommercial catwalks, piers, boathouses, boat shelters, fences, duckblinds, wildlife management shelters, footbridges, observation decks and shelters and other similar structures, provided that such structures are so constructed on pilings as to permit the reasonably unobstructed flow of the tide and preserve the natural contour of the wetlands;
 2. The cultivation and harvesting of shellfish, and worms for bait;
 3. Noncommercial outdoor recreational activities, including hiking, boating, trapping, hunting, fishing, shellfishing, horseback riding, swimming, skeet and trap shooting, and shooting on shooting preserves, provided that no structure shall be constructed except as permitted in subdivision 1 of this section;
 4. Other outdoor recreational activities, provided they do not impair the natural functions or alter the natural contour of the wetlands;
 5. Grazing, haying, and cultivating and harvesting agricultural, forestry or horticultural products;
 6. Conservation, repletion and research activities of the Commission, the Virginia Institute of Marine Science, the Department of Game and Inland Fisheries and other conservation-related agencies;
 7. The construction or maintenance of aids to navigation which are authorized by governmental authority;
 8. Emergency measures decreed by any duly appointed health officer of a governmental subdivision acting to protect the public health;
 9. The normal maintenance and repair of, or addition to, presently existing roads, highways, railroad beds, or facilities abutting on or crossing wetlands, provided that no waterway is altered and no additional wetlands are covered;
 10. Governmental activity in wetlands owned or leased by the Commonwealth or a political subdivision thereof; and
 11. The normal maintenance of manmade drainage ditches, provided that no additional wetlands are covered. This subdivision does not authorize the construction of any drainage ditch.
- § 4. A. Any person who desires to use or develop any wetland within this _____ (county, city, or town), other than for the purpose of conducting the activities specified in § 3 of this ordinance, shall first file an application for a permit directly with the wetlands board or with the Commission.

B. The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances or facilities, including those on adjacent uplands; a description of the type of equipment to be used and the means of equipment access to the activity site; the names and addresses of owners of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; any secondary purposes of the project, including further projects; the public benefit to be derived from the proposed project; a complete description of measures to be taken during and after the alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require.

C. A nonrefundable processing fee shall accompany each permit application. The fee shall be set by the applicable governing body with due regard for the services to be rendered, including the time, skill, and administrator's expense involved.

§ 5. All applications, maps, and documents submitted shall be open for public inspection at the office designated by the applicable governing body and specified in the advertisement for public hearing required under § 6 of this ordinance.

§ 6. Not later than sixty days after receipt of a complete application, the wetlands board shall hold a public hearing on the application. The applicant, local governing body, Commissioner, owner of record of any land adjacent to the wetlands in question, known claimants of water rights in or adjacent to the wetlands in question, the Virginia Institute of Marine Science, the Department of Game and Inland Fisheries, the Water Control Board, the Department of Transportation, and any governmental agency expressing an interest in the application shall be notified of the hearing. The board shall mail these notices not less than twenty days prior to the date set for the hearing. The wetlands board shall also cause notice of the hearing to be published at least once a week for two weeks prior to such hearing in a newspaper of general circulation in this _____ (county, city, or town). The published notice shall specify the place or places within this _____ (county, city, or town) where copies of the application may be examined. The costs of publication shall be paid by the applicant.

§ 7. A. Approval of a permit application shall require the affirmative vote of three members of a five-member board or four members of a seven-member board.

B. The chairman of the board, or in his absence the acting chairman, may administer oaths and compel the attendance of witnesses. Any person may testify at the public hearing. Each witness at the hearing may submit a concise written statement of his tes-

timony. The board shall make a record of the proceeding, which shall include the application, any written statements of witnesses, a summary of statements of all witnesses, the findings and decision of the board, and the rationale for the decision.

C. The board shall make its determination within thirty days of the hearing. If the board fails to act within that time, the application shall be deemed approved. Within forty-eight hours of its determination, the board shall notify the applicant and the Commissioner of its determination. If the board fails to make a determination within the thirty-day period, it shall promptly notify the applicant and the Commission that the application is deemed approved. For purposes of this section, "act" means taking a vote on the application. If the application receives less than four affirmative votes from a seven-member board or less than three affirmative votes from a five-member board, the permit shall be denied.

D. If the board's decision is reviewed or appealed, the board shall transmit the record of its hearing to the Commissioner. Upon a final determination by the Commission, the record shall be returned to the board. The record shall be open for public inspection at the same office as was designated under § 5 of this ordinance.

§ 8. The board may require a reasonable bond or letter of credit in an amount and with surety and conditions satisfactory to it, securing to the Commonwealth compliance with the conditions and limitations set forth in the permit. The board may, after a hearing held pursuant to this ordinance, suspend or revoke a permit if the applicant has failed to comply with any of the conditions or limitations set forth in the permit or has exceeded the scope of the work described in the application. The board may, after a hearing, suspend a permit if the applicant fails to comply with the terms and conditions set forth in the application.

§ 9. In fulfilling its responsibilities under this ordinance, the board shall preserve and prevent the despoliation and destruction of wetlands within its jurisdiction while accommodating necessary economic development in a manner consistent with wetlands preservation.

§ 10. A. In deciding whether to grant, grant in modified form or deny a permit, the board shall consider the following:

1. The testimony of any person in support of or in opposition to the permit application;
2. The impact of the proposed development on the public health, safety, and welfare; and
3. The proposed development's conformance with standards prescribed in § 28.2-1308 of the Code of Virginia and guidelines promulgated pursuant to § 28.2-1301 of the Code of Virginia.

B. The board shall grant the permit if all of the following criteria are met:

1. The anticipated public and private benefit of the proposed activity exceeds its anticipated public and private detriment.

2. The proposed development conforms with the standards prescribed in § 28.2-1308 of the Code of Virginia and guidelines promulgated pursuant to § 28.2-1301 of the Code of Virginia.

3. The proposed activity does not violate the purposes and intent of this ordinance or Chapter 13 (§ 28.2-1300 et seq.) of Title 28.2 of the Code of Virginia.

C. If the board finds that any of the criteria listed in subsection B of this section are not met, the board shall deny the permit application but allow the applicant to resubmit the application in modified form.

§ 11. The permit shall be in writing, signed by the chairman of the board, and notarized. A copy of the permit shall be transmitted to the Commissioner.

§ 12. No permit shall be granted without an expiration date established by the board. Upon proper application, the board may extend the permit expiration date.

§ 13. No permit granted by a wetlands board shall in any way affect the applicable zoning and land use ordinances of this _____ (county, city, or town) or the right of any person to seek compensation for any injury in fact incurred by him because of the proposed activity. (1972, c. 711, §§ 62.1-13.1, 62.1-13.5; 1973, cc. 382, 388; 1975, c. 268; 1979, c. 418; 1982, c. 300; 1985, c. 541; 1988, c. 587; 1989, c. 360; 1992, c. 836.)

Cross references - As to application of the Open-Space Land Act to wetlands, see § 10.1-1700. As to adoption of coastal primary sand dune zoning ordinance, see § 28.2-1403.

Law Review - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article assessing the adequacy of Virginia's water policy, see 14 Wm. & Mary L. Rev. 312 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973). For comment on nonpoint pollution control in Virginia, see 13 U. Rich. L. Rev. 539 (1979). For article, "Public Access to Virginia's Tidelands: A Framework for Analysis of Implied Dedications and Public Prescriptive Rights," see 24 Wm. & Mary L. Rev. 669 (1983). For article, "The Unresolved Structure of Property Rights in the Virginia Shore," see 24 Wm. & Mary L. Rev. 727 (1983).

§ 28.2-1303. Appointment, terms, compensation, etc., of local wetlands boards; jurisdiction of county wetlands board over wetlands in town.

A. Every county, city, or town which enacts a wetlands zoning ordinance pursuant to this chapter shall create a wetlands board, consisting of five or seven residents of that jurisdiction appointed by the local governing body. All board members' terms shall be for five years, except that the term of at least one of the original appointments shall expire during each of the succeeding five years. The chairman of the board shall notify the local governing body at

least thirty days prior to the expiration of any member's term and shall promptly notify the local governing body if any vacancy occurs. Vacancies shall be filled by the local governing body without delay upon receipt of such notice. Appointments to fill vacancies shall be for the unexpired portion of the term. Members may serve successive terms. A member whose term expires shall continue to serve until his successor is appointed and qualified. Members of the board shall hold no public office in the county or city other than membership on the local planning or zoning commission, the local erosion commission, the local board of zoning appeals, or as director of a soil and water conservation board. When members of these local commissions or boards are appointed to a local wetlands board, their terms of appointment shall be coterminous with their membership on those boards or commissions.

B. Upon a hearing with at least fifteen days' notice thereof, any board member may be removed for malfeasance, misfeasance, or nonfeasance in office, or for other just cause, by the local governing body.

C. If a town does not enact a wetlands zoning ordinance within one year of its enactment by the surrounding county, application for permits to use and develop wetlands within the town shall be made to the county wetlands board.

D. Any county, city, or town which creates a local wetlands board pursuant to this section may compensate the members of the board in accordance with such terms and conditions as the locality may prescribe.

E. Notwithstanding any other provision of this section, the Town of Dumfries in Prince William County may enact a wetlands zoning ordinance pursuant to the provisions of this chapter. (1972, c. 711. §§ 62.1-13.6, 62.1-13.8; 1977, c. 15; 1978, c. 585; 1982, cc. 300, 446; 1983, c. 87; 1987, c. 62; 1992, c. 836.)

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article, "Virginia Natural Resource Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

§ 28.2-1304. Officers, meetings, rules, etc., of wetlands boards; records and reports.

The board shall annually elect from its membership a chairman and such other officers as it deems necessary for terms of one year. For the conduct of any hearing and the taking of any action, a quorum shall be not less than three members of a five-member board nor less than four members of a seven-member board. The board may make, alter, and rescind rules and forms for its procedures, provided they are consistent with state law and local ordinances. The board shall keep a full public record of its proceedings and shall submit a report of its activities to the local governing body at least once each year. The board shall forward a copy of each report to the Commission. (1972, c. 711, § 62.1-13.7; 1977, c. 15; 1982, c. 446; 1992, c. 836.)

§ 28.2-1305. Local governing body to supply meeting space and services for wetlands board.

Every county, city, or town creating a wetland board shall supply the board with reasonable meeting space and necessary secretarial, clerical, legal, and consulting services. The local governing body is authorized to expend the public funds necessary to comply with the provisions of this section. (1972, c. 711, § 62.1-13.8; 1992, c. 836.)

Law Review. - For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

Article 3. Permits and Review.

§ 28.2-1306. Permits required for certain activities; issuance of permits by Commission.

A. It shall be unlawful for any person to conduct any activity which would require a permit under a wetlands zoning ordinance without such a permit. Until the county, city, or town in which a person proposes to conduct an activity which would require a permit under a wetlands zoning ordinance adopts the wetlands zoning ordinance, the person shall apply for a permit directly to the Commission, except as provided in subsection C of § 28.2-1303. If an applicant desires to use or develop wetlands owned by the Commonwealth, he shall apply for a permit directly to the Commission, and in addition to the application fee required by the wetlands zoning ordinance, he shall pay those fees and royalties assessed under § 28.2-1206.

B. Upon notification by any county, city, or town that it has adopted the wetlands zoning ordinance, the Commission shall immediately forward to that jurisdiction's wetlands board any pending permit application over which that board would have had jurisdiction if the ordinance had been in effect at the time the application was filed. However, if requested by the applicant, the application shall remain within the Commission's jurisdiction.

C. The Commission shall process permit applications in accordance with the provisions of the wetlands zoning ordinance and the Commissioner shall sign such permit; however, the Commission may designate one or more hearing officers who may, in lieu of the Commission, conduct public hearings as required under § 28.2-1302, and thereafter report their findings and recommendations to the Commission. (1972, c. 711, §§ 62.1-13.5, 62.1-13.9; 1973, cc. 382, 388; 1975, c. 268; 1979, c. 418; 1982, c. 300; 1985, c. 541; 1988, c. 587; 1989, c. 360; 1992, c. 836.)

Cross references. - As to adoption of coastal primary sand dune zoning ordinance, see § 28.2-1403.

Effective date. - Title 28.2 is effective October 1, 1992.

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973). For article, "Public Access to Virginia's Tidelands: A Framework for Analysis of Implied Dedications and Public Prescriptive Rights," see 24 Wm. & Mary L. Rev. 669 (1983). For article, "The Unresolved Structure of Property Rights in the Virginia Shore," see 24 Wm. & Mary L. Rev. 727 (1983).

§ 28.2-1307. Administrative procedures.

The Commission may, in conjunction with local wetlands boards and other affected state and federal agencies, develop administrative procedures to expedite the processing of applications for permits required under this chapter. Whenever an application is received by the Commission for a permit over which a local board has jurisdiction under a wetlands zoning ordinance, the Commission shall forward a copy of the application to that board within seven days. (1982, c. 300, § 62.1-13.5:2; 1992, c. 836.)

§ 28.2-1308. Standards for use and development of wetlands; utilization of guidelines.

A. The following standards shall apply to the use and development of wetlands and shall be considered in the determination of whether any permit required by this chapter should be granted or denied:

1. Wetlands of primary ecological significance shall not be altered so that the ecological systems in the wetlands are unreasonably disturbed; and
2. Development in Tidewater Virginia, to the maximum extent practical, shall be concentrated in wetlands of lesser ecological significance, in vegetated wetlands which have been irreversibly disturbed before July 1, 1972, in nonvegetated wetlands which have been irreversibly disturbed prior to January 1, 1983, and in areas of Tidewater Virginia outside of wetlands.

B. The provisions of guidelines promulgated by the Commission pursuant to § 28.2-1301 shall be considered in applying the standards listed in subsection A of this section. (1972, c. 711, § 62.1-13.3; 1982, c. 300; 1992, c. 836.)

Law Review. - For note on purposes and types of wetlands regulation, see 58 Va. L. Rev. 876 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973). For article, "The Unresolved Structure of Property Rights in the Virginia Shore," see 24 Wm. & Mary L. Rev. 727 (1983).

Violation of Wetlands Act as pendent state claim. - It was proper for aggrieved riparian owner to allege a violation of the Wetlands Act as a pendent state claim to its suit brought pursuant to the Clean Water Act, 33 U.S.C. § 1251 et seq. *City of Norfolk v. Harold*, 662 F. Supp. 959 (E.D. Va. 1987) (decided under former § 62.1-13.3).

§ 28.2-1309: Not set out.

Editor's note. - This section, relating to emergency sand grading activities on nonvegetated wetlands located on the Atlantic Shoreline of Virginia Beach, was enacted by Acts 1984, c. 518, as amended by Acts 1992, c. 836. In furtherance of the general policy of the Virginia Code Commission to include in the Code only provisions having general and permanent application, this section, which is limited in its purpose and scope, is not set out here, but attention is called to it by this reference.

§ 28.2-1310. Commissioner to review all decisions of wetlands boards.

The Commissioner shall review all decisions of wetlands boards and request the Commission to review a decision only when he believes the board failed to fulfill its responsibilities under the wetlands zoning ordinance. (1972, c. 711, § 62.1-13.10; 1992, c. 836.)

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act." see 30 Wash. & Lee Rev. 19 (1973).

§ 28.2-1311. When Commission to review decision of wetlands board.

A. The Commission shall review a decision of a wetlands board when any of the following events occur:

1. An appeal is taken from the decision by the applicant or the county, city, or town where the wetlands are located.
2. The Commissioner requests the review. In order to make the request, the Commissioner shall notify the board, applicant, and the county, city, or town where the wetlands are located within ten days of receiving notice of the board's decision.
3. Twenty-five or more freeholders of property within the county, city, or town in which the proposed project is located sign and submit a petition to the Commission requesting the review. The petition shall indicate those specific instances where the petitioners allege that the board failed to fulfill its responsibilities under the wetlands zoning ordinance.

B. All requests for review or appeal shall be made within ten days of the date of the board's decision. The Commission shall hear and decide the review or appeal within forty-five days of receiving the request for review or notice of appeal. A continuance may be granted by the Commission on a motion of the applicant, the freeholders specified in subsection A of this section, or the county, city, or town where the wetlands are located. (1972, c. 711, § 62.1-13.11; 1992, c. 836.)

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972).

§ 28.2-1312. Procedure for review; notice of decision.

A. The Commissioner shall cause notice of the review or appeal to be given to the board, the applicant, the county, city, or town where the wetlands are located, and where applicable, to the freeholders specified in § 28.2-1311.

B. The Commission shall hear the appeal or conduct the review of the record transmitted by the board to the Commissioner. The Commission may take such additional evidence as may be necessary to resolve any controversy as to the correctness of the record. The Commission, in its discretion, may also receive such other evidence as the ends of justice require.

C. The Commission shall notify the parties of its decision within forty-eight hours of the appeal or review hearing. (1972, c. 711, §§ 62.1-13.12, 62.1-13.14; 1992, c. 836.)

Law Review. - For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

§ 28.2-1313. When Commission to modify, remand, or reverse decision of wetlands board.

The Commission shall modify, remand, or reverse the decision of the wetlands board if:

1. The wetlands board, in reaching its decision, failed to fulfill its responsibilities under the wetlands zoning ordinance; or

2. The substantial rights of the appellant or the applicant have been prejudiced because the findings, conclusions, or decisions of the board are:

a. In violation of constitutional provisions;

b. In excess of statutory authority or jurisdiction of the wetlands board;

c. Made upon unlawful procedure;

d. Affected by other error of law;

e. Unsupported by the evidence on the record considered as a whole; or

f. Arbitrary, capricious, or an abuse of discretion. (1972, c. 711, § 62.1-13.13; 1975., c. 467; 1992, c. 836.)

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972).

§ 28.2-1314. Time for issuance of permit.

No permit shall be issued until the period within which a request for review or an appeal to the Commission may be made has expired. If a request for review is made or an appeal is noted, no activity for which the permit is required shall be commenced until the Commission has notified the parties of its determination. (1973, c. 65, § 62.1-13.14:1; 1992, c. 836.)

§ 28.2-1315. Judicial review.

An appeal from any Commission decision granting or denying a permit or from any Commission decision on the review of or appeal from a board decision may be taken by the applicant, any of the freeholders specified in subsection A of § 28.2-1311, or the county, city, or town where the wetlands are located. Judicial review shall be pursuant to the provisions of the Administrative Process Act (§ 9-6.14:1 et seq.). (1972, c. 711, § 62.1-13.15; 1982, c. 300; 1986, c. 615; 1992, c. 836.)

Law Review. - For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

Article 4. Enforcement and Penalties.

§ 28.2-1316. Investigations and prosecutions.

The Commission may investigate all projects, whether proposed or ongoing, which alter wetlands. The Commission may prosecute all violations of any order, rule, or regulation of the Commission or of a wetlands board, or violation of any provision of this chapter. Wetlands boards may investigate all projects, whether proposed or ongoing, which alter wetlands located within their jurisdiction. Wetlands boards may prosecute all violations of their orders and any violation of the wetlands zoning ordinance under which they were established. (1972, c. 711, § 62.1-13.16; 1975, c. 467; 1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

§ 28.2-1317. Monitoring, inspections, compliance, and restoration.

A. The Commissioner or board chairman may require a permittee to implement monitoring and reporting procedures they believe are reasonably necessary to ensure compliance with the provisions of the permit and this chapter.

B. The Commissioner or board chairman may require such on-site inspections as he believes are reasonably necessary to determine whether the measures required by the permit are being properly performed, or whether the provisions of this chapter are being violated. Prior to conducting any inspection, the Commissioner or board chairman shall provide no-

tice to the resident owner, occupier, or operator, who shall be given an opportunity to accompany the site inspector. If it is determined that there is a failure to comply with the permit, the Commissioner or board chairman shall serve notice upon the permittee at the address specified in his permit application or by delivery at the site of the permitted activities to the person supervising those activities and designated in the permit to receive the notice. The notice shall describe the measures needed for compliance and the time within which these measures shall be completed. Failure of the person to comply within the specified period is a violation of this section.

C. Upon receipt of a sworn complaint of a substantial violation of this chapter from the designated enforcement officer, the Commissioner or board chairman may, in conjunction with or subsequent to a notice to comply as specified in subsection B of this section, issue an order requiring all or part of the activities on the site to be stopped until the specified corrective measures have been taken. In the case of an activity not authorized under this chapter or where the alleged permit noncompliance is causing, or is in imminent danger of causing, significant harm to the wetlands protected by this chapter, the order may be issued without regard to whether the person has been issued a notice to comply pursuant to subsection B of this section. Otherwise, the order may be issued only after the permittee has failed to comply with the notice to comply. The order shall be served in the same manner as a notice to comply, and shall remain in effect for a period of seven days from the date of service pending application by the enforcing authority, permittee, resident owner, occupier, or operator for appropriate relief to the circuit court of the jurisdiction where the violation was alleged to have occurred. Upon completion of corrective action, the order shall immediately be lifted. Nothing in this section shall prevent the Commissioner or board chairman from taking any other action specified in § 28.2-1316.

D. Upon receipt of a sworn complaint of a substantial violation of this chapter from a designated enforcement officer, the Commission or a wetlands board may order that the affected site be restored to predevelopment conditions if the Commission or board finds that restoration is necessary to recover lost resources or to prevent further damage to resources. The order shall specify the restoration necessary and establish a reasonable time for its completion. The order shall be issued only after a hearing with at least thirty days' notice to the affected person of the hearing's time, place, and purpose, and shall become effective immediately upon issuance by the Commission or board. The Commission or board shall require any scientific monitoring plan they believe necessary to ensure the successful reestablishment of wetlands protected by this chapter and may require that a prepaid contract acceptable to the Commission or board be in effect for the purpose of carrying out the scientific monitoring plan. The Commission or board may also require a reasonable bond or letter of credit in an amount and with surety and conditions satisfactory to it securing to the Commonwealth compliance with the conditions set forth in the restoration order. The appropriate court, upon petition by the Commission or board, may enforce any such restoration order by injunction, mandamus, or other appropriate remedy. Failure to complete the required restoration is a violation of this chapter.

E. The duties of the Commissioner or the board chairman under this section may be delegated to their respective designees; however, these designees shall not be designated enforcement officers. (1987, c. 436, § 62.1-13.16:1; 1990, c. 811; 1992, c. 836.)

§ 28.2-1318. Violations; penalty.

Any person who knowingly, intentionally, or negligently violates any order, rule, or regulation of the Commission or of a wetlands board established pursuant to this chapter, any provision of this chapter or of a wetlands zoning ordinance enacted pursuant to this chapter, or any provision of a permit granted pursuant to this chapter is guilty of a Class 1 misdemeanor. Following a conviction, every day the violation continues is a separate offense. (1972, c. 711, § 62.1-13.18; 1992, c. 836.)

Cross references. - As to punishment for Class 1 misdemeanors, see § 18.2-11.

§ 28.2-1319. Injunctions.

Upon the petition of the Commission or a wetlands board to the circuit court of the county or city where any act is done or threatened which is unlawful under this chapter, the court may enjoin the unlawful act and order the defendant to take any steps necessary to restore, protect, and preserve the wetlands involved. This remedy shall be exclusive of and in addition to any criminal penalty which may be imposed under § 28.2-1318. (1973, c. 65, § 62.1-13.18:1; 1992, c. 836.)

§ 28.2-1320. Penalties.

A. Without limiting the remedies which may be obtained under this chapter, any person who violates any provision of this chapter or who violates or fails, neglects, or refuses to obey any Commission or wetlands board notice, order, rule, regulation, or permit condition authorized by this chapter shall, upon such finding by an appropriate circuit court, be assessed a civil penalty not to exceed \$25,000 for each day of violation. Such civil penalties may, at the discretion of the court assessing them, be directed to be paid into the treasury of the county, city, or town in which the violation occurred for the purpose of abating environmental damage to or restoring wetlands therein, in such a manner as the court may, by order, direct, except that where the violator is the county, city, or town itself, or its agent, the court shall direct the penalty to be paid into the state treasury.

B. Without limiting the remedies which may be obtained under this chapter, and with the consent of any person who has violated any provision of this chapter or who has violated or failed, neglected, or refused to obey any Commission or wetlands board order, rule, regulation, or permit condition authorized by this chapter, the Commission or wetlands board may provide, in an order issued by the Commission or wetlands board against such person, for the one-time payment of civil charges for each violation in specific sums, not to exceed

\$10,000 for each violation. Civil charges shall be in lieu of any appropriate civil penalty which could be imposed under subsection A of this section. Civil charges may be in addition to the cost of any restoration ordered by the Commission or a wetlands board. (1990, c. 811, § 62.1-13.18:2; 1992, c. 836.)

Chapter 14. Coastal Primary Sand Dunes and Beaches.

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28.2-1420. Penalties.

Article 1. General Provisions.

§ 28.2-1400. Definitions.

A. As used in this chapter, unless the context requires a different meaning:

“Beach” means the shoreline zone comprised of unconsolidated sandy material upon which there is a mutual interaction of the forces of erosion, sediment transport and deposition that extends from the low water line landward to where there is a marked change in either material composition or physiographic form such as a dune, bluff, or marsh, or where no such change can be identified, to the line of woody vegetation (usually the effective limit of stormwaves), or the nearest impermeable manmade structure, such as a bulkhead, revetment, or paved road.

“Coastal primary sand dune” or *“dune”* means a mound of unconsolidated sandy soil which is contiguous to mean high water, whose landward and lateral limits are marked by a change in grade from ten percent or greater to less than ten percent, and upon which is growing any of the following species: American beach grass (*Ammophilla breviligulata*); beach heather (*Hudsonia tomentosa*); dune bean (*Strophostylis* spp.); dusty miller (*Artemisia stelleriana*); saltmeadow hay (*Spartina patens*); seabeach sandwort (*Arenaria peploides*); sea oats (*Uniola paniculata*); sea rocket (*Cakile edentula*); seaside goldenrod (*Solidago sempervirens*); and short dune grass (*Panicum ararum*). For purposes of this chapter, *“coastal primary sand dune”* or *“dune”* shall not include any mound of sand, sandy soil, or dredge spoil deposited by any person for the purpose of temporary storage.

“Coastal primacy sand dune zoning ordinance” means the ordinance set forth in § 28.2-1403.

“County or city” means the governing body of the county or city.

“Governmental activity” means any of the services provided by Commonwealth or a county or city to its citizens for the purpose of maintaining public facilities, including but not limited to, such services as constructing, repairing and maintaining roads; providing street lights and sewage facilities; supplying and treating water; and constructing public buildings.

“Wetlands board” or *“board”* means the board created pursuant to § 28.2-1303.

B. Although separately defined in subsection A of this section, the terms *“coastal primary sand dune,”* *“dune,”* and *“beach,”* when used in this chapter, shall be interchangeable. (1980, c. 660, §§ 62.1-13.21, 62.1-13.22; 1984, c. 556; 1985, c. 589; 1987, c. 499; 1989, c. 342; 1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

§ 28.2-1401. Powers and duties of Commission.

A. The Commission may receive gifts, grants, bequests, and devises of coastal primary sand dunes, beaches, and money which shall be held for the uses prescribed by the donor, grantor, or testator and in accordance with the provisions of this chapter.

B. The Commission shall preserve and protect coastal primary sand dunes and beaches and prevent their despoliation and destruction. Whenever practical, the Commission shall accommodate necessary economic development in a manner consistent with the protection of these features. The Commission shall manage any coastal primary sand dunes and beaches it receives so as to maximize their ecological value.

C. In order to perform its duties under this section and to assist counties and cities in regulating coastal primary sand dunes and beaches, the Commission shall, with the advice and assistance of the Virginia Institute of Marine Science, promulgate guidelines which describe the consequences of use of these dunes and beaches.

D. In developing guidelines or regulations under this chapter, the Commission shall consult with all affected state agencies. Consistent with other legal rights, consideration shall be given to the importance of coastal primary sand dunes with their unique physiographic features which, in their natural state, serve as protective barriers from the effects of flooding and erosion caused by coastal storms, thereby protecting life and property; provide an essential source of natural sand replenishment for beaches and an important natural habitat for coastal fauna; and enhance the scenic and recreational attractiveness of Virginia's coastal area. (1972, c. 711, § 62.1-13.17; 1980, c. 660, §§ 62.1-13.21, 62.1-13.24; 1984, c. 556; 1989, c. 342; 1992, c. 836.)

§ 28.2-1402. (Effective until July 1, 1993) Exemptions.

A. Nothing in this chapter shall affect any project or development (i) for which a valid building permit or final site plan approval was issued prior to July 1, 1980; (ii) which, if no building permit is required for such project, including a locally approved mining operation, was commenced prior to July 1, 1980, and certified as exempt by the Commission or appropriate wetlands board; or (iii) which was approved by the governing body of any county or city pursuant to any local ordinance whose principal purpose was the review of development in coastal primary sand dunes prior to July 1, 1980. Nothing in this section excludes from regulation any activity which expands or enlarges a project already in existence or under construction.

B. The Virginia Beach Wetlands Board shall make an ongoing determination in the Sandbridge Beach subdivision of the area bounded on the north by Dam Neck Naval Base, on the west by Sandfiddler Road, and on the south by White Cap Lane, to determine which structures or properties are in clear and imminent danger from erosion and storm damage due to severe wave action or storm surge. The owners of structures or properties so defined shall not be prohibited from erecting and maintaining protective bulkheads or other equivalent

structural improvements of a type, size, and configuration approved by the Virginia Beach Wetlands Board. The Virginia Beach Wetlands Board shall not impose arbitrary or unreasonable conditions upon its approval of any such bulkhead or other structural improvement but shall maintain a continuing responsibility to ensure that each bulkhead or structural improvement constructed under the authority of this section is maintained in a condition which is safe, structurally sound, and otherwise in conformity with the reasonable conditions imposed by the Virginia Beach Wetlands Board. At the time the application is submitted, the applicant shall consent in writing to any subsequent construction which may occur whereby an adjacent property owner desires to tie in a bulkhead at no additional cost with that bulkhead proposed by the applicant. Such consent shall be considered a waiver of property line defenses relating to the bulkhead line.

C. This section shall expire on July 1, 1993. (1980, c. 660, § 62.1-13.28; 1987, c. 499; 1988, c. 740; 1991, c. 114; 1992, c. 836.)

Editor's note. - Acts 1992, c. 836, cl. 5 repealed this section effective October 1, 1992. Acts 1992, c. 836 also enacted new Title 28.2, Fisheries and Habitat of the Tidal Waters, effective October 1, 1992. See § 28.2-100 et seq.

Acts 1988, c. 740, which amended this section, provided in cl. 2 that the 1988 act would expire on June 30, 1991. However, Acts 1991, c. 114, cl. 1, effective March 7, 1991, amended Acts 1988, c. 740, cl. 2 so that amendatory provisions of the 1988 act shall expire on July 1, 1993.

Article 2. Coastal Primary Sand Dune Ordinance and Boards.

§ 28.2-1403. Certain counties and cities authorized to adopt coastal primary sand dune ordinance.

Any of the following counties or cities which adopt a wetlands zoning ordinance pursuant to § 28.2-1302 may adopt the coastal primary sand dune zoning ordinance which is set out in this section: the Counties of Accomack, Lancaster, Mathews, Northampton and Northumberland and the Cities of Hampton, Norfolk, and Virginia Beach. In the event that a locality has not adopted a wetlands zoning ordinance pursuant to Chapter 13 or repeals it if already adopted, such locality may adopt or continue to administer the ordinance contained herein provided the locality appoints a wetlands board following the procedure specified in § 28.2-1303. Any county or city which has adopted the Coastal Primary Sand Dune Zoning Ordinance prior to October 1, 1992, shall amend the ordinance to conform it to the ordinance contained herein by October 1, 1992. The following ordinance is the only coastal primary sand dune zoning ordinance under which any board shall operate after October 1, 1992.

Coastal Primary Sand Dune Zoning Ordinance

§ 1. The governing body of _____ acting pursuant to Chapter 14 (§ 28.2-1400 et seq.) of Title 28.2 of the Code of Virginia, adopts this ordinance regulating the use and development of coastal primary sand dunes. Whenever coastal primary sand dunes are referred to in this ordinance, such references shall also include beaches.

§ 2. As used in this ordinance, unless the context requires a different meaning:

“Beach” means the shoreline zone comprised of unconsolidated sandy material upon which there is a mutual interaction of the forces of erosion, sediment transport and deposition that extends from the low water line landward to where there is a marked change in either material composition or physiographic form such as a dune, bluff, or marsh, or where no such change can be identified, to the line of woody vegetation (usually the effective limit of stormwaves), or the nearest impermeable manmade structure, such as a bulkhead, revetment, or paved road.

“Coastal primary sand dune” or *“dune”* means a mound of unconsolidated sandy soil which is contiguous to mean high water, whose landward and lateral limits are marked by a change in grade from ten percent or greater to less than ten percent, and upon which is growing any of the following species: American beach grass (*Ammophilla breviligulata*); beach heather (*Hudsonia tomentosa*); dune bean (*Strophostylis* spp.); dusty miller (*Artemisia stelleriana*); saltmeadow hay (*Spartina patens*); seabeach sandwort (*Arenaria peploides*); sea oats (*Uniola paniculata*); sea rocket (*Cakile edentula*); seaside goldenrod (*Solidago sempervirens*); and short dune grass (*Panicum ararum*). For purposes of this ordinance, “coastal primary sand dune” shall not include any mound of sand, sandy soil, or dredge spoil deposited by any person for the purpose of temporary storage.

“Commission” means the Virginia Marine Resources Commission.

“Commissioner” means the Commissioner of Marine Resources.

“County or city” means the governing body of the county or city.

“Governmental activity” means any of the services provided by the Commonwealth or a county or city to its citizens for the purpose of maintaining public facilities, including but not limited to, such services as constructing, repairing, and maintaining roads; providing street lights and sewage facilities; supplying and treating water; and constructing public buildings.

“Wetlands board” or *“board”* means the board created pursuant to § 28.2-1303 of the Code of Virginia.

§ 3. The following uses of and activities in dunes are authorized if otherwise permitted by law:

1. The construction and maintenance of noncommercial walkways which do not alter the contour of the coastal primary sand dune;
2. The construction and maintenance of observation platforms which are not an integral part of any dwelling and which do not alter the contour of the coastal primary sand dune;
3. The planting of beach grasses or other vegetation for the purpose of stabilizing coastal primary sand dunes;
4. The placement of sand fences or other material on or adjacent to coastal primary sand dunes for the purpose of stabilizing such features, except that this provision shall not be interpreted to authorize the placement of any material which presents a public health or safety hazard;
5. Sand replenishment activities of any private or public concern, provided no sand shall be removed from any coastal primary sand dune unless authorized by lawful permit;
6. The normal maintenance of any groin, jetty, riprap, bulkhead, or other structure designed to control beach erosion which may abut a coastal primary sand dune;
7. The normal maintenance or repair of existing roads, highways railroad beds, and facilities of the United States, this Commonwealth or any of its counties or cities, or of any person, provided no coastal primary sand dunes are altered;
8. Outdoor recreational activities, provided the activities do not alter the natural contour of the coastal primary sand dune or destroy the vegetation growing thereon;
9. The conservation and research activities of the Commission, Virginia Institute of Marine Science, Department of Game and Inland Fisheries, and other conservation-related agencies;
10. The construction and maintenance of aids to navigation which are authorized by governmental authority;
11. Activities pursuant to any emergency declaration by the governing body of any local government or the Governor of the Commonwealth or any public health officer for the purposes of protecting the public health and safety; and
12. Governmental activity in coastal primary sand dunes owned or leased by the Commonwealth or a political subdivision thereof.

§ 4. A. Any person who desires to use or alter any coastal primary sand dune within this _____ (county or city), other than for the purpose of conducting the activities specified in § 3 of this ordinance, shall first file an application directly with the wetlands board or with the Commission.

B. The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities and a map, drawn to an appropriate and uniform scale, showing the area of dunes directly affected, the location of the proposed work thereon, the area of any proposed fill and excavation, the location, width, depth and length of any disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances or facilities, including those on adjacent uplands; a description of the type of equipment to be used and the means of equipment access to the activity site; the names and addresses of owners of record of adjacent land; an estimate of cost; the primary purpose of the project; any secondary purposes of the project, including further projects; the public benefit to be derived from the proposed project; a complete description of measures to be taken during and after the alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require.

C. A nonrefundable processing fee shall accompany each permit application. The fee shall be set by the applicable governing body with due regard for the services to be rendered, including the time, skill, and administrator's expense. No person shall be required to file two separate applications for permits if the proposed project will require permits under this ordinance and Chapter 13 (§ 28.2-1300 et seq.) of Title 28.2 of the Code of Virginia. Under those circumstances, the fee shall be established pursuant to this ordinance.

§ 5. All applications, maps, and documents submitted shall be open for public inspection at the office of the recording officer of this _____ (county or city).

§ 6. Not later than sixty days after receipt of a complete application, the wetlands board shall hold a public hearing on the application. The applicant, local governing body, Commissioner, owner of record of any land adjacent to the coastal primary sand dunes in question, the Virginia Institute of Marine Science, the Department of Game and Inland Fisheries, the State Water Control Board, the Department of Transportation, and any governmental agency expressing an interest in the application shall be notified of the hearing. The board shall mail these notices not less than twenty days prior to the date set for the hearing. The wetlands board shall also cause notice of the hearing to be published at least once a week for two weeks prior to such hearing in a newspaper of general circulation in this _____ (county or city). The costs of publication shall be paid by the applicant.

§ 7. A. Approval of a permit application shall require the affirmative vote of three members of a five-member board or four members of a seven-member board.

B. The chairman of the board, or in his absence the acting chairman, may administer oaths and compel the attendance of witnesses. Any person may appear and be heard at the public hearing. Each witness at the hearing may submit a concise written statement of his testimony. The board shall make a record of the proceeding, which shall include the application, any written statements of witnesses, a summary of statements of all witnesses, the findings and decision of the board, and the rationale for the decision.

C. The board shall make its determination within thirty days of the hearing. If the board fails to act within that time, the application shall be deemed approved. Within forty-eight hours of its determination, the board shall notify the applicant and the Commissioner of its determination. If the board fails to make a determination within the thirty-day period, it shall promptly notify the applicant and the Commission that the application is deemed approved.

D. If the board's decision is reviewed or appealed, the board shall transmit the record of its hearing to the Commissioner. Upon a final determination by the Commission, the record shall be returned to the board. The record shall be open for public inspection at the office of the recording officer of this _____ (county or city).

§ 8. The board may require a reasonable bond or letter of credit in an amount and with surety and conditions satisfactory to it, securing to the Commonwealth compliance with the conditions and limitations set forth in the permit. The board may, after a hearing held pursuant to this ordinance, suspend or revoke a permit if the applicant has failed to comply with any of the conditions or limitations set forth in the permit or has exceeded the scope of the work described in the application. The board may, after a hearing, suspend a permit if the applicant fails to comply with the terms and conditions set forth in the application.

§ 9. In fulfilling its responsibilities under this ordinance, the board shall preserve and protect coastal primary sand dunes and beaches and prevent their despoliation and destruction. However, whenever practical, the board shall accommodate necessary economic development in a manner consistent with the protection of these features.

§ 10. A. In deciding whether to grant, grant in modified form, or deny a permit, the board shall consider the following:

1. The testimony of any person in support of or in opposition to the permit application;
2. The impact of the proposed development on the public health, safety, and welfare; and
3. The proposed development's conformance with standards prescribed in § 28.2-1408 of the Code of Virginia and guidelines promulgated pursuant to § 28.2-1401 of the Code of Virginia.

B. The board shall grant the permit if all of the following criteria are met:

1. The anticipated public and private benefit of the proposed activity exceeds its anticipated public and private detriment.
2. The proposed development conforms with the standards prescribed in § 28.2-1408 of the Code of Virginia and guidelines promulgated pursuant to § 28.2-1401 of the Code of Virginia.
3. The proposed activity does not violate the purposes and intent of this ordinance or Chapter 14 (§ 28.2-1400 et seq.) of Title 28.2 of the Code of Virginia.

C. If the board finds that any of the criteria listed in subsection B of this section are not met, the board shall deny the permit application but allow the applicant to resubmit the application in modified form.

§ 11. The permit shall be in writing, signed by the chairman of the board, and notarized. A copy of the permit shall be transmitted to the Commissioner.

§ 12. No permit shall be granted without an expiration date established by the board. Upon proper application, the board may extend the permit expiration date.

§ 13. No permit granted by a wetlands board shall in any way affect the right of any person to seek compensation for any injury in fact incurred by him because of the permitted activity. (1980, c. 660, §§ 62.1-13.21, 62.1-13.25; 1984, c. 556; 1989, c. 342; 1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

§ 28.2-1404. Meetings, quorum, rules, etc., of wetlands boards; records and reports.

For the conduct of any wetlands board hearing and the taking of any action, a quorum shall be not less than three members of a five-member board nor less than four members of a seven-member board. The board may make, alter, and rescind rules and forms for its procedures, provided they are consistent with state law and local ordinances. The board keep a full public record of its proceedings and shall submit a report of its activities to the local governing body at least once each year. The board shall forward a copy of each report to the Commission. (1992, c. 836.)

§ 28.2-1405. Local governing body to supply meeting space and services for wetlands board.

Every county or city enacting an ordinance pursuant to this chapter shall supply the board with reasonable meeting space and necessary secretarial, clerical, legal, and consulting serv-

ices. The local governing body is authorized to expend public funds necessary to comply with the provisions of this section. (1992, c. 836.)

Article 3. Permits and Review.

§ 28.2-1406. Permits required for certain activities; issuance of permits by Commission.

A. It shall be unlawful for any person to conduct any activity which would require a permit under a coastal primary sand dune zoning ordinance without such a permit. Until the county or city in which a person proposes to conduct an activity which would require a permit under the ordinance adopts the ordinance, such person shall apply for a permit directly to the Commission. Permit applicants desiring to use or develop dunes or beaches owned by the Commonwealth shall also apply directly to the Commission.

B. The Commission shall process permit applications in accordance with the provisions of the Coastal Primary Sand Dune Zoning Ordinance and the Commissioner shall sign any permit granted; however, the Commission may designate one or more hearing officers who may, in lieu of the Commission, conduct public hearings as required under § 28.2-1403 and thereafter report their findings and recommendations to the Commission. (1972, c. 711, § 62.1-13.9; 1980, c. 660, § 62.1-13.26; 1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

Law Review. - For survey of Virginia administrative law for the year 1971-1972, see 58 Va. L. Rev. 1159 (1972). For article, "Virginia Natural Resources Law and the New Virginia Wetlands Act," see 30 Wash. & Lee L. Rev. 19 (1973).

§ 28.2-1407. Administrative procedures.

The Commission may, in conjunction with local wetlands boards and other affected state and federal agencies, develop administrative procedures to expedite the processing of applications for permits required under this chapter. Whenever an application is received by the Commission for a permit over which a local board has jurisdiction under a coastal primary sand dune zoning ordinance, the Commission shall forward a copy of the application to that board within seven days. (1992, c. 836.)

§ 28.2-1408. Standards for use of coastal primary sand dunes.

No permanent alteration of or construction upon any coastal primary sand dune shall take place which would (i) impair the natural functions of the dune, (ii) physically alter the contour of the dune, or (iii) destroy vegetation growing thereon unless the wetlands board or

the Commission, whichever is applicable, determines that there will be no significant adverse ecological impact, or that the granting of a permit is clearly necessary and consistent with the public interest, considering all material factors. (1980, c. 660, § 62.1-13.23; 1992, c. 836.)

§ 28.2-1409: Not set out.

Editor's note. - This section, relating to emergency sand grading activities on sand dunes located on the Atlantic Shoreline of Virginia Beach, was enacted by Acts 1984, c. 518, as amended by Acts 1992, c. 836. In furtherance of the general policy of the Virginia Code Commission to include in the Code only provisions having general and permanent application, this section, which is limited in its purpose and scope, is not set out here, but attention is called to it by this reference.

§ 28.2-1410. Commissioner to review all decisions of wetlands boards.

The Commissioner shall review all decisions of wetlands boards and request the Commission to review a decision only when he believes the board failed to fulfill its responsibilities under the coastal primary sand dune zoning ordinance. (1992, c. 836.)

§ 28.2-1411. When Commission to review decision of wetlands board.

A. The Commission shall review a decision of a wetlands board when any of the following events occur:

1. An appeal is taken from the decision by the applicant or by the county or city where the dunes are located.
2. The Commissioner requests the review. In order to make the request, the Commissioner shall notify the board, applicant, and county or city where the dunes are located within ten days of receiving notice of the board's decision.
3. Twenty-five or more freeholders of property within the county or city in which the proposed project is located sign and submit a petition to the Commission requesting the review. The petition shall indicate those specific instances where the petitioners allege that the board failed to fulfill its responsibilities under the coastal primary sand dune zoning ordinance.

B. All requests for review or appeal shall be made within ten days of the date of the board's decision. The Commission shall hear and decide the review or appeal within forty-five days of receiving the request for review or notice of appeal. A continuance may be granted by the Commission on a motion of the applicant, the freeholders specified in subsection A of this section, or the county or city where the dunes are located. (1992, c. 836.)

§ 28.2-1412. Procedure for review; notice of decision.

A. The Commissioner shall cause notice of the review or appeal to be given to the board, the applicant, the county or city where the dunes are located, and where applicable, to the free-holders specified in § 28.2-1411.

B. The Commission shall hear the appeal or conduct the review on the record transmitted by the board to the Commissioner. The Commission may take such additional evidence as may be necessary to resolve any controversy as to the correctness of the record. The Commission, in its discretion, may receive such other evidence as the ends of justice require.

C. The Commission shall notify the parties of its decision within forty-eight hours of the appeal or review hearing. (1992, c. 836.)

§ 28.2-1413. When Commission to modify, remand or reverse decision of wetlands board.

The Commission shall modify, remand or reverse the decision of the wetlands board if:

1. The wetlands board, in reaching its decision, failed to fulfill its responsibilities under the coastal primary sand dune zoning ordinance; or

2. The substantial rights of the appellant or the applicant have been prejudiced because the findings, conclusions, or decisions of the board are:

- a. In violation of constitutional provisions;
- b. In excess of statutory authority or jurisdiction of the wetlands board;
- c. Made upon unlawful procedure;
- d. Affected by other error of law;
- e. Unsupported by the evidence on the record considered as a whole; or
- f. Arbitrary, capricious, or an abuse of discretion. (1992, c. 836.)

§ 28.2-1414. Time for issuance of permit.

No permit shall be issued until the period within which a request for review or an appeal to the Commission may be made has expired. If a request for review is made or an appeal is noted, no activity for which the permit is required shall be commenced until the Commission has notified the parties of its determination. (1992, c. 836.)

§ 28.2-1415. Judicial review.

An appeal from any Commission decision granting or denying a permit or from any Commission decision on the review of or appeal from a board decision may be taken by the applicant, any of the freeholders specified in subsection A of § 28.2-1411, or by the county or city where the dunes or beaches are located. Judicial review shall be pursuant to the provisions of the Administrative Process Act (§ 9-6.14:1 et seq.). (1992, c. 836.)

Article 4. Enforcement and Penalties.

§ 28.2-1416. Investigations and prosecutions.

The Commission may investigate all projects, whether proposed or ongoing, which alter dunes or beaches. The Commission may prosecute all violations of any order, rule, or regulation of the Commission or of a wetlands board, or violation of any provision of this chapter. Wetlands boards may investigate all projects, whether proposed or ongoing, which alter dunes or beaches located within their jurisdiction. Wetlands boards may prosecute all violations of their orders and any violation of any provision of the coastal primary sand dune zoning ordinance which they administer. (1992, c. 836.)

Effective date. - Title 28.2 is effective October 1, 1992.

§ 28.2-1417. Monitoring, inspections, compliance, and restoration.

A. The Commissioner or board chairman may require a permittee to implement monitoring and reporting procedures they believe are reasonably necessary to ensure compliance with the provisions of the permit and this chapter.

B. The Commissioner or board chairman may require such on-site inspections as he believes are reasonably necessary to determine whether the measures required by the permit are being properly performed, or whether the provisions of this chapter are being violated. Prior to conducting such inspections, the Commissioner or board chairman shall provide notice to the resident owner, occupier, or operator, who shall be given an opportunity to accompany the site inspector. If it is determined that there is a failure to comply with the permit, the Commissioner or board chairman shall serve notice upon the permittee at the address specified in his permit application or by delivery at the site of the permitted activities to the person supervising the activities and designated in the permit to receive the notice. The notice shall describe the measures needed for compliance and the time within which these measures shall be completed. Failure of the person to comply within the specified period is a violation of this section.

C. Upon receipt of a sworn complaint of a substantial violation of this chapter from the designated enforcement officer, the Commissioner or board chairman may, in conjunction with

or subsequent to a notice to comply as specified in subsection B of this section, issue an order requiring all or part of the activities on the site to be stopped until the specified corrective measures have been taken. In the case of an activity not authorized under this chapter or where the alleged permit noncompliance is causing, or is in imminent danger of causing, significant harm to the coastal primary sand dunes protected by this chapter, the order may be issued without regard to whether the person has been issued a notice to comply pursuant to subsection B of this section. Otherwise, the order may be issued only after the permittee has failed to comply with the notice to comply. The order shall be served in the same manner as a notice to comply, and shall remain in effect for a period of seven days from the date of service pending application by the enforcing authority, permittee, resident owner, occupier, or operator for appropriate relief to the circuit court of the jurisdiction wherein the violation was alleged to have occurred. Upon completion of corrective action, the order shall immediately be lifted. Nothing in this section shall prevent the Commissioner or board chairman from taking any other action specified in § 28.2-1416.

D. Upon receipt of a sworn complaint of a substantial violation of this chapter from a designated enforcement officer, the Commission or a wetlands board may order that the affected site be restored to predevelopment conditions if the Commission or board finds that restoration is necessary to recover lost resources or to prevent further damage to resources. The order shall specify the restoration necessary and establish a reasonable time for its completion. The order shall be issued only after a hearing with at least thirty days' notice to the affected person of the hearing's time, place, and purpose, and shall become effective immediately upon issuance by the Commission or board. The Commission or board shall require any scientific monitoring plan they believe is necessary to ensure the successful reestablishment of coastal primary sand dunes protected by this chapter and may require that a pre-paid contract acceptable to the Commission or board be in effect for the purpose of carrying out the scientific monitoring plan. The Commission or board may also require a reasonable bond or letter of credit in an amount and with surety and conditions satisfactory to it securing to the Commonwealth compliance with the conditions set forth in the restoration order. The appropriate court, upon petition by the Commission or board, may enforce any such restoration order by injunction, mandamus, or other appropriate remedy. Failure to complete the required restoration is a violation of this chapter.

E. The duties of the Commissioner or the board chairman under this section may be delegated to their respective designees; however, these designees shall not be designated enforcement officers. (1992, c. 836.)

§ 28.2-1418. Violations; penalty.

Any person who knowingly, intentionally, or negligently violates any order, rule, or regulation of the Commission or of a wetlands board, any provision of this chapter or of a coastal primary sand dune zoning ordinance enacted pursuant to this chapter, or any provision of a permit granted pursuant to this chapter is guilty of a Class 1 misdemeanor. Following a conviction, every day the violation continues is a separate offense. (1992, c. 836.)

Cross references. - As to punishment for Class 1 misdemeanors, see § 18.2-11.

§ 28.2-1419. Injunctions.

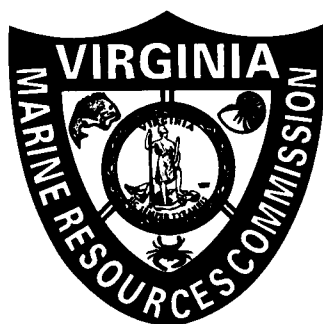
Upon the petition of the Commission or a wetlands board to the circuit court of the county or city where any act is done or threatened which is unlawful under this chapter, the court may enjoin the unlawful act and order the defendant to take any steps necessary to restore, protect, and preserve the dunes or beaches involved. This remedy shall be exclusive of and in addition to any criminal penalty which may be imposed under § 28.2-1418. (1992, c. 836.)

§ 28.2-1420. Penalties.

A. Without limiting the remedies which may be obtained under this chapter, any person who violates any provision of this chapter or who violates or fails, neglects, or refuses to obey any Commission or wetlands board notice, order, rule, regulation, or permit condition authorized by this chapter shall, upon such finding by an appropriate circuit court, be assessed a civil penalty not to exceed \$25,000 for each day of violation. Such civil penalties may, at the discretion of the court assessing them, be directed to be paid into the treasury of the county, city, or town in which the violation occurred for the purpose of abating environmental damage to or restoring dunes or beaches therein, in such a manner as the court may, by order, direct, except that where the violator is the county, city, or town itself, or its agent, the court shall direct the penalty to be paid into the state treasury.

B. Without limiting the remedies which may be obtained under this chapter, and with the consent of any person who has violated any provision of this chapter or who has violated or failed, neglected, or refused to obey any Commission or wetlands board order, rule, regulation, or permit condition authorized by this chapter, the Commission or wetlands board may provide, in an order issued by the Commission or wetlands board against such person, for the one-time payment of civil charges for each violation in specific sums, not to exceed \$10,000 for each violation. Civil charges shall be in lieu of any appropriate civil penalty which could be imposed under subsection A of this section. Civil charges may be in addition to the cost of any restoration ordered by the Commission or a wetlands board. (1990, c. 811, § 62.1-13.27:1; 1992, c. 836.)

Wetland Guidelines



Prepared by

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and

The Habitat Management Division
Virginia Marine Resources Commission

Developed Pursuant to Chapter 13 of Title 28.2, Code of Virginia

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Section I

Introduction

Virginia's coastal zone is composed of many different but highly interrelated ecological systems. Below the low tide limits are found the vast areas of submerged bottomland which are vitally important as fish and shellfish feeding, spawning and nursery habitat. These areas not only help support Virginia's highly valuable commercial catch but also the myriad of species which the average Virginian never directly encounters but nevertheless are as important ecologically as the commercially sought organisms.

Between the high water line and the low water line are found the nonvegetated intertidal flats and beaches. These areas, though uncovered and seemingly devoid of life during a portion of each tidal cycle, provide important habitat for a host of different marine organisms, aquatic birds and many mammals.

Beginning approximately at the elevation we call mean sea level are found the various vegetated communities known as marshes. Best known for their high plant production on the order of tons per acre per year, marshes have other valuable functions. They are a buffer between the estuary and the upland; interacting with both.

With the passage of House Bill 400, which adds nonvegetated intertidal areas to the existing wetlands protection mechanism, the General Assembly has not only recognized the value of intertidal flats and beaches to the Commonwealth but also the interrelated and interdependent nature of the vegetated and nonvegetated wetlands systems. All wetland resources of the Commonwealth will now be managed under a single, unified program. Moving landward from mean low water (the Marine Resources Commission controls the bottomland seaward of mean low water) wetland jurisdiction now extends to mean high water where no emergent vegetation exists, and to 1.5 times the mean tide range where marsh is present. All intertidal areas are now called wetlands and can be managed holistically under a single permit system.

The purpose of this document is to revise the existing Wetlands Guidelines, which deal only with marshes, to include beaches, tidal flats and subaqueous lands as well. Although scientific research has yet to clearly define and quantify all aspects of wetlands function and importance within the estuary, there are few in the scientific community who would argue that these areas are not highly significant systems whose conservation is very important to the Commonwealth. The policy stated by the legislature when it passed the vegetated wetlands act in 1972 is as relevant today as it was then:

“Therefore, in order to protect the public interest, promote the public health, safety and the economic and general welfare of the Commonwealth, and to protect public and private property, wildlife, marine fisheries and the natural environment, it is declared to be the public policy of this Commonwealth to preserve the wetlands, and to prevent their despoliation and destruction and to accommodate necessary economic development in a manner consistent with wetlands preservation.”

In the pages that follow, the value of the wetlands to the Commonwealth and its citizens is described. This is followed by a brief description of each community type and then by an environmental value ranking system. In this section the community types are ranked relative to each

other according to their environmental values. It should be noted that all wetlands are important but where management decisions must be made regarding necessary economic development in wetlands, this ranking system may help in guiding development into the lesser value wetland communities.

The ranking system is followed by the general and specific guidelines for wetland disturbing activities. These guidelines have been expanded to cover the nonvegetated area and to deal with issues that have arisen since the adoption of the original guidelines in 1974. It is intended that these guidelines aid wetland managers in preserving the wetlands while accommodating necessary economic development along Virginia's 5000 miles of shoreline.

Section II

Wetlands Types and Properties

Wetlands, as defined in Chapter 13 of Title 28.2 of the Code of Virginia, fall into two major groupings: vegetated (tidal marshes and swamps) and nonvegetated (intertidal flats, bars and beaches). Although seldom recognized by the general public except as exhibited in the desire to live on or near the water, wetlands have a variety of both tangible and intangible values which place them in a position of inestimable importance to the Commonwealth.

This section of this document first identifies the primary values of the wetlands, then describes the general wetland types found in "Tidewater" Virginia, and finally ranks these types relative to each other in terms of these primary values.

Each wetland type is evaluated in accordance with five general values.

These are:

A. Production and detritus availability. Marshes and tidal flats are major sites of primary production in the marine ecosystem. When this plant material dies and begins to decay (detritus) it becomes the basis of a major marine food pathway. The productivity of all the major marsh community types is well documented and ranges from one to six tons per acre per year. Generally, the lower the elevation of the marsh, the greater its contribution of detritus and the greater its value to the aquatic environment.

Plant productivity on tidal flats is typically less than that of tidal marshes but higher than the bottom in deeper open water areas due to the greater supply of light and nutrients available. Plant productivity in intertidal areas is dominated by nonvascular plants (bottom-dwelling, one-celled micro- and macroalgae). Probably the most important function of the nonvegetated wetlands is that of mediating the breakdown of detritus produced on the vegetated marshes. Tidal flats located adjacent to extensive marsh areas may therefore be more biologically valuable than more isolated tidal flats. As mediators of detrital breakdown, nonvegetated wetlands are often the sites of large, diverse invertebrate populations and are often major feeding sites and spawning and nursery grounds for estuarine organisms of sport and commercial value to man.

B. Waterfowl and Wildlife Utilization. Long before wetlands were discovered to be detritus producers and feeding areas for marine organisms, they were known as rich habitats for various mammals, marine birds and migratory waterfowl. Some wetland types are more important than others in this regard but in many cases distinctions may not be clear-cut. A species, for example, may appear to be dependent on vegetated marsh for cover and breeding but without the adjacent tidal flats may not use a certain marsh at all. Wetlands offering a variety of habitats and plant types are generally the more valuable from a habitat perspective.

C. Erosion Buffer. Erosion is a common problem throughout coastal Virginia and is by no means limited to ocean beaches. Vegetated wetlands do erode but by virtue of their ability to establish dense root systems, trap and accumulate sediments, and baffle wave energy they are buffers against erosion and sea level rise. Among the vegetated wetlands the freshwater communities are less effective in this regard.

Nonvegetated wetlands are also effective erosion buffers although they function in a different manner from the marshes. For example, a broad, gently sloping sand beach is an excellent wave energy dissipator and large intertidal bars and flats serve to “trip” waves as they move shoreward thus reducing their energy before they strike the shoreline. The disruption of nearshore intertidal areas may increase wave energy striking the adjacent shoreline thus accelerating erosion there.

D. Water Quality Control. The dense growth of some marshes acts as a filter, trapping upland sediment before it reaches waterways and thus protecting shellfish beds and navigation channels from siltation. Marshes can also filter out sediments that are already in the water column. The ability of marshes to filter sediments and maintain water clarity is of particular importance to the maintenance of clam and oyster production. Some marshes have been shown to act as sinks or traps for other pollutants and marsh plants take up nutrients deposited in marsh soils. Excess nutrient levels in an estuary can be a problem but the exact role of marshes in nutrient removal is not yet fully understood.

Nonvegetated wetlands are also important in the cycling of nutrients in the estuary and the filter feeding organisms present, particularly on tidal flats, remove suspended solids from the water column in amounts that may significantly affect water clarity.

E. Flood Buffer. The peat substratum of some marshes acts as a giant sponge in receiving and releasing water. This characteristic is an effective buffer against coastal flooding, the effectiveness of which is a function of marsh type and size. The higher elevation marshes are the more effective flood buffers. Nonvegetated wetlands, because of their intertidal location have little value in this regard.

The following descriptions of wetland community types are identified and presented for management purposes. The first twelve of these are the vegetated wetlands and of these the first ten are characterized by a single dominant species of emergent vegetation. The term “dominant” is defined here to mean at least 50% of the vegetated surface of the marsh is covered by a single plant species. Types eleven and twelve are brackish and freshwater marshes which have no clearly dominant species of vegetation.

The five types of nonvegetated wetlands described here are identified mainly by physiographic position and sediment composition. No attempt is made to quantitatively separate the communities by particle size dominance since this is not necessary for value judgements on the level described in this publication.

SALTMARSH CORDGRASS
Spartina alterniflora



3 to 6
feet high

Type I. Saltmarsh Cordgrass Community

Dominant vegetation: Saltmarsh cordgrass (*Spartina alterniflora* Loisel).

Associated vegetation: Saltmeadow hay, saltgrass, black needlerush, saltwort, sea lavender, marsh elder, groundsel tree, sea oxeye.

Growth habit: Stout, erect grass; long, smooth leaves, often with attached periwinkle snails; located at the waters edge. Tall form 4 to 6 feet along the water; short form 1 to 2 feet at or slightly higher than MHW.

Physiographic position: Ranges from mean sea level to approximately mean high water.

Average density: Usually 20 plants per square foot. Can range from 10 to 50 plants.

Annual production and detritus availability: Average yield is about 4 tons per acre per annum; optimum growth up to 10 tons per acre. Daily tides flux nearly throughout this community. Available detritus to the marine environment is optimum. This type of marsh is recognized as an important spawning and nursery ground for fish.

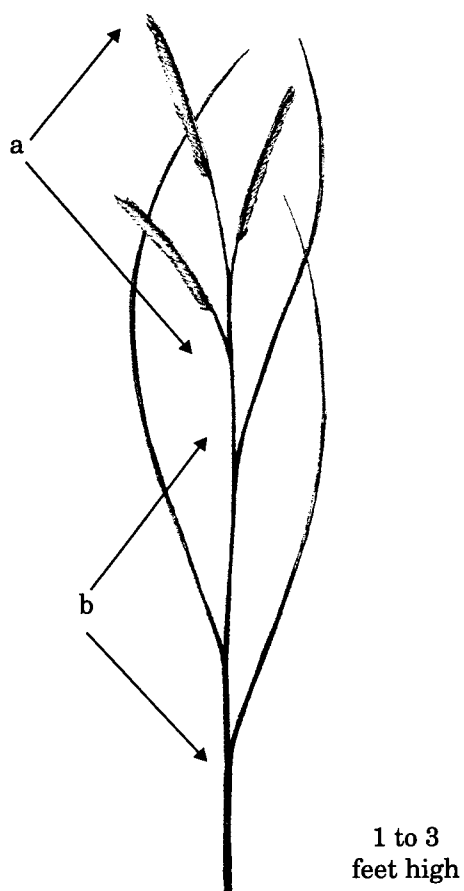
Waterfowl and wildlife utility: Roots and rhizomes eaten by waterfowl. Stems used in muskrat lodge construction. Nesting material for Forsters tern, clapper rail and willet.

Potential erosion buffer: Most salt marshes and brackish water marshes are bordered by saltmarsh cordgrass along the waters edge. A marsh/water interface of this type is highly desirable as a deterrent to shoreline erosion. Underlying peat with a vast network of rhizomes and roots is very resistant to wave energy.

Water quality control and flood buffer: Marshes of this type can also serve as traps for sediment that originate from upland runoff. This also includes large debris that may accumulate on the marsh surface.

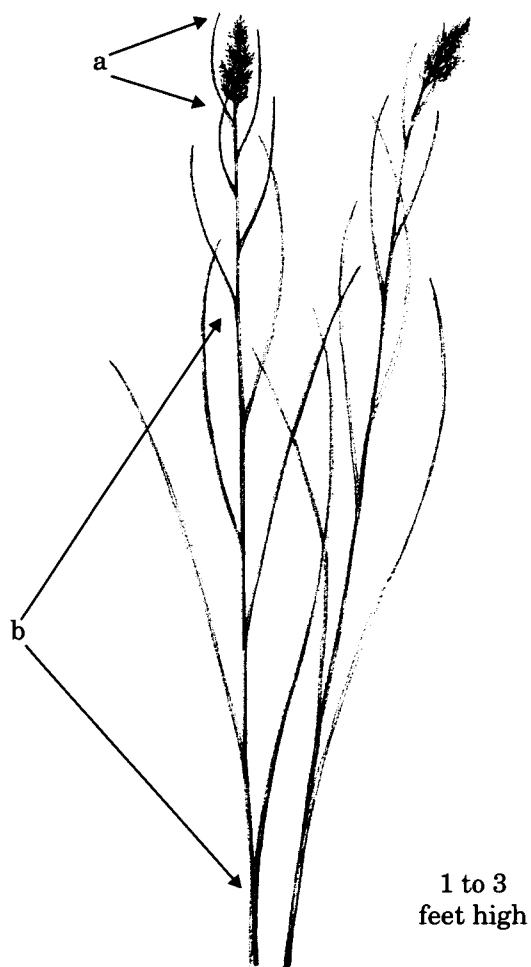
SUMMARY: Considering the many attributes of this type of marsh community, its conservation should be of highest priority.

SALTMEADOW HAY
or
SALTMEADOW CORDGRASS
Spartina patens



- a. Flowering or fruiting head.
b. Leaves arranged in 3 or more planes.

SALT GRASS
Distichlis spicata



- a. Flowering or fruiting head.
b. Leaves arranged in one plane.

Type II. Saltmeadow Community

Dominant vegetation: Saltmeadow hay (*Spartina patens* (L.) Greene) Saltgrass (*Distichlis spicata* (L.) Greene).

Associated vegetation: Saltmarsh cordgrass, black needlerush, marsh elder, groundsel tree, saltwort, sea oxeye.

Growth habit: Matted meadow-like stands with swirls or “cowlicks,” individual plants wiry in appearance; saltgrass 1-2 feet high.

Physiographic position: About mean high tide to the limit of spring tides; saltgrass at lower elevations, saltmeadow hay predominates at the higher end of the range.

Average density: Mixed populations; 50-150 stems per square foot.

Annual production and detritus availability: Ranges from 1-3 tons per acre annum. Only small amounts of dead plant material are flushed out during storms and spring tides.

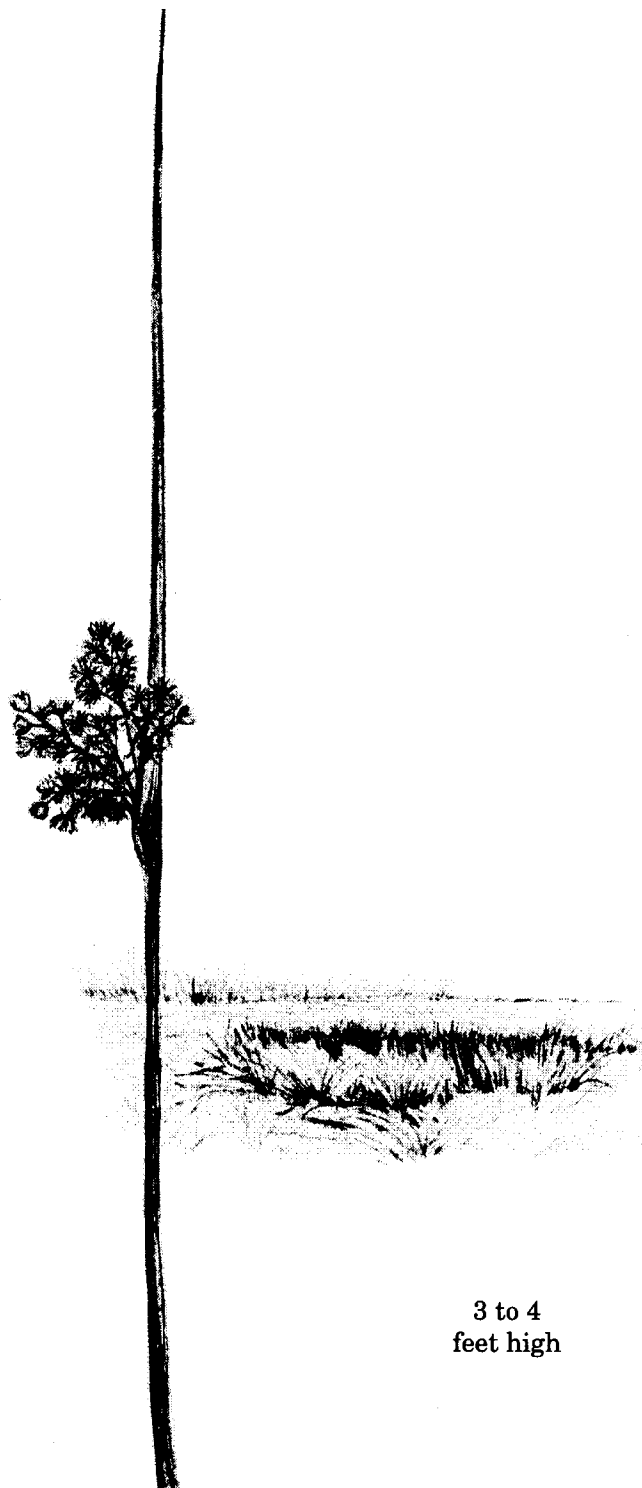
Waterfowl and wildlife utility: Seeds eaten by birds; provides nesting area. Habitat for a snail (*Melampus*) important as food for birds.

Potential erosion buffer: Effective erosion deterrent at higher elevations.

Water quality control and flood buffer: In many cases, this community represents the oldest part of a marsh system. Peat may accumulate to great depths, making this type of marsh act as a giant sponge when flood waters wash over it. Denseness of vegetation and deep peat filter sediments and waste material.

SUMMARY: This system is an excellent buffer, filtering out sediments and wastes and absorbing runoff water originating in the uplands. Production and detritus are less important to the marine environment than in Type I communities. Its contributions tend to favor the upland environment. Its values rank somewhat below Type I but, nevertheless, a Type II marsh should not be unnecessarily disturbed.

NEEDLERUSH
Juncus roemerianus



3 to 4
feet high

Type III. Black Needlerush Community

Dominant vegetation: Black needlerush (*Juncus roemerianus* Scheele.)

Associated vegetation: Usually pure stands with saltmarsh cordgrass, saltgrass and salt-meadow hay near the margin.

Growth habit: Dense monospecific stands; plant leafless, cylindrical hard stems tapering to a sharp pointed tip; brown to dark green in color, 3 to 5 feet high.

Physiographic position: About mean high water to somewhat below spring tide limit. Seems to prefer sandy substratum.

Average density: 30 to 50 stems per square foot.

Annual production and detritus availability: 3 to 5 tons per acre per annum, decomposes more slowly than most of the marsh grasses. Not flushed daily by tides.

Waterfowl and wildlife utility: There is no evidence that waterfowl or wildlife utilize this type of plant directly as a food. Because of the dense, stiff stands, it has little wildlife value except for limited cover.

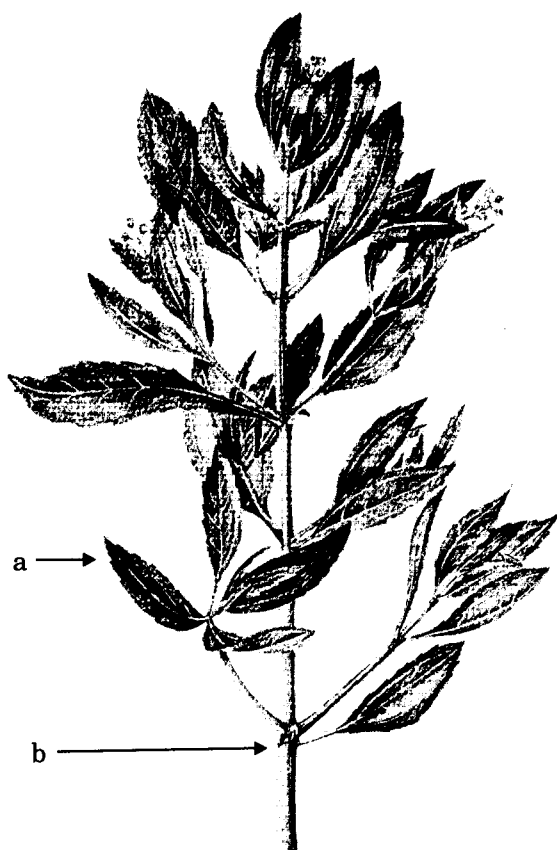
Potential erosion buffer: The dense system of rhizomes and roots of black needlerush are highly resistant to erosion. On sandy shores and low sand berms which support this community type, this characteristic is of high value.

Water quality control and flood buffer: An effective trap for suspended sediments, but less effective than the densely matted saltmeadow community. Provides effective absorbent areas to buffer coastal flooding.

SUMMARY: As a single monospecific community this type would support less wildlife diversity than Type I and II. It functions well as a sediment trap and erosion deterrent but ranks lower than the preceding types. The rhizomes of black needlerush are harder and tougher than the grasses that dominate Types I and II communities; therefore, needlerush is useful as an erosion deterrent. Overall, the values of this marsh type rank below Types I and II.

MARSH ELDER

Iva frutescens

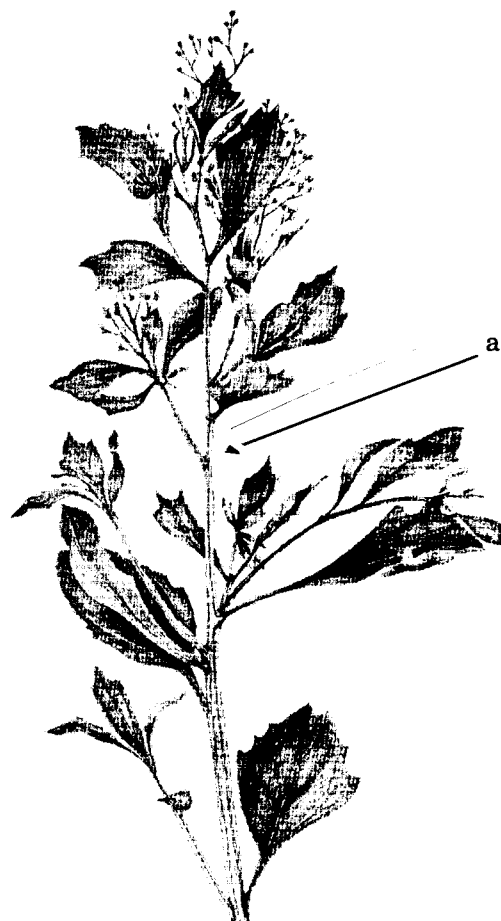


3 to 10 feet high

- a. Leaves thick and fleshy.
- b. Leaves opposite each other on the stem.

GROUNDSEL TREE

Baccharis hamiflora



3 to 10 feet high

- a. Leaves alternate on stem.

Type IV. Saltbush (Gallbush) Community

Dominant vegetation: Groundsel tree, highwater bush (*Baccharis halimifolia* L.), marsh elder saltwater bush (*Iva frutescens* L.)

Associated vegetation: Saltmeadow hay, saltgrass, wax myrtle, sea oxeye.

Growth habit: Shrubs 3 to 10 feet high along the margin of the marsh and upland plant communities.

Physiographic position: Lower limit is approximately the upper limit of marsh (marsh-upland ecotone).

Average density: May provide dense canopy over marsh. Individual shrub trunks usually spaced 3 to 10 feet apart.

Annual production and detritus availability: Probably less than 2 tons per acre per annum. Detritus of little value.

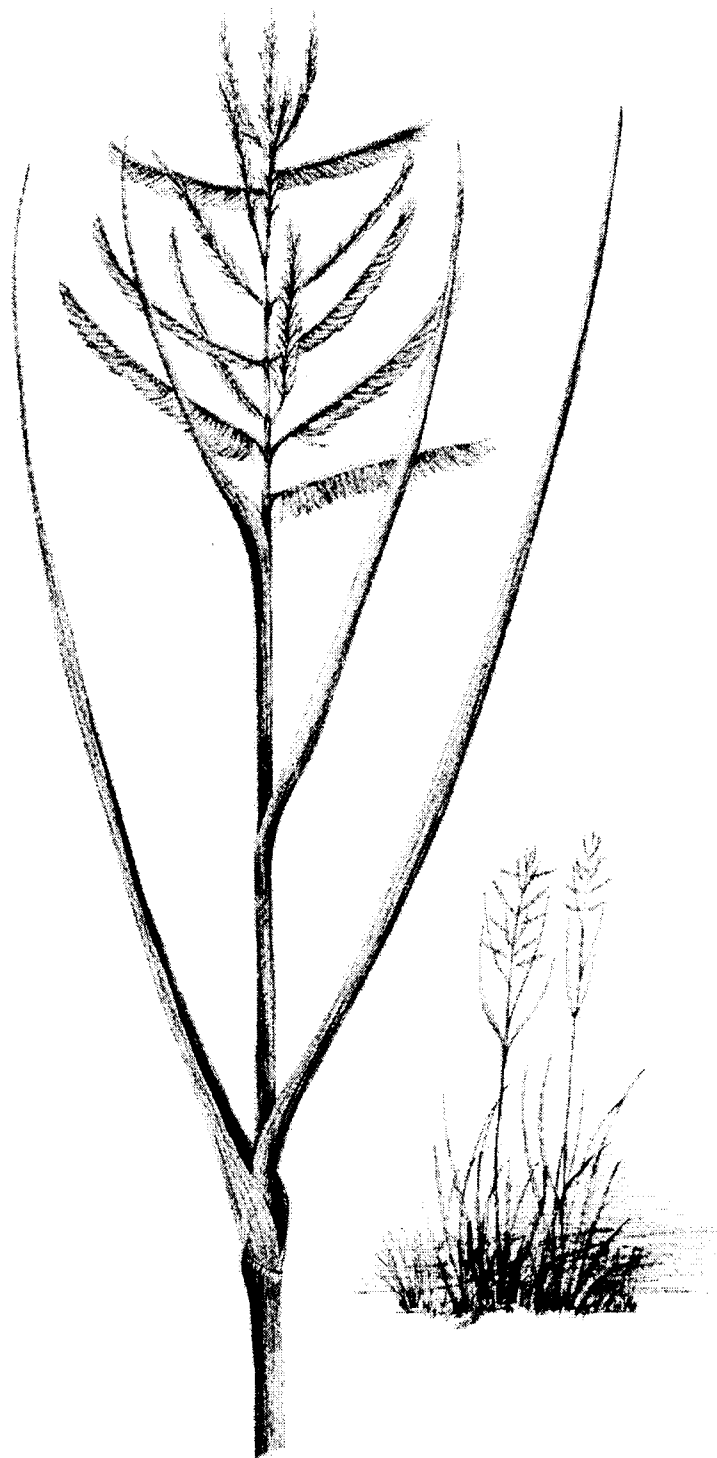
Waterfowl and wildlife utility: Provides diversity for wildlife in general and especially as a nesting area for small birds. No significant food value.

Potential erosion buffer: Although not structurally suited as an assimilator of sediment and flood waters, it serves somewhat as a buffer to erosion on sand berms that often front small pocket marshes. Also functional as a trap for larger flotsam.

Water quality control and flood buffer: Of minor consequence, but does trap larger material. (See above).

SUMMARY: Useful as an indicator of upper limits of marshes as defined in the Wetlands Act. Values of this type rank below that of the preceding types. However, this community does add diversity to the marsh ecosystem.

BIG CORDGRASS
Spartina cynosuroides



Type V. Big Cordgrass Community

Dominant vegetation: Big cordgrass (*Spartina cynosuroides* (L.) Roth.)

Associated vegetation: Usually pure stands.

Growth habit: Very tall (6-12 feet), heavily stemmed, leafy grass with distinct branched fruiting head in the fall.

Physiographic position: At or slightly above mean high water and extending to the upland margin. Most common in brackish or lower salinity marshes.

Average density: 10 to 15 stems per square foot.

Annual production and detritus availability: 3 to 6 tons per acre per annum. Detritus accessible only on spring or wind tide, however is rivaled only by saltmarsh cordgrass, which gives big cordgrass a higher value in the context of production than other grasses found above mean high tide. Decomposes more slowly than saltmarsh cordgrass.

Waterfowl and wildlife utility: Utilized as a habitat by small animals, often used for muskrat lodges. Geese often eat its rhizomes.

Potential erosion buffer: The large, coarse rhizomes and intertwining roots stabilize peat along marsh edges.

Water quality control and flood buffer: Usually this community type occupies the older parts of a marsh system where peat may be deeper increasing its capacity as a flood water assimilator. It is also useful in trapping flotsam.

SUMMARY: Although the elevation occupied by this community type is similar to that of the saltmeadow community, big cordgrass has a much higher yield of organic matter which likely contributes to the marine food web. It is also relatively high in value as a wildlife food as well as a buffer to erosion.

COMMON or BROAD-LEAVED CATTAIL
Typha latifolia



NARROW-LEAVED CATTAIL
Typha angustifolia



Type VI. Cattail Community

Dominant vegetation: Narrowleaf cattail (*Typha angustifolia* L.)

Associated vegetation: Broadleaf cattail (*Typha latifolia* L.), sedges, bulrushes, arrow arum, pickerel weed, smartweed, other fresh or brackish water plants.

Growth habit: Characteristic “Wiener on a stick” fruiting heads, long strap-like leaves, somewhat blunted tips. 4 to 6 feet tall.

Physiographic position: Very wet sites, sometimes in standing water, often at the margin of marsh and uplands. Does well in seepage areas resulting from upland runoff.

Average density: 2 to 6 stalks per square foot.

Annual production and detritus availability: 2 to 4 tons per acre. Detritus usually not readily accessible to the marine environment.

Waterfowl and wildlife utility: Provides habitat for certain birds; roots consumed by muskrats.

Potential erosion buffer: Because of its preferred habitat and its characteristic shallow root system, Type VI is only a minor buffer to erosion.

Water quality control and flood buffer: Its usual habitat along the upland margins in soft muddy areas ranks this marsh type high as a sediment trap despite its shallow rooted condition. Very few species will grow in these areas either because of the stagnant condition of the substratum or because they are inhibited by toxin release of the cattail roots or a combination of the two factors.

SUMMARY: Because of its value as a wildlife food and habitat, its function as a sediment trap, its relatively high production and the usual soft substratum, this type of marsh community should not be indiscriminately used as a development site. As far as overall value is concerned it compares with a saltmeadow marsh (Type II).

PICKEREL WEED
Pontederia cordata



a. Blue flower head.

ARROW ARUM
Peltandra virginica



a. Flower head.
b. Fruiting head.

Type VII. Arrow Arum-Pickerel Weed Community

Dominant vegetation: Arrow arum (*Peltandra virginica* (L.) Kunth.) Pickerel weed *Pontederia cordata* L.)

Associated vegetation: Sedges, smartweeds, bulrushes, ferns, cattails, pond lily.

Growth habit: Many broad leaved clumps growing from a thick, cylindrical rhizome; arrow or heart shaped leaves. Clumps 2 to 6 feet tall, average height 3 feet.

Physiographic position: On tidal mud flats from mean sea level to about mean high tide in low salinity or freshwater marshes.

Average density: 1 or 2 clumps per 10 square feet.

Annual production and detritus availability: 2 to 4 tons per acre. Detritus readily available to the marine food web because of daily tide fluxes. In the fall of the year these species decompose quite rapidly and completely except for the root stock.

Waterfowl and wildlife utility: Seeds and shoots of both species are eaten by ducks. Arrow arum seeds float after the pod decays and are readily available for wood ducks. Often associated with confirmed spawning and nursery areas for herring and shad.

Potential erosion buffer: Although this community type lacks the vast network of rhizomes, roots and peat substratum typical of a saltmarsh cordgrass community, this marsh/water interface vegetation is often the only vegetative buffer to shoreline erosion in freshwater areas. The substratum in a marsh such as this is typically often, unstable mud. After the vegetation has decayed in the winter time, the mud flats are highly susceptible to erosion due to winter rains.

Water quality control and flood buffer: Slows the flow of flood waters, causing some suspended sediment to settle out.

SUMMARY: Under natural conditions the marsh of this type is relatively stable but is highly sensitive to development and activities such as excessive boat traffic. Because of its many attributes this marsh ranks similar to that of Type 1.

REED GRASS
Phragmites australis



Type VIII. Reed Grass Community

Dominant vegetation: Reed grass (*Phragmites australis*) formerly (*Phragmites communes* Trinius)

Associated species: Switch grass, saltbushes, a few others.

Growth habit: Tall stiff grass with short, wide leaves tapering abruptly to a point; soft plume-like seed head. 6 to 10 feet high.

Physiographic position: Usually above mean high tide, drier areas on disturbed sites.

Average density: 3 to 6 stems per square foot.

Annual production and detritus availability: 4 to 6 tons per acre, detritus seldom available except in storm conditions.

Waterfowl and wildlife utility: Little direct value to wildlife except as cover. May have a detrimental effect in that it can invade areas of a marsh and compete with desirable species. It appears to be replacing big cordgrass and other plants in freshwater marshes of the Pamunkey River.

Potential erosion buffer: Good erosion deterrent on disturbed sites, especially on spoil.

Water quality control and flood buffer: Valuable as a buffer to erosion. Potential as sediment trap and flood deterrent appears to be minimal.

SUMMARY: This plant is a relatively recent invader in Virginia but is spreading rapidly, often displacing more important marsh plants. It has little or no value to wildlife in general. Its only important value would be its function as a stabilizer on dredge spoil. This community type ranks below a Type III marsh, the black needlerush community.

YELLOW POND LILY
Naphur luteum



Type IX. Yellow Pond Lily Community

Dominant vegetation: Yellow pond lily, spatter-dock (*Nuphar luteum* (L. Sibthorp and Smith))

Associated vegetation: Pickerel weed, arrow arum.

Growth habit: Saucer shaped leaves with a narrow notch, floating on water; large, leathery yellow flower. 2 to 4 feet high from submerged root stalk.

Physiographic position: Submerged except for floating leaves at high tide. Found in freshwater areas.

Average density: One plant (cluster of leaves) for every 3 to 5 square feet.

Annual production and detritus availability: To 1 ton per acre; detritus readily available but not a significant contributor to the food chain.

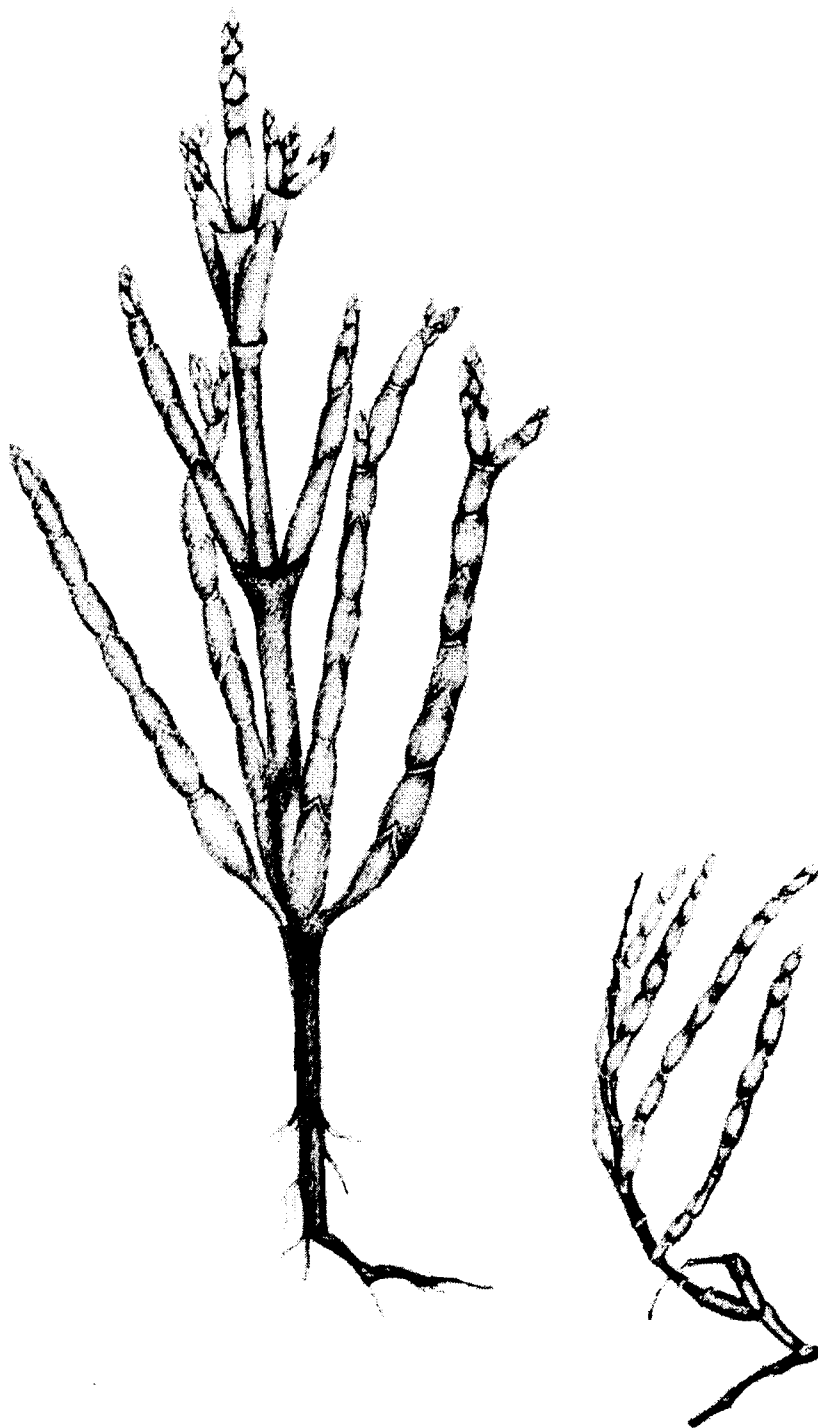
Waterfowl utility: Excellent cover and attachment site for aquatic animals and algae. Feeding territory for aquatic birds and fish.

Potential erosion buffer: While lacking the stiffness of grasses and sedges, these plants do reduce wave action from wind and boats. This has been noted in freshwater streams and boat channels.

Water quality control and flood buffer: Although not a direct assimilator of sediments and flood waters, the flow of flood water is slowed somewhat and sediments can settle out. This function is minimal because the community is submerged completely in flood conditions.

SUMMARY: Destruction of the community would result in a decrease in number and diversity of aquatic animal life in the immediate area. The greatest value the community has is its habitat for aquatic biota. This type should be ranked with or slightly higher than a Type III (black needlerush) marsh.

SALTWORT
Salicornia sp.



Type X. Saltwort Community

Dominant vegetation: Saltwort, glasswort (*Salicornia* sp.)

Associated vegetation: Saltmarsh cordgrass, saltgrass, sea lavender.

Growth habit: Leafless green fleshy-stemmed plant, red in color in fall; 8 inches to 1 feet tall.

Physiographic position: Above mean high tide in pannes or sparsely vegetated areas.

Average density: 10 to 15 stems per square foot.

Annual production and detritus availability: Less than 1/2 ton per acre. Exerts very little influence on the marine environment.

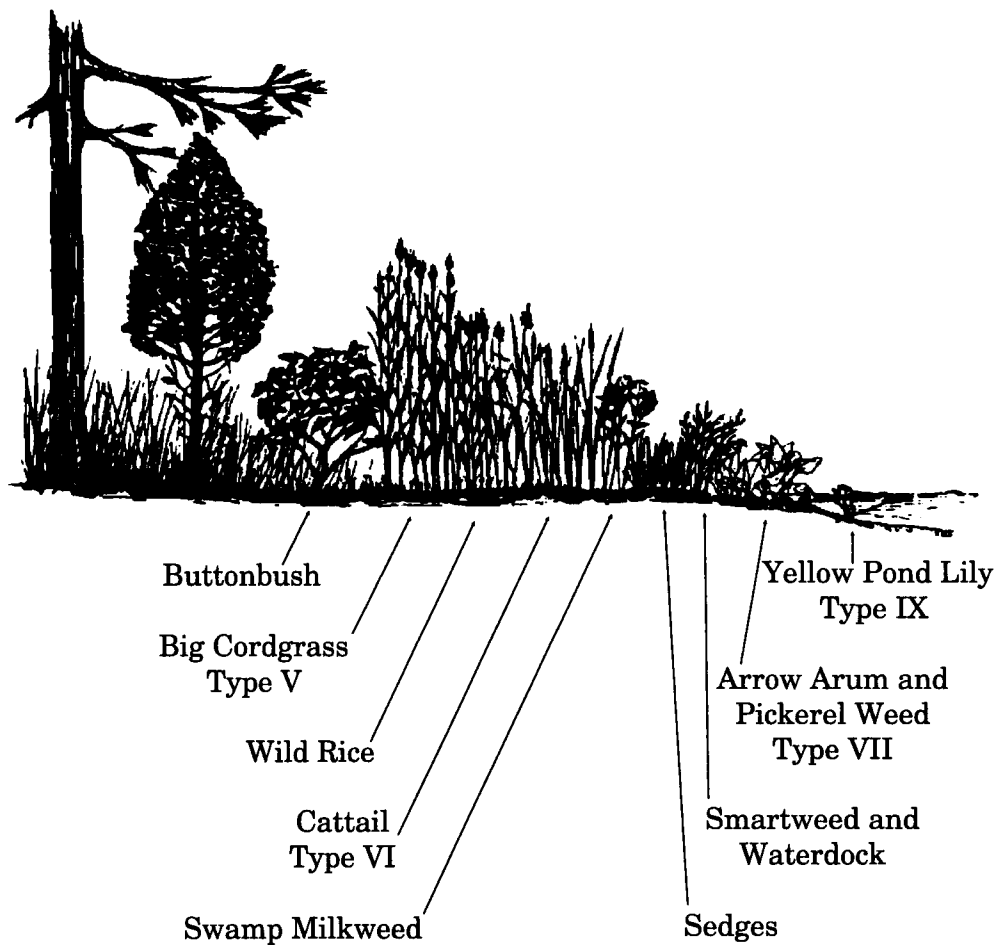
Wildlife and waterfowl utility: Some evidence that stems are eaten by ducks. May be a feeding area for other marsh birds.

Potential erosion buffer: Has very little value as an erosion deterrent.

Water quality control and flood buffer: Because of the character of the stem, a shallow root system and the usual small sizes of the populations, these community types have little or no value in this category.

SUMMARY: This community is not high in value. It usually occupies small areas within larger more productive marshes and can be used as an indicator of higher marsh elevations.

FRESHWATER MIXED COMMUNITY - TYPE XI
(excluding upland species - pines, cedars, etc.)



Type XI. Freshwater Mixed Community

Dominant vegetation: No single species covers more than 50% of the site.

Associated vegetation: Bulrushes, sedges, waterdock, smartweeds, ferns, pickerel weed, arrow arum, wildrice beggar's ticks, rice cutgrass.

Growth habit: Heterogeneous mixture of plants.

Physiographic position: From submerged to the upper limits of the wetlands.

Average density: Highly variable.

Annual production and detritus availability: 3 to 5 tons per acre. Detritus of species such as arrow arum, pickerel weed and yellow pond lily would be available in the intertidal zone.

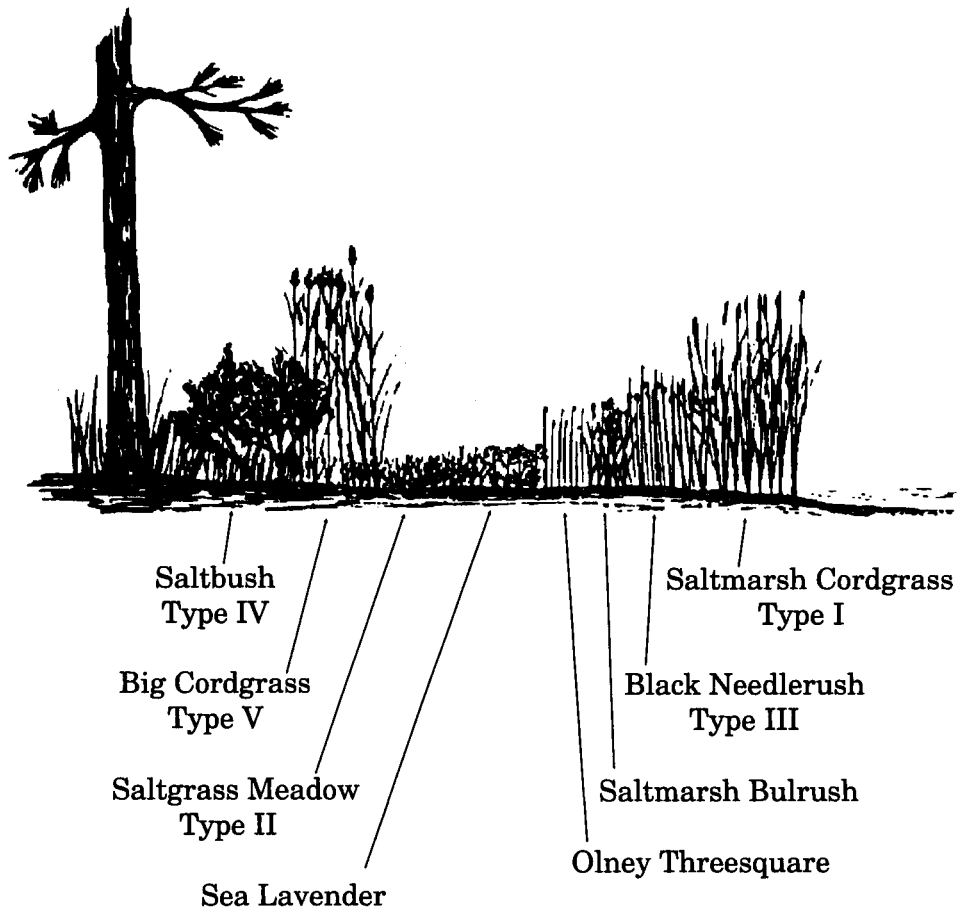
Waterfowl and wildlife utility: A highly valuable marsh for a broad diversity in wildlife species. Plant species such as smartweeds, waterdock, wildrice and others are prime waterfowl and sora rail foods. Waters adjacent to these type marshes are also known as spawning and nursery grounds for striped bass, shad and river herring.

Potential erosion buffer: Shoreline erosion protection provided by this type of marsh is equivalent to Type VII, arrow arum - pickerel weed community.

Water quality control and flood buffer: This ranks somewhat higher as a sediment trap and flood deterrent than an arrow arum - pickerel weed community. The presence of the stiffer, more resilient grasses, sedges and rushes and peaty-type substratum increases the ability of this type of community over a Type VII marsh as an assimilator of sediments and flood waters.

SUMMARY: These are very valuable marshes and the aim should be to keep them in a natural state. This type of marsh would be ranked equivalent to a saltmarsh cordgrass marsh (Type I) and an arrow arum - pickerel weed (Type VII) marsh.

BRACKISH WATER MIXED COMMUNITY - TYPE XII
(excluding upland species - pines, cedars, etc.)



Type XII. Brackish Water Mixed Community

Dominant vegetation: No single species covers more than 50% of the site.

Associated vegetation: Saltmarsh cordgrass, saltmeadow hay, saltgrass, black needlerush, saltbushes, threesquares, big cordgrass, cattails.

Growth habit: Heterogeneous mixture of plants in wet areas.

Physiographic position: Extending from about mean sea level to the upland margin.

Average density: Highly variable.

Annual productivity and detritus availability: 3 to 4 tons per acre, detritus readily available in the intertidal zone.

Waterfowl and wildlife utility: Wide diversity of vegetation provides a variety of wildlife food. Waterfowl foods are plentiful, such as the generous seed heads of saltmarsh bulrush.

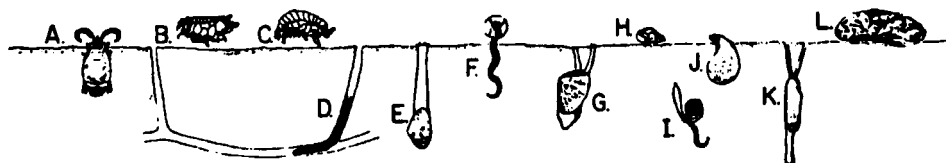
Potential erosion buffer: Shoreline erosion protection is the same as that of a Type I marsh (saltmarsh cordgrass). Most brackish water marshes are bordered by saltmarsh cordgrass.

Water quality control and flood buffer: Ranks high in this category, having similar attributes as a Type II marsh (saltmeadow).

SUMMARY: This marsh is a microcosm of all the communities found in saline waters. Brackish water marshes are known spawning and nursery grounds. This community type contains valuable food and habitat for a wide diversity of wildlife species. Ranks with a Type I (saltmarsh cordgrass) marsh.

DOMINANT BENTHIC SPECIES OF THE NON-VEGETATED WETLAND COMMUNITIES

	Intertidal Beach Community	Tidal Flat Community	Intertidal Oyster Reef Community		
SEDIMENT TYPE	SAND	SAND	SAND/MUD	MUD	SHELL
DOMINANT SPECIES	Amphipods Mole crabs Donax clams	Amphipods Bloodworms Soft clams Razor clams Sandworms	Mud snails Soft clams Razor clams Spionid worms Hard clams	Mud snails Bloodworms Razor clams Spionid worms	Oysters Hard clams Curved mussels Amphipods Mud crabs



SPECIES INDEX	A. Mole crab (<i>Emerita talpoida</i>)	F. Spionid worm (<i>Polydora ligni</i>)
	B. Haustorid amphipod (<i>Parahaustorius</i>)	G. Donax clam (<i>Donax variabilis</i>)
	C. Haustorid amphipod (<i>Parahaustorius</i>)	H. Mud snail (<i>Ilyanassa obsoleta</i>)
	D. Sandworm (<i>Nereid polychaete</i>)	I. Bloodworm (<i>Glycera dibranchiata</i>)
	E. Soft clam (<i>Mya arenaria</i>)	J. Curved mussel (<i>Isochodium recurvus</i>)
		K. Razor clam (<i>Tagelus plubeus</i>)
		L. Oyster (<i>Crassostrea virginica</i>)

Type XIII. Intertidal Beach Community

Dominant species:

Ocean Beach - Mole crabs, Donax clam, Haustorid amphipods

Bay Beach - Haustorid amphipods, oligochaete worms, beach fleas

Associated species: Ghost crabs, polychaete worms, razor clams

Growth habit: Most organisms buried just below the sand surface. Constantly being uncovered by waves and burrowing back into sand. Most species are annuals.

Average density: Highly variable, animals move up and down beach with tide level. In warmer months densities can average 100 to 5000 individuals/m². Annual production is very high.

Primary production and nutrient cycling: Relatively low compared to marshes and tidal flats because of high wave energy.

Habitat value: Very important foraging area for many shorebirds areas above mean high water are used as nesting sites by terns and skimmers. Fish utilize area for feeding during high tide.

Erosion buffer: Beach is an ideal natural wave-energy dissipator. It interacts with nearshore sand bars and dunes. Its most important ecological function to man is to buffer the effects of storm waves.

SUMMARY: Beach systems deserve the highest order of protection particularly when associated with extensive dunes and nearshore sandbars.

Type XIV. Sand Flat Community

Dominant species: Sandworm, bloodworm, amphipods, soft clams, razor clams.

Associated species: Other polychaete worms, mollusks and phoronid worms.

Growth habit: Most of the inhabitants are surface and deep burrowing species; some are permanent tube builders. Most species are annuals or biannuals, several reproduce throughout the warm weather period. There is a fairly rapid turnover of individuals due to predation so the average size of organisms is small.

Average density: Highly variable with polychaete worms reaching higher densities than other groups. Densities of major invertebrate groups range from 330 to 3000 ind./m².

Primary production: Annual production ranges from 100 to 200 g C/m². This is lower than that of marshes but only slightly less than other tidal flats. The primary production of this community enters the estuarine food web directly via grazing. This is more efficient than the detrital food chain where decomposition is an intermediate step. The large particle size of sand and lower percentage of organics reduces the role of this community type in nutrient recycling.

Habitat value: Very important as nursery and feeding area for fishes and blue crabs. Important shorebird feeding area. May support high shellfish populations.

Erosion buffer: Important in reducing wave energy and thus erosion potential on adjacent shorelines.

SUMMARY: Overall, the ecological value of this community rates only slightly below beaches, oyster reefs and Group I marshes.

Type XV. Sand/Mud Mixed Flat Community

Dominant species: Hard clams, parchment worms, Spionid polychaetes, soft clams, razor clams and mud snails.

Associated species: Other polychaetes, molluscs, crustaceans, acorn worms, Phoronid worms.

Growth habit: This community is populated in general by many surface and deep burrowers, and permanent tube builders. Otherwise similar to sand flats.

Average density: Highly variable but overall higher than sand flats or mud flats. Densities range from 5300 to 8300 individuals/m².

Primary production and nutrient cycling: Primary production in this community is very similar to sand flats. Since the organic matter content of the sediments is higher than that of sand flats, secondary, microbial production may be higher and this augments the primary production. This community probably interacts with estuarine nutrient cycles to a greater extent than sand flats.

Habitat value: This community is a very important area for wading birds, shorebirds and other migratory waterfowl. It is heavily used by important commercial and sports fishes for feeding and is important blue crab habitat. The habitat value may increase in importance when a marsh is adjacent due to higher organic content in the sediments and the habitat variety provided by the marsh.

Erosion buffer: Slows wave velocity and thus may reduce wave erosion impinging on adjacent shoreline.

SUMMARY: Overall this community has very high habitat values especially if associated with marshes. Ranks only slightly below beaches and intertidal oyster reefs.

Type XVI. Mud Flat Community

Dominant species: Spionid worms, mud snails, razor clams, bloodworms.

Associated species: Other polychaetes, molluscs and crustaceans.

Growth habit: Surface and shallow burrowing organisms predominate in this community type. Some permanent tube builders may be present. Problems with sediment stability limit species to mainly surface detrital feeders.

Average density: Highly variable; Generally densities are slightly lower than mixed flats but higher than sand/flats with a range of 50 to 5000 individuals/m².

Primary production and nutrient cycling: The areal extent of mud flats is probably equal to or greater than the total for marshes. Primary production is probably the highest of the nonvegetated communities. Mud flats interact significantly with adjacent vegetated areas in the cycling of nutrients. Where mudflats and marshes occur together they are mutually dependent. Ecologically, each is an extension of the other.

Habitat value: Highly important foraging area for waterfowl, sports and commercial fishes and many other species of food chain value in the marine ecosystem.

Erosion buffer: Since this community is generally only found in quiescent areas it has less value in this regard than sand or mixed flats.

SUMMARY: The overall ecological value of mud flats is comparable to sand flats and mixed flats. It is probably most important in nutrient cycling of the three.

Type XVII. Intertidal Oyster Reef Community

Dominant species: Oysters, hard clams, sand worms, amphipods, mud crabs.

Associated species: Other polychaetes, mud snails, curved mussels, barnacles, sponges, hydroids, razor clams, other molluscs and crustaceans.

Growth habit: Oyster shells provide increased diversity of habitats for a variety of estuarine species. This community is characterized by high diversity of attached and associated organisms.

Average density: Oysters dominate when area managed by man. Otherwise the reef is dominated by fouling organisms as listed above. Highly variable density but generally greater than other flats.

Primary productivity and nutrient cycling: Very little data are available concerning the primary production of oyster reefs. Given the high habitat and animal diversity however, it is probable that primary production is at least as high as other nonvegetated communities.

Habitat value: Very high; many important food chain organisms associated. This community is heavily utilized by blue crabs and fishes during high tides. Very high diversity and secondary productivity.

Erosion buffer: Shells cemented together may be important in dissipating waves and may resist shoreline erosive forces.

SUMMARY: Overall ecological value very high. This community is an excellent habitat with high diversity.

Section III

Evaluation of Wetlands Types

For management purposes, the twelve types of vegetated wetlands (marshes) and five types of nonvegetated wetlands (tidal flats and beaches) identified in Section II are grouped into five classifications based on the estimated total environmental value of an acre of each type. The reader is cautioned however that these groupings are based on average values and case-by-case analysis may yield differing results. One must also exercise restraint when comparing vegetated vs. non-vegetated communities.

Group One: **Vegetated communities**
Saltmarsh cordgrass (Type I)
Arrow arum-pickerel weed (Type VII)
Freshwater mixed (Type XI)
Brackish water mixed (Type XII)

Nonvegetated communities
Intertidal beaches (Type XIII)
Intertidal oyster reef (Type XVII)

The vegetated community types in Group One have the highest values in productivity and wildlife utility and are closely associated with fish spawning and nursery areas. They also have high values as erosion inhibitors, are important to shellfish populations and are important factors in nutrient cycling.

Intertidal beaches and sand bars have the highest relative values as buffers to shoreline erosion. In addition, they rank very high as marine habitat and in secondary productivity. Intertidal oyster reefs, which occur primarily on the seaside of the Eastern Shore, have their highest values in terms of productivity, habitat and commercial importance.

All of the communities in the Group One classification merit the highest order of protection.

Group Two: **Vegetated communities**
Big cordgrass (Type V)
Saltmeadow (Type II)
Cattail (Type VI)

Nonvegetated communities
Sand/flats (Type XIV)
Sand/mud mixed flats (Type XV)
Mud/flats (Type XVI)

The marshes in Group Two are only slightly less valuable than those in the Group One classification. The major differences being the reduced availability of detritus from the Group Two marshes due to physiographic factors. The detritus produced on the Group Two marshes is more likely to accumulate in the marsh and is less available to marine organisms. Group Two

marshes have high values in maintaining water quality, buffering coastal flooding, and as habitat.

The Group Two nonvegetated communities have high general productivity values and play an essential role in nutrient cycling in the estuary. They are very important foraging areas for marine birds and many mobile marine organisms of commercial and recreational importance. They have less value than the Group One communities from an erosion and flood buffering standpoint.

Group Two wetlands communities rank only slightly below those of Group One in overall environmental importance. They deserve an order of protection only slightly below that of the Group One wetlands. Since there are many variables involved in any evaluation scheme, it is highly likely that some Group Two wetlands may on occasion outrank some Group One communities. This may be particularly true of the nonvegetated communities which exhibit a great deal more variability than the vegetated communities.

Group Three: Yellow pond lily (Type IX)
 Black needlerush (Type III)

The two marshes in the Group Three category are quite dissimilar in properties. The yellow pond lily marsh is not a significant contributor to the food web but it does have high values to wildlife and waterfowl. Black needlerush has a high productivity factor but a low detritus availability value. Black needlerush has little wildlife value but it ranks high as an erosion and flood buffer. Group Three marshes are important, though their total values are less than Group One and Two marshes. If development in wetlands is considered necessary, it would be better to alter Group Three marshes than Group One or Two.

Group Four: Saltbush (Type IV)

The saltbush community is valued primarily for the diversity and bird nesting habitat it adds to the marsh ecosystem. To a lesser extent it also acts as an erosion buffer. Group Four marshes should not be unnecessarily disturbed but it would be better to concentrate necessary development in these marshes rather than disturb any of the marshes in the preceding groups.

Group Five: Saltwort (Type X)
 Reedgrass (Type VIII)

Based on present information Group Five marshes have only a few values of significance. While Group Five marshes should not be unreasonably disturbed, it is preferable to develop in these marshes than in any of the other types.

The ranking system above is only a partial tool for use in making decisions to alter wetlands for it measures only one wetland type against another. Other factors, involving a total view of the creek or river system involved, should be considered in the decision making process.

Acreage is obviously one important factor to consider when evaluating a specific wetland. A large wetland is inherently more valuable than a smaller wetland of the same type. Many creeks and rivers in Virginia however, contain vegetated and nonvegetated wetland areas which are quite small and/or fragmented. The cumulative value of these small areas may be as great or greater than that of a single wetland of the same type and acreage.

Any marsh which is 2 feet or more in average width is considered to have significant values as an erosion deterrent and in filtering sediments coming from the uplands. It may also have other values depending upon the total acreage of the marsh parcel. Any marsh which is greater than 1/10 of an acre in size may have, depending on type and viability, significant values in terms of productivity, detritus availability and wildlife habitat. Depending on its location, it may also have value as an erosion buffer.

In Virginia wetlands represent a little over 1% of the total acreage in the state yet they play a vital role in sustaining the important commercial and recreational fisheries which millions of east coast citizens enjoy. Population and development pressures in the tidal portion of Virginia pose a subtle but constant threat to these marine resources. Habitat losses are generally counted in small portions rather than catastrophic leaps. It is very important to note that although the large scale projects attract greater publicity, the total resource loss due to many small projects may be of equal or greater importance from an environmental viewpoint.

Because of the essential functions performed by wetlands in the marine environment and the limited extent of this resource, it is necessary to limit the activities which adversely affect wetlands to those considered highly essential. If the activity proposed can be accommodated while preserving all or most of the wetlands involved, a proper balance has been struck. In cases where development and preservation are mutually exclusive the necessity of the activity must be weighed against the value of the resource involved and the degree of adverse impact the activity will have on the wetland.

Section IV

Criteria for Evaluating Alterations of Wetlands

The legislature established a policy "to preserve the wetlands and to prevent their despoliation and destruction and to accommodate necessary economic development in a manner consistent with wetlands preservation." This section addresses the foregoing policy. Many proposed uses of the shoreline can be accommodated with little or no loss of wetlands if the following criteria are applied. There are times, of course, when these criteria may not apply in specific cases. The conscientious application of these criteria will, however, materially reduce adverse environmental impacts of man's activities on the shoreline.

The individual criteria contained in this section are supported by brief statements explaining the basic reasons behind adoption of the particular criterion. It is emphasized that these rationale are of necessity very brief and do not encompass all aspects of the given subject. Persons desiring further details should contact either the Virginia Marine Resources Commission, Habitat Management Division or the Virginia Institute of Marine Science, Department of Wetlands Ecology.

General Criteria

- A.** Provided significant marine fisheries, wetlands and wildlife resources are not unreasonably detrimentally affected, alteration of the shoreline or construction of shoreline facilities may be justified in order to:

1. Gain access to navigable waters by:
 - a. Commercial, industrial, and recreational interests for which it has been clearly demonstrated that waterfront facilities are required.
 - b. Owners of land adjacent to waters of navigable depth or waters which can be made navigable with only minimal adverse impact on the environment.
2. Protect property from significant damage or loss due to erosion or other natural causes.

B. Alteration of the shoreline is ordinarily *not* justified:

1. For purposes or activities which can be conducted on existing fastlands and which have no inherent requirement for access to water resources.
2. For purposes of creating waterfront property from lots and subdivisions which are not naturally contiguous to waters of navigable depth or waters which can only be made navigable by substantial alteration or destruction of marine resources.
3. When damage to properties owned by others is a likely result of the proposed activity.
4. When the alteration will result in discharge of effluents which impair wetlands, water quality or other marine resources.
5. When there are viable alternatives which can achieve the given purpose without adversely affecting marshes, oyster grounds or other natural resources.

Rationale: These criteria recognize riparian rights and reserve the shoreline for those uses or activities which require water access. These criteria also point out that activities such as dredging into the fastlands for housing developments often have a significant and long term adverse impact on the marine environment through such effects as changed upland hydrology, sedimentation, changes in water current patterns near the shoreline, and the introduction of pollutant discharges which frequently lead to closure of shellfish grounds. The dredging of channels into fastlands may also lead to deterioration of ground water by salt water intrusion into aquifers.

C. Utilization of open-pile type structures for gaining access to adequate water depths is generally preferred over the construction of solid structure, dredging or filling.

Rationale: The construction of solid structures, or the conduct of dredging and filling operations, often causes irretrievable loss of wetlands through their direct displacement or by indirect effects of sedimentation or altered water currents. Open-pile type structures permit continued tidal flow over existing wetlands and subtidal areas, avoid potential sedimentation problems, future maintenance dredging, and have less effect on existing water current patterns.

D. Channels, fills and structures should be designed to withstand the maximum stresses of the marine environment and also to minimize the frequency of future maintenance activities.

Rationale: Shoreline alterations often change currents, affect shoreline stability and cause biological damage. Unsuccessful structures or channels generate demands for remedial action which can compound initial adverse effects. Designs which minimize the dredging frequency in channels are particularly important. Dredging destroys or displaces bottom-dwelling organisms of value to the aquatic food web. Organisms can be expected to recolonize a dredged area after a period of time, however, too frequent dredging can inhibit recolonization.

- E.** High density development in or immediately adjacent to wetlands and/or other flood plains is discouraged.

Rationale: Development in low-lying areas and on high energy coastlines has historically created costly flood control and flood relief problems including claims for indemnification. Additionally, hydrological changes in surface run-off patterns are caused by the paving over of formerly absorbent soil. The usual effect is an increase in both the amount and the rate of surface water-flow, often contributing to shoreline erosion and other problems. Finally, high-density development leads to a concentration of contaminating constituents in urban surface water runoff which can severely stress receiving waters in the adjacent marine environment. There appears to be a direct relationship between population density in a watershed and increased bacterial levels in adjacent waters. This may lead to the imposition of long term restrictions on the direct marketing of shellfish.

Specific Criteria

The following specific criteria are established for use in the design, evaluation or modification of individual projects.

A. Shoreline Protection Strategies

1. Shoreline protection structures are justified only if there is active, detrimental shoreline erosion which cannot be otherwise controlled; if there is rapid sedimentation adversely affecting marine life or impairing navigation which cannot be corrected by upland modifications; or if there is a clear and definite need to accrete beaches.

Rationale: The design and placement of shoreline protection structures is a highly technical subject and often the precise or long-term effects of such structures on littoral processes cannot be predicted. A study of one county's shoreline shows that nearly 50% of the existing shoreline protection systems are ineffective or poor in performance. Shoreline protection structures disrupt natural forces and drive a shoreline away from a natural equilibrium state. In short, all protective structures have the potential to adversely affect marine resources directly or through indirect means. Needless shoreline modification is therefore discouraged.

2. For shorelines experiencing mild to moderate erosion, the planting of marsh grasses is a preferred means of stabilization. **Note:** The planting of marsh grasses is not appropriate on all shorelines and requires some technical expertise. Free advice is available from the Virginia Shoreline Advisory Service and the Virginia Institute of Marine Science.

Rationale: Fringing marshes buffer erosion through their dense root systems and ability to collect sand and sediments moving along the shoreline. When a fringe marsh is established, it not only provides food and habitat for marine birds and other organisms but also minimizes the adverse effects to adjacent shoreline properties which are often associated with other types of erosion control measures.

3. When an erosion control structure, such as a bulkhead or seawall, is deemed necessary, it should ordinarily be placed landward of any existing and productive marsh vegetation. A line of saltbushes, if existing, can usually indicate the seaward limit of the vertical structure. Along shorelines where no marsh vegetation exists, the retaining structure should ordinarily be placed far enough landward of mean high water so as to minimize exposure to wave action.

Rationale: A vertical retaining structure behind a marsh not only preserves the marsh for its biological productivity but also utilizes the marsh's capabilities of aiding water quality and deterring erosion.

Placing a vertical retaining structure landward of mean high water minimizes its exposure to wave action and reduces erosion or scour along the toe which could jeopardize the integrity of the structure. Landward placement also preserves intertidal bottom, maintaining habitat diversity and associated functions of this area within the marine ecosystem.

4. Sloped rock or riprap revetments and gabions are generally preferred over vertical structures.

Rationale: Vertical retaining structures tend to reflect wave energy and often transfer a problem to neighboring properties. Coastal waves, whether from natural causes or from boat wakes, are better absorbed or dissipated by riprap revetments or gabions. In addition, the slope and open spaces in riprap or gabion structures may provide suitable habitat for crabs and small fish. In some cases, sediment may be trapped in riprap or gabion structures and subsequently become vegetated with marsh species.

5. The placement of offshore breakwater or submerged, nearshore sills parallel to a portion of shoreline in order to attempt to elevate the height of a beach or dampen wave energy is generally acceptable only in areas with a good sand supply in the nearshore zone or where there is active detrimental erosion. Sill structures are usually constructed of properly filled sandbags, gabions or mortar filled bags. Although not a general rule, the sill is usually most effective when placed at or near the mean low water line. Both breakwaters and sills must be specifically designed for the shoreline segment in question.

Rationale: The placement of sill structures where there is an insufficient supply of sand to the beach may cause harmful effects to the shorelines of adjacent downdrift properties. Placing the sills at, or near the mean low water line will usually ensure sufficient backshore height. Placement of the sill structure too far offshore may result in insufficient filling and ultimately failure of the system. Sills may also not be suitable for high use beaches because of the potential hazard to swimmers.

6. The placement of a groin or series of groins on eroding shorelines in an effort to trap sand and build up a beach is justified only when there is sufficient sand in the littoral drift system or if properly functioning groins already exist in the section of shoreline in question.

Rationale: Groins are designed to trap sand and build beaches. When they function properly, they necessarily deprive downdrift shorelines of sand and thus may accelerate erosion to adjacent properties particularly if there is only a small amount of sand available in the system.

7. When groins are considered justified they should be low profile in design and only as long as is necessary to trap sand drifting in the littoral zone. Ideal groin length can be determined by examining the sand fillets in existing groins along the same shoreline reach or can be based on the width of the local beach.

Rationale: The low profile groin is designed to resemble the natural beach slope and allow sand to by-pass and thus nourish downstream properties once the groin has filled. Groins which are too long for the existing beach may shunt sand out to deeper water thus making it unavailable to downdrift properties.

8. The use of jetties at the entrance of a channel in order to maintain navigable depths or protect the entrance from wave attack is justified only when there is a clear and demonstrated need for such a structure and adjacent properties will not be significantly adversely affected.

Rationale: jetties attempt to prevent the littoral drift from entering the channel by trapping sediment moving along the shoreline. Sand tends to accumulate on the updrift side of a jetty and sediments are transported away from the jetty on the downdrift side. This can often result in accelerated erosion of the downdrift shoreline.

B. Filling and Dredged Material Disposal.

1. Filling in wetlands or subaqueous areas for the singular purpose of creating waterfront upland property is generally undesirable.

Rationale: Marine resources are finite, provide many valuable services and products and are delicately balanced in an intricate web of biological and physical interactions. Permanent loss of these resources and unnecessary alterations jeopardize this delicate ecological balance.

2. When filling along a shoreline is necessary, the activity should be confined to the area landward of any wetlands. If suitable non-wetland areas are not available and it is necessary to locate the fill further seaward, locations in Group 3-5 wetlands should be selected if possible (reed grass, saltwort, saltbush, black needlerush, yellow pond lily). Every reasonable effort should be made to preserve existing Group 1 and 2 wetlands communities. In nonvegetated wetlands, fill should be contained at or above the mean high water line. In cases where some encroachment beyond mean high water is justified (e.g. where an

eroding bluff is being graded down to stop erosion), the encroachment channelward of mean high water should be limited to the minimum required to achieve the desired goal.

Rationale: The values of the more important wetland communities are preserved, thus somewhat lessening the undesirable impact of destroying marshes and in the case of non-vegetated areas, minimizing encroachment conserves these shallow areas to function as described in Section II of this document.

3. Fill material, whether on wetlands or nearby fastlands, should not contain contaminants which may leach into adjacent waters. Upland source material is generally preferable to dredged material for use as fill.

Rationale: Oil or other contaminants can leach off the surface of filled areas and travel to adjacent waters via surface runoff. In some instances, they may also leach downward into the water table. In either case, water quality is impaired. Most dredged material is composed of silts and clays which when dry and compacted do not allow the free flow of water and thus may cause hydraulic flow problems behind a bulkhead.

4. Where feasible, controlled disposal of dredged material on highland property is the preferred method.

Rationale: There are many difficulties inherent in controlling dredged material in the marine environment. Marine resources are finite and subject to significant disruption from such activities since the water column can act as a vector carrying sediments well beyond the immediate disposal point.

5. Dredged material disposal areas should meet the following criteria:

- a. Disposal by the bucket or dragline method:

- (1) Build an earth-tight bulkhead along the perimeter of the disposal area sufficient to confine the dredge spoil. The bulkhead or dike (berm) should have a top elevation at least 3 feet above the average upper limit of spring tides.
- (2) Earthen dikes (berms) should be compacted as they are constructed, have side slopes no steeper than 1 horizontal to 3 vertical, a top width of at least 3 feet, and the toe of the slope should be at least 15 feet from existing marsh grasses. Spillway boxes or release pipes should be provided to prevent water from eroding or over-topping the dike. As soon as possible after completion of the project, the disposal area should be graded and vegetative cover established.
- (3) In some projects involving small volumes of generally sandy material, a double line of staked straw bales may provide suitable containment.

b. Disposal by hydraulic methods:

- (1) Earthen dikes should be constructed by dragline or land fill methods to the specifications as described in 3 (1) above. The volume of the disposal area lying below the elevation of the spillway crest should, at all times during the dredging, be sufficient to provide a retention time long enough to clarify the discharge water to meet applicable water quality standards. The spillway should be placed as far as possible from the discharge end of dredging pipes.
- (2) The dredge pipeline should have tight joints to prevent leaks. Grading and vegetative cover should be accomplished as soon as possible. (It is recognized that hydraulically filled areas may take many months to dry sufficiently for people or equipment to move across them. Seeding may have to be delayed for periods possibly as long as a year. The spillway should therefore be maintained until the area is permanently seeded and vegetation is well established and providing adequate ground cover to retain the soil).

Rationale: Control of sedimentation is accomplished if the above criteria is maintained during the entire dredging period.

6. Dredged material should not ordinarily be deposited in adjacent marsh as a convenience. If it becomes necessary to place spoil on a marsh, consideration should be given to placing it on those portions of lower value or to scattering the material in a thin layer rather than containing it behind a berm. Berms in marshes should be used to contain fill only when absolutely necessary and when they will not impair tidal flow to other wetlands areas.

Rationale: A continuous berm often cuts off water supply to a marsh. Selective piling allows continued water supply to uncovered portions of a marsh and may enhance habitat for wildfowl and animals. Scattering of dredged material in a thin layer can sometimes maintain basic marsh values though it may ultimately lead to changes in vegetative species if the marsh surface is significantly raised in elevation. The depth of the soil layer must be evaluated in each case.

7. Whenever feasible, displaced marsh vegetation and peat should be used to reconstitute marsh in the vicinity of the activity site and particularly along the banks of newly cut canals. The practice of compensating for marsh loss in one area by building marsh in another is theoretically viable but because of significant technical difficulties is not always recommended.

Rationale: This procedure, when successful, aids in maintaining marsh inventory and will deter shoreline erosion and enhance water quality conditions.

8. When under specific case by case analysis it is determined that marsh creation is an acceptable means of compensating for an unavoidable marsh loss, one marine habitat (e.g. tidal flats) should ordinarily not be sacrificed to create another (marsh). Resource compensation through marsh creation is not a panacea and should be limited to cases where the

loss of existing marsh is unavoidable and significant and there is a high probability of success.

Rationale: There is at present no conclusive evidence that the trading of one marine habitat for another results in a net gain for the environment. The creation of marsh from upland or other habitat is technically feasible in many cases. It is however a complex activity that generally cannot be successfully accomplished without technical knowledge and expertise.

9. Overboard disposal of dredged material is generally undesirable unless the deposits are basically clean sand, the disposal area is devoid of commercially important bottom organisms, and the deposits will have a beneficial effect on shoreline erosion problems. There may be occasions when overboard disposal of silty spoil can be used to create marsh. This will probably also entail the planting or seeding of marsh vegetation under closely controlled conditions.

Rationale: Silty soils tend to stay in the water column longer than the heavier sands and may therefore drift to other areas resulting in damage to bottom organisms outside the selected spoil area. Pollutants may likewise drift with the currents. In some cases, good quality sand can be beneficial in nourishing starved or eroding beaches and this possibility should be considered.

10. Whenever overboard disposal is permitted, the operation should be located and conducted so as to minimize impacts on commercially important bottom dwelling (benthic) organisms such as clams and oysters, submerged aquatic vegetation, and other unique or highly productive habitats.

Rationale: Because water is the link which ties all different marine habitats together and can transport pollutants over large areas, care must be taken to localize the impacts of overboard disposal to the maximum extent practical.

11. The overboard disposal of good quality sand in order to replenish beaches is generally acceptable so long as the beach sand and dredged sand are size-compatible.

Rationale: The placement of material of smaller particle size than that found on the natural beach will only serve to increase turbidity since it will be resuspended by wave action and carried away very quickly resulting in little benefit for the sand-starved beach.

C. Dredging

1. When possible, open pile piers should be lengthened to reach necessary water depths in order to minimize the amount of dredging required.

Rationale: Open pile piers have a minimal adverse impact on the marine environment. Dredging is a significant, though temporary, disruption which must be repeated in order to maintain water depths. Every dredging project, whether new dredging or maintenance

requires an approved disposal area and this can be a major problem particularly in developed areas.

2. Dredging for the singular purpose of obtaining fill is ordinarily not justified.

Rationale: Although dredged areas are repopulated to a degree by organisms after cessation of dredging, they generally never return to their predredge productivity levels if water depths are greatly increased. The result is a chronic degradation of habitat quality and reduction in system productivity.

3. For relatively small projects (2000 c.y. or less), dredging by dragline or bucket method is generally preferred.

Rationale: Control of sedimentation is much simpler with the bucket dredge in that there is a higher ratio of soil to water as the dredged material is transferred from the dredging area. Dredged material disposal is less complicated and more easily subject to productive use. Hydraulic dredging is preferred for large dredging projects particularly when the dredged material is to be placed in an area remote from the dredged site.

4. The practice of "double handling" dredged material in a waterway is generally undesirable.

Rationale: This activity, which involves the interim placement of dredged material in the waterway effectively doubles the adverse effects of bottom disruption and turbidity associated with dredging activities.

5. Dredging in shellfish areas, beds of subaquatic vegetation and other areas of singularly high productivity should be avoided if possible.

Rationale: These areas generally have very high values to both commercial and sport fisheries and to the organisms that support them. In addition their recovery period from dredging is measured in years rather than months as is the case for other bottom types. In many cases the new depth involved after dredging may preclude any recovery of these particular biotic communities.

6. In oyster and clam growing areas (brackish and saline water) dredging should be avoided during the months of July, August, September, December, January and February, whenever possible. This is particularly important when the dredging is to be performed within 500 yards of, or overboard disposal is within one mile of, productive public or privately leased oyster ground. In anadromous fish spawning and nursery areas (i.e. freshwater), dredging and overboard disposal operations should be avoided, when possible, during the period of mid-March through October. Particularly critical is the actual spawning period, mid-March through June. Concern is heightened when overboard disposal is involved.

Rationale: The majority of oyster spawning and spatfall occurs during the months of July, August and September in most areas of Virginia. Higher than normal suspended solids levels, which can occur in proximity to large dredging and disposal activities, can inter-

fere with the development and survival of oyster larvae. Resultant sedimentation can also adversely affect the setting of oyster larvae by covering clean hard substrates thus making them unavailable to the larvae. During the coldest months of the year, oysters are more susceptible to siltation because their pumping activity is reduced and they are less able to clear away rapidly accumulating silt. During the spring spawning run (mid-March through June) anadromous fish eggs and larvae can be adversely affected by higher than normal levels of suspended sediments. Adult migrations can be impeded especially in narrow streams and rivers where turbidity may reach from bank to bank. The period July through October is the nursery period when the larvae develop into juveniles before beginning their migration back to the ocean. **Note:** This guideline is not subject to blanket application in the salinity regimes where it is applicable. Careful case-by-case analysis is required.

7. In relatively large water bodies, overdredging to reduce the frequency of maintenance dredging, should not exceed an additional two feet and this should be based on the anticipated sedimentation rate. In narrow canals and other water bodies subject to poor flushing, the dredged depth should not exceed one foot below that of the connecting waters.

Rationale: This guideline balances the benefits of reduced maintenance frequency and thus environmental disturbance with the creation of stagnant or “dead” water which can occur when artificially deep holes are created.

Specialized Structures and Activities

D. Channeling into Fastland or Marshes

1. Where feasible, community piers and launching facilities are preferable to channeling into fastlands or marshes for water access in conjunction with urban development.

Rationale: Studies have shown that such channeling leads to water quality problems. Poor water circulation and flushing, combined with contaminating constituents and high nutrient loads from adjacent development often leads to reduced dissolved oxygen levels, noxious odors, uncontrolled algal growth and fish kills.

2. While environmentally objectionable, there may be times when channels into marshes or uplands are permitted. When this is the case, the following criteria should be applied in order to reduce adverse effects:
 - a. Channels should be short in length and preferably no longer than twice the width.
 - b. Channels should not be dredged more than 1 foot deeper than the depth of the waterway to which they are to be connected.
 - c. Channels should not be box-cut but should be dredged with slopes that approximate the natural angle of repose of soils of the area, usually on the order of 3 feet horizontal for every 1 foot vertical.

- d. The top banks of channels should be graded to a slight incline anywhere between mean sea level and mean high tide for an inland distance of at least 10 feet. This area should then be planted with marsh vegetation appropriate to the soils and the salinity of waters in the area.
- e. Channels should be significantly shallower at their heads than at their mouths in order to promote better exchange with the natural waterway.
- f. Channel curves and angles should be avoided.

Rationale: The foregoing criteria reduce the potential adverse impacts of channelization by providing for better water circulation and bank stability. The marsh vegetation aids in preventing upland spoils and contaminants from lowering water quality.

E. Dams and Impoundments

1. Dams and impoundments should ordinarily not be located in tidal wetland areas. If some encroachment into such areas is deemed necessary every effort should be made to limit the encroachment as much as possible and restrict marsh loss to Group 3-5 marshes.

Rationale: Impounding an upland area generally involves a tradeoff of one set of upland habitat values (e.g. hardwood forest) for another set (lake or pond). When tidal wetlands are lost to this same type of development, the loss to the marine environment can be severe and is generally irreplaceable.

2. When a dam or impoundment is constructed in, or adjacent to, a tidal stream, provisions should be incorporated into the design to maintain a flow of freshwater into the estuary.

Rationale: Maintaining a flow will minimize the upstream movement of salt water in the stream and thus reduce large scale aquatic habitat changes due to salinity shift.

3. Dams should incorporate the use of fish ladders in order to minimize the loss of upstream spawning and nursery grounds for marine species.

Rationale: Many commercial and sports fishes are spawned and develop to adult stages above the tidal estuary. These areas are critical to the maintenance of population levels in these species.

4. Techniques which will minimize the possibility of mudwave creation adjacent to the dam site should be implemented when wetlands are present.

Rationale: This guideline limits wetland losses due to impoundments to that immediately in and upstream of the dam site. A mudwave effectively destroys wetlands in its path by raising the substrate elevation above the range of tide.

5. Whenever possible, impoundments should be designed to incorporate shallow water areas capable of supporting emergent vegetation and water tolerant timber.

Rationale: Shallow water habitat within the impoundment can help offset the loss of tidal wetland habitat due to dam construction.

F. Marinas

1. Dry storage type facilities are encouraged in preference to wet slip complexes.

Rationale: Such facilities minimize adverse impacts to the marine environment and do not occupy space in the water which could be used for recreation by all citizens of the Commonwealth.

2. When siting and designing a marina facility in a coastal waterway, the following should be considered:
 - a. All structures should be open-pile or floating with any permanent loss of aquatic habitat limited to that which is absolutely necessary.
 - b. If sited in a small tributary or other poorly circulating body of water, the marina should be situated near the mouth rather than the headwaters.
 - c. The structures should encroach no more than one third the distance across the waterway except in unusual channel configurations.
 - d. Marinas should be sited away from productive or actively worked oyster and clam grounds.
 - e. Consideration should be given to the size and depth of the existing waterway and to the number of boats already housed in the vicinity.
 - f. Slips for deep draft vessels should be located in the naturally deeper waters of the marina.
 - g. If the site involves a marsh, all structures except those needed for access (ramps, railways, etc.) should be located landward of or channelward of marsh vegetation.
 - h. Design of any necessary breakwaters should permit adequate water circulation within the facility to help prevent an accumulation of pollutants. Floating tire or other non-permanent type breakwaters should be considered.

Rationale: The foregoing criteria reduce the potential adverse impacts of marinas by providing for better water circulation, minimizing marine habitat loss, and reducing initial and maintenance dredging requirements.

G. Drainage and mosquito ditches

1. Drainage and mosquito ditches should be designed according to a master plan which will maximize their effectiveness while minimizing their extent as much as possible.

2. Ditches designed along conventional grid patterns are discouraged in favor of ditches which link identified mosquito producing areas within the marsh with tidal waters. Drainage ditches should also be designed to connect to specifically identified areas of poor drainage.
3. Depths should be limited to no more than 1 foot deeper than the connecting waters.
4. Depending on the size of the ditch, dredging should be accomplished "in the dry" (landside to seaward).
5. If dredge spoil must be placed in the marsh, it should be spread or broadcast as thinly as possible over a broad area with no effective elevation change on the marsh surface. If this is not possible, the dredged material should be placed in small widely separated mounds creating plant diversity and allowing water to circulate over the remaining marsh.
6. Where maintenance dredging is to be accomplished, the dredged material should be placed, to the maximum extent possible, on the old spoil area. If this is in the form of a continuous berm paralleling the ditch, the berm should be breached periodically to promote inundation of the remaining marsh.
7. Rotary ditchers are the preferred means of constructing mosquito ditches and small drainage ditches.

Rationale: Adherence to the above procedures will maximize the effectiveness of the ditches while minimizing adverse impacts to the wetlands.

H. Submarine pipeline crossings

1. Whenever feasible, pipelines should be placed on piles or attached to existing structure.
2. When a pipeline must be buried in the river bottom, the stockpiling of excavated material adjacent to the trench should be avoided.
3. When a pipeline must be buried in a marsh, material may be temporarily placed along side the trench if upon completion all excess material is removed from the marsh, the original elevation is restored, and all denuded areas are sprigged with appropriate vegetation.

Rationale: These guidelines minimize construction impacts to the wetlands and allow for the fastest possible recovery of the natural system after the disturbance.

Glossary

- ALGAE** - Simple marine or freshwater photosynthetic plants. May be single or multicelled.
- ANNUALS** - Invertebrates which generally spawn once a year and live about a year.
- BENTHIC** - Pertaining to any plant or animal living in or on the bottom sediment of a river, ocean, lake or other aquatic system.
- BERM** - A wall or mound built around a low-lying area to contain a spoil material.
- BIANNUALS** - Invertebrates which generally spawn twice a year and live less than a year.
- BRACKISH** - Pertaining to the waters of bays and estuaries, salty but of lower salinity than seawater.
- BULKHEAD** - A structure or partition, usually running parallel to the shoreline, for the purpose of protecting fastlands from wave action or protecting channels from upland sedimentation.
- COMMUNITY** - Ecological term for any naturally occurring group of different organisms inhabiting a common environment, interfacing with each other relatively independent of other groups. Communities may vary in size and larger communities may contain smaller ones.
- DETRITUS** - Organic matter (primarily marsh plants) which while decaying in the aquatic system forms the basis of major marine food web. The organic matter and its rich growth of microbes are fed on by many estuarine species.
- DOMINANT** - For purposes of classifying marshes in this report, any organism which makes up at least 50% by volume of the organisms present in a given area.
- DRAGLINE** - The method of dredging employing a crane and large metal bucket to remove accumulated sediment.
- DREDGING IN THE DRY** - A technique of dredging used where new channels or canals are being cut. The canal is dredged from the landward end toward the seaward end and the last step is to open the new canal to the existing waterway.
- DIKE** - A wall or mound built around a low-lying area to prevent flooding.
- ECOLOGY** - The overall relationships between organisms and their environment.
- FASTLANDS** - The zone extending from the landward limits of wetlands to at least 400 feet inland.
- FRESH WATER** - Waters containing no appreciable salt, usually less than .5 parts per thousand.
- FOOD WEB** - The complex interactions of organisms in a natural community involving organisms feeding on one another to obtain energy.
- GABION** - A container filled with stone, brick, shells or other material to give it a heavy weight suitable for use in constructing bulkheads or groins. In the marine environment, usually made of galvanized steel wire mesh with a PVC (polyvinyl chloride) coating over the galvanizing.
- GROIN** - A shore protection structure built (usually perpendicular to the shoreline) to trap sand and other material moving along the shoreline and thus retard erosion of the shore.
- HETEROGENEOUS** - Being composed of many different forms of something. Specifically, a heterogeneous marsh is one composed of many different species without any one being dominant.

- HYDROLOGICAL** - Pertaining to water, its properties and distribution especially with reference to water on the surface of the land, in the soil and underlying rock.
- INTERTIDAL** - Area on a shoreline between mean high water and mean low water.
- JETTY** - On open seacoast, a structure extending into a body of water designed to prevent shoaling of a channel by sand or other materials. Usually placed along side channels at entrances.
- LINE OF SALT BUSHES** - Refers to the characteristic growth of salt marshes at the upper limit of the highest high tides. When present in a line along the inland side of a marsh it often indicates the upper limits of wetlands as defined in the Virginia Wetlands Act.
- LITTORAL PROCESSES** - Those physical features and characteristics of the intertidal area which determine the type of shoreline present.
- MICROCOSM** - A small community regarded as having all the characteristics of the biosphere or the world.
- MONOSPECIFIC** - Being composed entirely of one species or one type of organism. In this case a marsh vegetated by one type of grass.
- MEAN HIGH WATER** - The average height of high waters over a nineteen year period.
- MEAN LOW WATER** - The average height of low waters over a nineteen year period.
- PERENNIAL** - A plant which produces new growth year after year according to the seasons. In the case of nonwoody plants the aerial portion dies each winter and is replaced each spring.
- PHYSIOGRAPHIC** - A description of nature or natural phenomena in general.
- POPULATION** - All of the members of one species within a community.
- PRIMARY PRODUCTION** - Biomass produced directly from sunlight by plants.
- PRODUCTIVITY** - The rate of energy storage of an ecosystem or community in the form of organic substances which can be used as food materials.
- RHIZOMES** - Underground stems capable of producing new aerial shoots.
- RIPRAP** - Refers to a bulkhead or groin constructed of selected rock or concrete forms carefully placed so as to dissipate wave energy (bulkhead) or collect sand (groin) along a shoreline.
- SECONDARY PRODUCTION** - Biomass produced by animals grazing on plants or other organic matter.
- SHORE DEFENSE STRUCTURES** - A bulkhead or groin intended to deter erosion of the shoreline.
- SPECIES DIVERSITY** - Pertaining to the numbers of different species inhabiting a given area, i.e. high species diversity would mean many different species in one area.
- SPOIL** - The material removed from a channel bottom or other body of water during a dredging operation.
- SPRING TIDES** - Higher high tides which occur twice monthly due to astronomical conditions.
- WRACK LINE** - A line of debris, above the mean high tide line, which has been deposited by previous higher than normal tides.

Coastal Primary Sand Dunes/ Beaches Guidelines

Guidelines for the Permitting of Activities Which Encroach into Coastal Primary Sand Dunes/Beaches



Issued by the
Virginia Marine Resources Commission
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Newport News, Virginia 23607

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Section I

Introduction

During its 1980 session, the Virginia General Assembly took an important step in reducing the potential for the loss of lives and property as well as the expenditure of public assistance funds in coastal hazard areas by adopting the first State-supervised program in Virginia for controlling development in coastal primary sand dunes. In adopting the legislation, the Commonwealth recognized the importance of coastal primary sand dunes as features which, in their natural state, serve as protective buffers to the effects of flooding and erosion caused by coastal storms; thereby, protecting life and property, and further recognized the value of these features to the replenishment of sand on beaches, their importance as habitat for coastal fauna and their role in the overall scenic and recreational attractiveness of Virginia's coastal environment.

At the same time, the General Assembly expressed its concern over the fact that activities which do not take into account the essentially dynamic nature of coastal dunes and which compromise their special values may lead to increased shoreline erosion, coastal flooding damage to fixed structures and increased expenditure of public funds for disaster assistance and beach replenishment. Therefore, the General Assembly established the policy of preserving and protecting, whenever necessary and practical, coastal primary sand dunes in a manner which accommodates necessary economic development. Building upon the successful structure of the Virginia Wetlands Act, the General Assembly has chosen to offer selected localities having coastal primary sand dunes the opportunity to adopt a specified ordinance to control development in these dunes through local wetlands boards already in existence or created in order to carry out this Act. In order to simplify the task of these boards as well as the Marine Resources Commission, the legislators have wisely chosen to standardize procedures for the Wetlands and Dunes Statutes. Therefore, as with the Wetlands Statute, the Marine Resources Commission will review, on appeal, local permit decisions on dunes, and where the locality has not adopted the specified ordinance, administer the permit system itself.

In order to provide guidance to the public, and to local wetlands boards as well as to insure uniformity of decision making criteria, the General Assembly directed the Marine Resources Commission, with the assistance of the Virginia Institute of Marine Science, to develop and publish guidelines. These guidelines were approved by the Commission August 26, 1980 following four public hearings which were held in conformance with the Administrative Processes Act. They are promulgated to supplement the policy and standards of the Coastal Primary Sand Dune Protection Act with the hope that they will assist project proponents and decision-makers alike in shaping shorefront development in a manner that preserves and protects the values of coastal primary sand dunes articulated in the Act.

In 1989, the General Assembly modified the Coastal Primary Sand Dune Protection Act to bring "beaches" in certain counties, cities and towns fronting on Chesapeake Bay under the same regulatory process as that required of dunes. The intent is to regulate the use or development of sandy beaches and to prevent their alteration even if no coastal primary sand dune can be identified or where contiguity with a dune system or former dune system has been interrupted by a manmade structure such as a road, bulkhead or building.

Section II

Description of Coastal Primary Sand Dunes and Their Values

A. Dune Characterization. The Coastal Primary Sand Dune Protection Act defines a dune as a mound of unconsolidated sandy soil which is contiguous to mean high water, whose landward and lateral limits are marked by a change in grade from ten percent or greater to less than ten percent and upon any part of which is growing as of July one, nineteen hundred eighty, or grows thereon subsequent thereto, any one or more of ten plant species associated with dunes. Under this definition, chosen to recognize the dynamic nature of the system, coastal primary sand dunes include both the mound of sand comprising the dune zone as well as the foreshore comprising the beach zone. Together, these two zones form the coastal primary sand dune system which commences at mean high water and proceeds landward to the backside of the dunes where the slope drops below ten percent. (See Figure 1).

The primary dune system is a component of the active shore system as well as a transition zone between the intertidal area and secondary rows of dunes or fastland property. Coastal primary sand dunes represent an accumulation of sand, often supporting rooted vegetation, formed by the interaction of wind and wave action on the sandy material along the shore. Sand moved on the beach during periods of relatively low wave energy is moved landward by the action of onshore winds. Vegetation along the dune line acts as a baffle, slowing wind speed and causing wind-borne sand to settle and be trapped in the vegetation resulting in the growth or accretion of the dune. The size and location of a primary dune are therefore determined by the amount of sand available and the ability of wind and waves to move the sand as well as the degree to which any existing vegetation can act to trap it. Thus, just as the intensity, direction and duration of winds and waves constantly change through the

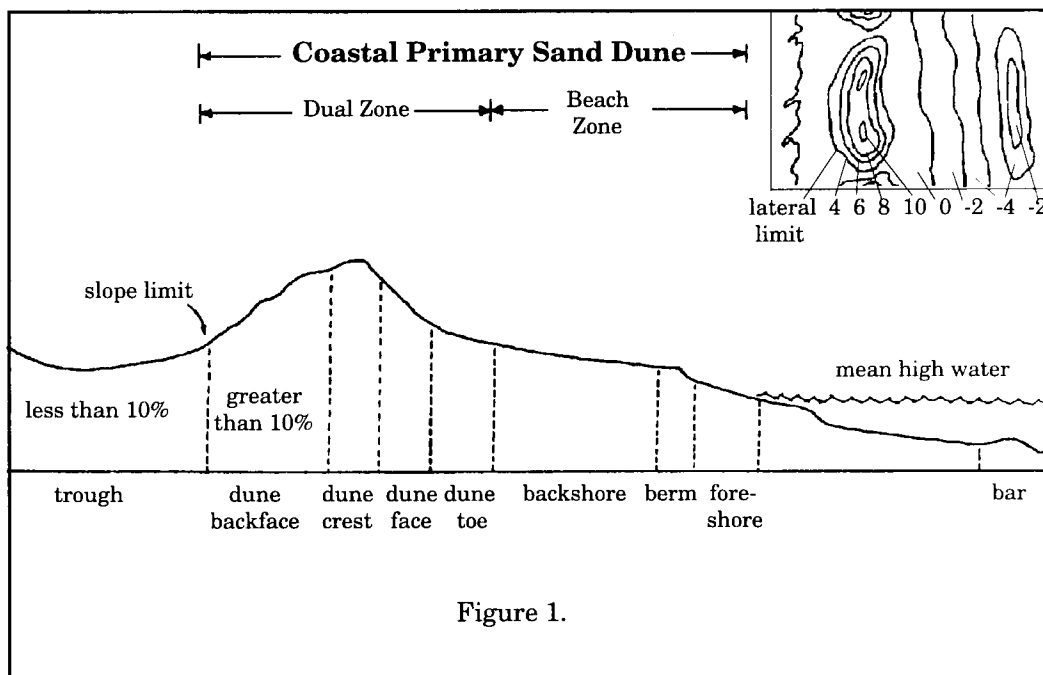


Figure 1.

seasons, so, too, do coastal dunes remain in a state of flux. During high energy conditions, such as the northeast storms which frequent the Eastern Seaboard, primary dunes may be subject to attack by wind driven waves aided by storm surges, and the dune is eroded away, with the sand settling in an offshore bar. Thus, during normal weather conditions, dunes act as a reservoir of sand which can, through erosion, buffer inland areas from the effects of storm waves and in the process act as natural levees against the effects of coastal flooding.

B. Dune Values. In adopting legislation governing coastal primary sand dunes, the General Assembly recognized that these features, "...in their natural state serve as protective barriers from the effects of coastal flooding and erosion caused by coastal storms...provide an essential source of natural sand replenishment for beaches and an important natural habitat for coastal fauna; and are important to the overall scenic and recreational attractiveness of Virginia's coastal area." Every primary sand dune provides some measure of each of these four recognized benefits, depending upon the size, location and setting of the dune as well as the quality and vigor of the vegetation.

- 1. Flood and Erosion Protection.** Primary sand dunes provide a buffer against coastal flooding and erosion by virtue of both their location and composition. Primary dunes develop at an elevation above the normal reach of tidal waters. During storm surges, however, the dune, as noted above, serves as a levee protecting the land behind from the force of waves and flood waters. The sand itself absorbs much of the wave energy as it is moved about by storm waves. Thus, the energy each wave expends eroding the dune is subsequently unavailable to act on fastland and structures behind the dune. The ability of the dune to provide this protection is obviously dependent on its height and breadth. The continuity of the dune line is also a major factor in the ability of the dune to provide protection. Solitary dunes or dune lines which are subject to being breached or flanked cannot afford the protection provided by a continuous line of uniformly high dunes.

The composition of the dune, in terms of its sediments and vegetation, also affects its ability to provide protection for coastal areas. As noted above, dune vegetation acts as a baffle to trap sand where the root system of the vegetation as well as dead vegetation bind the sediments together. Thus, the type and vigor of vegetation present on dunes help to determine the degree to which the dune will absorb wave energy.

- 2. Sand Replenishment.** Coastal primary sand dunes are basically onshore sand bars, or as noted above, reservoirs of sand. Sand is constantly being moved by wind and waves between offshore sand bars, beaches, dunes and during storm events, even inland. Sand eroded from dunes during high energy conditions often finds its final resting place on beaches or offshore bars. These offshore bars then act as sources of sand for the beach during periods of lower energy when wave action tends to deposit material in the beach zone. Thus after each storm, the sand originally eroded from the dune returns to the beach zone during the rebuilding process.
- 3. Habitat.** Coastal primary sand dunes, in their natural state, serve as a habitat for a wide variety of plants. Dune vegetation is characterized by its ability to withstand extremes in the natural environment and by its inability to withstand man-made disturbances. The dune is a very rigorous environment for a plant. Each plant must be able to survive with

very limited amounts of fresh water, tolerate constant salt spray and endure extreme variations in temperature. That such vegetation hardly enough to survive all of these stresses should be so intolerant to any additional disturbance such as trampling by people and/or vehicles is explained by the fact that these plants are living close to their limit of tolerance and even minor disturbances to root systems can cause such plants to die.

Vigorous vegetation both on the dune crest and the leeward side of the dune can provide attractive habitats for some shore-dwelling animals. The most visible inhabitants of dunes other than plants are various shore birds which utilize the area for roosts and nesting. Dunes also support a variety of insects and occasionally some small mammals and reptiles.

4. **Aesthetics.** Perhaps the most widely accepted but least quantifiable value of the coastal primary sand dune is the contribution it makes to the attractiveness of the coastal area. Aesthetic evaluations are a personal prerogative and therefore difficult to utilize as the basis for management decisions. Nevertheless, the General Assembly has taken note of the contribution dunes make to the enhancement of the shore experience. It is therefore, appropriate for development adjacent to dune areas to be considerate of that contribution.

Section III

Consequences of Altering Coastal Primary Sand Dunes

Simply stated, the consequences of altering coastal primary sand dunes are a loss of or diminution of the values discussed above. Unfortunately, there is very little information enabling quantitative assessments of the loss or degradation of these values from any proposed development in the dunes area. In the absence of such information decisions regarding such development must be based on experience and reasoned judgments with each decision being made on a case-by-case basis. It is, however, possible to rank the consequences of alteration in terms of the scale of alteration:

- A. **Leveling dunes.** The leveling of a dune is certainly the most extreme alteration of that feature which can be undertaken. In such instances, the buffering capability provided by the natural levee of the dune and its source of sand are obliterated. This exposes adjacent and neighboring properties to substantially greater risk of flooding and causes a reduction in available sand for the adjacent beach zone as well as destabilization of the flanks of adjacent dunes.
- B. **Displacement of the dune.** The natural position of a dune is the result of a balance of natural forces at any given time. Generally dunes are found in areas where they are attacked by waves only during storm events and then only after the backshore has been eroded by wave action. Displacement of a dune to a more seaward location exposes it to wave energy more often thereby accelerating erosion of the dune. Structures built on or behind the dune may then be exposed to wave action or inundated with sand as the dune migrates to a position in which it is again in equilibrium with wind and wave forces. Equally important, however, is the breach that such relocation causes in the dune line and the hazard such a breach poses for both the property located behind the relocated dune and adja-

cent properties as well. Displacement of a dune to a more landward location for whatever reasons would create the same type of breaching problem as well as affording no buffering capability for any property located seaward of it. Such displacement also causes a loss of sand for natural beach replenishment.

C. Building on the beach backshore. Building on the beach backshore, seaward of the dune can lead to adverse consequences in three ways:

1. During construction, the dune may be reduced in elevation for access to the building site. Should a storm occur during this period, the dune may be breached with the impacts discussed above.
2. After construction, the structure itself may interfere with wind patterns over the dune crest causing deflation or wind scouring.
3. Pedestrian traffic over the dune can cause the loss of vegetation anchoring the dune unless a dune overwalk, following the natural contour of the dune, is provided.

D. Pedestrian and vehicular traffic across the dune. The principal consequence of cross dune traffic is that, after the vegetation has been killed, wind transport of sand can very quickly excavate a crossdune blowout resulting in a localized weakness.

E. Building on the crest or foreface of the dune. Building on the foreface of the dune is very likely to result in alteration of the dune contours during construction, sand removal from channelization of wind around the structure and an increase of pedestrian traffic over the dune. During construction, wind blown sand may become a nuisance to other nearby properties.

F. Building on the dune backface. Since the dune backface is the natural zone of deposition in the dune system, construction in this zone is less deleterious to the functions of the dunes so long as significant amounts of material are not excavated. The presence of the structure will modify the wind flow but to the extent the structure is in the lee of the dune this may be minimized.

The preceding comments are directed principally toward destructive alterations of coastal primary sand dunes. It is possible to enhance dunes. Basically, these alterations are efforts to create more extensive, better stabilized dunes. Encouraging the natural development of a dune is not an exact science, but there is information available about the efficacy of a variety of methods. Just as with the construction of any other structure, seeking advice from a professional is advisable. The benefits accrue in terms of lessening costs associated with coastal storms.

The consequences of altering existing natural dunes are, in some respects, dependent on where the dune is located. This is particularly true of the dune's role as a protection and beach replenishment device. Within Virginia, coastal dunes are found in three broad geographic areas: the oceanside of the Eastern Shore, the Atlantic beaches south of the Bay entrance, and the shoreline of the Bay proper.

Eastern Shore - Oceanside

The oceanside of the Eastern Shore contains by far the largest complement of dunes in Virginia. Accomack and Northampton Counties have a total of about 85.3 miles of coastal dunes associated almost exclusively with the barrier islands. Barrier islands are among the most dynamic of coastal features.

As the Barrier Islands absorb the storm induced wave energy, they are frequently breached or overtopped and the sand is spread over the lee-side marshes. With the onset of normal weather, the dunes rebuild. As the Barrier Islands erode, the entire ensemble, beach-dune-washover, also retreats. Thus, the complete beach morphology is preserved. For the most part, the dunes are of low elevation and susceptible to even moderate storm activity. Given the many inlets in the system, the dunes do not have a primary function of flood control. They do, however, help control the washover processes. Given the low-lying elevations, any development on the Barrier Islands may result in inordinately high private or public costs. (See Section VII).

Virginia Beach

The second general area includes the Atlantic coast beaches south of the entrance to Chesapeake Bay. These beaches lie almost entirely within the City of Virginia Beach. The city contains about 38.5 miles of dunes. In contrast to the Barrier Island dunes, the Virginia Beach sand dunes include some under the most intense developmental pressure anywhere in Virginia.

Because of the tremendous development along the coastline, it is in this area that primary sand dunes have their greatest potential for protecting life and property. In order for the dunes to offer the maximum flood and erosion protection, they must be maintained as a relatively uniform, uninterrupted dune line. Each time a dune elevation is lowered or a portion of the dune line is completely removed, the protective capabilities of the dune are compromised not only at that site, but for adjacent areas as well.

The challenge is to accommodate the property owner's desire for access to the beach while retaining the integrity of the dune system. Repeated experience has established that construction on the dune is undesirable. Even open-pile structures lead to changes in wind and sand deposition patterns in the area. Frequently, this results in a local deflation of the dune. In the Virginia Beach area, loss of the primary dune line integrity could have its most significant consequences in terms of loss of life and property.

A second consequence of modifying dunes in the Virginia Beach area is the loss of the natural sand replenishment dunes provide to beaches. In an area whose principal resources include an attractive beach, the value of a viable dune system can easily be appreciated. The costly and continuous efforts of artificial beach nourishment are a partial result of sand dunes having been previously destroyed.

Chesapeake Bay Shores

There are scattered dune areas throughout much of the Virginia Bay shoreline. They can be found in: Norfolk, Hampton, Virginia Beach, Mathews County, Lancaster County, Northumberland County, and Northampton and Accomack Counties on the Eastern Shore. The Chesapeake Bay shoreline in Virginia Beach, Norfolk's Ocean View section and some of Hampton's shoreline possess the same development pressures as the Atlantic shoreline of Virginia Beach. The conse-

quences of dune alteration are therefore identical in those areas. The other localities differ in the type and location of dunes generally found there. Typically, the dunes are part of a less extensive beach system and frequently occur in areas with much less developmental pressure than the more urban settings. In these areas, loss of a dune's protective capabilities can have consequences for both life and property similar to that in Virginia Beach, and can impact other natural resources as in the Barrier Islands.

Section IV

Recommended Guidelines When Altering Coastal Primary Sand Dunes

In adopting the Coastal Primary Sand Dune Act, the General Assembly established the following standards for construction on sand dunes:

“No permanent alteration or construction upon any coastal primary sand dune shall take place which would:

- A. impair the natural functions of the dune as described by the Act
- B. physically alter the contour of the dune
- C. destroy vegetation growing on the dune

Activities contrary to these standards will be permitted only if the wetlands board or Commission finds that there will be no significant adverse ecological impact from the proposal, or that granting a permit for the proposal is clearly necessary and consistent with the public interest.”

It is apparent from a reading of the policy and standards of the Act that the General Assembly did not intend a prohibition on all activity in the dunes area. Instead, the legislators sought a careful balancing of the public and private benefits and detriments of each proposal. Some proposed development in the dunes area can be accommodated by utilizing proper location and design methods. Each proposal will likely be unique with respect to the necessity for the project and its probable effects on the beneficial value of dunes; therefore, criteria must be applied on a case-by-case basis. The objective of these criteria is to provide guidance which will direct development into an accommodation with the ecology of the coastal primary sand dune.

Guidelines

- A. Provided the beneficial attributes of coastal primary sand dunes as discussed above are not significantly disturbed, alteration of dunes may be justified in order to:
 - 1. Construct water access dependent facilities which must pass over the coastal primary sand dune for such access.

Such construction as might be allowed in item 1 above must be constructed in a manner which will minimize alteration of the dune slope during and after construction. Encroachment on the backside of a primary dune should be limited to the minimum necessary. In addition to other re-

quirements that may apply for construction, only structures with open pile foundations should be constructed.

Rationale: The requirement that any construction on the dune backside must utilize an open pile foundation design is based upon consideration of the dynamics of dune movement, the compatibility of housing within the dune system, and the need to protect life and property within the fastland fringing the beach zone.

During times of severe storms, the entire primary dune system may yield to excavation by elevated water levels accompanied by high waves. Structures on slab foundations or designs other than open piling may be expected to exhibit structural failure. Such slab foundations also generally require the excavation of the dune backface for placement and do not allow for the natural migration of the dune. During periods of normal weather and sea state, and during poststorm periods of natural dune rebuilding, the backside of the dune is a zone of sand deposition. Structures elevated on open piling foundations will be less susceptible to burial by encroachment and deposition.

Bridging the dunes to gain access for certain water dependent activities may be permitted when those activities are deemed necessary. In such cases, elevated open piling foundations will minimize disturbance of natural dune building processes.

It should be noted that a requirement for open pile foundations is consistent with existing requirements of the National Flood Insurance Act.

B. Alteration of coastal primary sand dunes is ordinarily not justified:

1. For purposes of activities which can be accommodated without encroachment into the dune area.

Rationale: It is clearly the intent of the legislature to protect the primary sand dunes from unnecessary despoliation. Therefore, activities which have no inherent need to be immediately adjacent to the shore or for which there is sufficient room landward of the coastal primary sand dune may not require modification of the dune.

2. Where the construction is proposed on the dune crest or seaward of the dune crest.

Rationale: The beach backshore is the primary sand supply for the primary dune and the foreface and crest of the deposit are the most active transport zones in the dune system. Construction on the backshore, frontal face and crest is thus likely to disrupt the transport system. In particular, construction on the crest and/or frontal face will cause local deflation of the sand elevations causing local weaknesses in the integrity of the dune system.

3. Where the dune location must be modified in order to accommodate the proposed construction activity.

Rationale: The natural location of the primary dune is the result of all beach processes. The natural dune position is just beyond the reach of normal beach modulations. Reloca-

tion of the dune by artificial means to a more seaward or landward location is likely to result in a loss of the sand stored in the dune. This will reduce the integrity of the dune line and compromise the ability of the dune to protect against storm flooding and erosion.

4. Where alteration of the dune would likely result in damage to neighboring property owners.

Rationale: Construction within a primary coastal dune may lead to weaknesses in the protective attributes of the system. Under severe storm attack, the weakness may lead to failure causing that site to become the focus of wave overwash activity. The breach in the system can reasonably be expected to widen to neighboring properties and cause otherwise avoidable damage.

In addition, during the periods of dune regrowth, the new sand deposits may encroach upon the developed zone of the neighboring lots.

Section V

Considerations for Construction and Mitigation Activities in the Area of Coastal Primary Sand Dunes

Due to the constantly changing nature of dunes and the possible wind, wave and scour action they may be subjected to, the design, location selection, and construction of structures in dune areas should be done by qualified professionals. As a recommended minimum, all elements of beach front structures, including the foundation and non-structural fastenings and components, should be designed to withstand the wind and wave forces of a 100 year storm. The first habitable floor of a building should be elevated on a piling foundation to a height above the crest of the 100 year design wave. Any construction in the space below the first floor should incorporate breakaway walls intended to collapse under stress without jeopardizing the structural support of the building. The piling foundation should safely transmit to the ground the full vertical and horizontal loads imposed on the superstructure by 100 year design storms. It should present as slender a profile as possible while being durable enough to resist storm loads, which may include the impact of floating debris. Pilings should be spaced such that no one row of piles is subject to significant wave forces at any one time and the spacing should provide for unhindered movement of water and debris between piles. Pilings should be of a circumference which minimizes induced concentration of wave force and consequent erosion and scour at the base, yet they should penetrate deeply enough (5 to 20 feet below mean sea level) and have sufficient strength to safely support the superstructure when the surrounding material is eroded down to the lowest predictable level. The foundation should be of a material which will resist deterioration in a corrosive marine environment. Structures with large areas in contact with the ground, such as swimming pools, decks, and slab foundations, should be discouraged. The ground below the first habitable floor should not be paved or altered, however, shell or marl are suitable when used to stabilize driveways. Telephone and electric lines should be located underground in water proof conduits laid in protected areas not subject to erosion. Water and sewage facilities should also be located in protected areas not subject to erosion.

Vegetation is the most effective protection for the land against the sea in establishing and maintaining a coastal position, and for that reason, during permitted construction, all precautions should be taken to retain as much natural vegetation as possible on the dunes and upper beaches. When walkways and platforms are located over a dune system, they should be elevated sufficiently to provide for the continued healthy growth of the vegetation below (3 feet minimum). Restoration of destroyed dunes can be accomplished by creating fills using slat or brush fencing or by moving upper beach sand by machine. Both procedures should be followed by long-term plantings of vegetation to replace that which was destroyed and to stabilize the dune. For the restoration of a long foredune, the fence should be aligned parallel to primary dunes in the vicinity and somewhat parallel to the drift line berm of the upper beach. The fence should be far enough back to allow the wind to move an adequate supply of sand against it, and placed so as not to bury existing vegetation. To build fills and help reform dune topography in smaller areas, fences should be built across the direction of prevailing winds. The newly created fill material should then be stabilized with plantings.

Section VI

Beaches

A. Definition. In the 1989 change to the Coastal Sand Dune Protection Act, the term beach is defined and added in place of reach. All references to reaches were dropped. Beach is defined as:

1. The shoreline zone comprised of unconsolidated sandy material upon which there is a mutual interaction of the forces of erosion, sediment transport and deposition that extends from the low water line landward to where there is a marked change in either material composition or physiographic form such as a dune, bluff or marsh, or
2. where no such change can be identified, to the line of woody vegetation (usually the effective limit of storm waves), or the nearest impermeable man-made structure, such as a bulkhead, revetment or paved road.

Beaches have therefore been added to the legislative declaration of policy as an area to preserve and protect in the same fashion as Coastal Primary Sand Dunes.

B. Applicability. Under the foregoing definition, all coastal and bay beaches in Virginia would be included since they all are composed of unconsolidated sandy soil and experience the "... mutual interaction of erosion, sediment transport and deposition..."

Identifying the landward limit of a beach should present minimal problems. In most cases a dune, bulkhead or other solid man-made structure will mark the upper limit of the beach. Where none of these are found, the landward limit will be marked by woody vegetation such as wild black cherry (*Prunus serotina*) Ehrhart, live oak (*Quercus virginiana*) Miller, red cedar (*Juniperus virginiana*) L., wax myrtle (*Myrica cerifera*) L., loblolly pine (*Pinus taeda*) L., bayberry (*Myrica pensylvanicum*) Loisel, poison ivy (*Rhus radicans*) L., and highbush blueberry (*Vaccinium corymbosum*) L.

In evaluating an application to use or develop property which meets the “beach” definition, Sections IV and V of these Guidelines contain information which can be utilized in arriving at the appropriate decision.

C. Decision Process. The wetlands and dunes protection programs have been successful largely because of the conscientious adherence of local boards and VMRC to established policy standards and guidelines. Similar careful adherence to a rule of reasonableness in administering “beaches” will assure the development of a decision record which can successfully sustain an appeal should one result.

Section VII

Virginia Marine Resources Commission Barrier Island Policy

(Rev. October 25, 1990)

A. Introduction

1. **Definitions.** For the purpose of this regulation, the definitions contained within Section 28.2-1400 of the code of Virginia apply. In addition, the following words and terms when used in these regulations, shall have the following meaning unless the context clearly indicates otherwise:

Barrier Islands - means elongated narrow landforms consisting largely of unconsolidated and shifting sand, fronted on one side by the ocean and on the other by a bay or marshland which separates them from the mainland.

Dune Crest - means the highest elevation of the coastal primary sand dune on the lot as determined in consultation with the Virginia Institute of Marine Science.

Local 100-year long-term recession rate - means calculating the average shoreline recession over fixed one-mile intervals averaged over the period between surveys of 100 years or more.

2. **Background.** Barrier islands are transient landforms. Their dynamic and unstable nature poses significant risk to life and property located there. Scientific evidence placed before the Marine Resources Commission supports a finding that some of Virginia's barrier islands, including Cedar Island, are more fragile, more unstable, and pose even greater risk to life and property than many other coastal barriers due to their sand-deficient character. In addition, barrier islands are themselves significant natural resources that contain a number of specific features (coastal primary sand dunes, wetlands, and vast stretches of state-owned sandy beaches) including natural heritage resources and threatened or endangered species that are recognized by the General Assembly for their natural value and are protected by law. This policy applies to the barrier island systems on the seaside of the Virginia portion of the southern Delmarva peninsula, and is not intended to cover military activities essential to national security, or the construction, operation, maintenance or rehabilitation of Coast Guard facilities or access thereto. This exclusion

does not obviate compliance with other applicable provisions of the Coastal Primary Sand Dune Protection Act.

Survival of these barrier islands often depends on the ability of sand to wash across the island naturally in concert with the local wind and wave climate. The sand is then protected from loss offshore and provides a means of perpetuating the island, albeit in a more landward location. Activities which adversely affect this interaction can have an extremely detrimental impact on the island as well as the structure, form and function of its dune system. The artificial accumulation of sand along the oceanside of an island can make it more susceptible to loss offshore during a storm. Once such a loss occurs, the sand then becomes unavailable for washover and for the continued landward migration of the island. Houses, sand fences and similar structures can also alter wind patterns; this alteration impedes the wind transport of sand across the island. Accumulations adjacent to these impediments can be lost offshore as the shoreline continues to recede, leading to an increased rate of recession and a narrowing of the island. In addition, many of the Commonwealth's rarest species depend on the continuation of natural processes that currently exist on barrier islands. Consequently, they are threatened by any interference with those processes. The implementation of the policies and guidelines set forth in this document will support a fuller achievement of the purposes of the Virginia Natural Area Preserves Act (Section 101.1-209 et. seq. of the Code of Virginia), the Virginia Endangered Species Act (Section 29.1-563 et. seq. of the Code of Virginia) and the Virginia Endangered Plant and Insect Species Act (Section 3.1-1020 et. seq. of the Code of Virginia).

Two of the main natural features of barrier islands are natural dunes and washover areas, both of which are included in the statutory definition of a coastal primary sand dune as a "mound of unconsolidated sandy soil which is contiguous to mean high water, whose landward and lateral limits are marked by a change in grade from ten percent or greater to less than ten percent, and upon any part of which is growing" certain designated plants as listed in Section 28.2-1400 of the Code of Virginia. Given the particular combination of risks to both natural values and life and property posed by development on barrier islands, the Commission finds it necessary and appropriate to establish a policy and supplemental guidelines to assist landowners and decision makers alike in shaping barrier island uses in a manner that preserves and protects the values of Coastal Primary Sand Dunes as set forth by the General Assembly.

B. Permits Required

1. Applications for New Development

- a. No construction or any other activity which has the potential for encroaching on or otherwise damaging coastal primary sand dunes or state-owned beaches shall occur without review and approval by the Marine Resources Commission (Commission) or a local wetland board, or both. Consequently, a permit application must be submitted for any such construction or other activity. Each application shall include:

- (1) A certified survey of the site which is representative of current conditions showing:

- (i) One-foot contours relative to local mean high water, commencing at that line and proceeding through the site to the first wetlands vegetation,
 - (ii) Specific location for all proposed structures including septic system and drainfields,
 - (iii) Size, configuration and design of access points,
 - (iv) Location of any other activity which may affect coastal primary sand dunes or State-owned shore, and
 - (v) A dune crest, determined in consultation with the Virginia Institute of Marine Science, which identifies the highest elevation of the coastal primary sand dune on the lot.
- (2) A copy of both a valid building permit and septic or other wastewater handling or disposal system permit.
- b. All lot pins and proposed construction locations, drainfield sites and access points shall be staked and tied to suitable reference points.
 - c. In its review of the application, the Commission (or a local wetlands board) will determine the correctness of the dune crest and will establish a minimum setback necessary to prevent encroachment in or damage to the dune or interference with the natural processes of dune growth.

2. Loss of Structures and Applications for Redevelopment. When a structure is destroyed or damaged by natural events such that the structure is condemned by health officials or local building officials, reconstruction in that location may not be authorized. Submission of a new application and evaluation as if no structure were present will be required. In the event a structure is damaged beyond repair and is no longer habitable, or damaged and not restored to a usable state within one year, the owner of record shall be responsible for the complete removal of all vestiges of the structure and materials resulting therefrom, including the septic tank, distribution box and drainfields in their entirety, or as directed by the State or local Department of Health. The owner of the lot shall restore the area to as natural a state as possible.

C. Supplemental Guidelines

1. Structures

- a. No permanent structure, other than those already specifically allowed by law or provided for in Section C.2.b below for purposes of permanent access, will be permitted seaward of the crest of the coastal primary sand dune. No permanent alteration of the coastal primary sand dune will be permitted, except in accordance with the standards set forth in the Coastal Primary Sand Dunes Act.

- b. Since it is well established that the coastal primary sand dunes and the islands themselves recede continually westward at a reasonably predictable rate, and that excessive vehicular and pedestrian use will increase the fragility of coastal primary sand dunes or impact upon significant natural resources, development must be limited to no more than low density single family use on each platted parcel. Uses other than single family dwellings can clearly be characterized as “unnecessary and inconsistent with the public interest considering all material factors.”
- c. The density of structures and the percent of the shoreline frontage occupied by those structures are critical to minimizing the impact they have on sand migration across the island. Data concerning the development on barrier islands indicates that adverse impacts may be minimized when no more than 25% of the islands' linear shoreline is occupied by structures. This factor shall be considered in evaluating the individual and cumulative impacts of each permit application. In considering permit applications, the following guidelines shall be followed:
 - (1) There shall be adequate area within the lot that is neither sand dune (including beach and overwash areas) nor wetlands to accommodate the proposed dwelling and any appurtenant structures, including attendant sanitary facilities.
 - (2) Minimum frontage for a lot on the ocean capable of supporting a single-family vacation cottage shall be 100 feet.
 - (3) Minimum side yard requirements shall be 30 feet.
 - (4) The setback from the dune crest for all structures including septic systems shall be 20 times the local 100 year long-term annual shoreline recession rate. The dune crest shall be defined as the location of the highest elevation of the coastal primary sand dune, beach or washover located on the lot.
 - (5) The maximum allowable square footage for the first floor of a single family dwelling on a 100 foot lot shall be 900 square feet and for a 200 foot lot, 1800 square feet, including porches, decks, and other appurtenances. Houses with first floors larger than these will not be considered necessary economic development.
 - (6) The maximum height of a dwelling shall be 25 feet measured from the base of the first floor to the peak of the roof.
 - (7) All dwellings shall be constructed on elevated open pilings a minimum of ten feet above grade. No enclosures will be permitted below the first floor.
 - (8) An appropriate identification number shall be affixed to all septic tanks made of nonbiodegradable plastic materials to aid in their identification.

- (9) Exceptions to these requirements may be authorized in individual cases. No such exception shall be authorized unless the Commission finds:
- (i) That the strict application of the requirement would produce undue hardship, and
 - (ii) That the authorization of such exception will not result in significant detriment to barrier islands, their natural resources, or adjacent property.
- d. Evidence of cumulative environmental impacts of existing and proposed structures, as well as the secondary impacts resulting from their use, shall be considered in passing upon any application for a permit.

2. Access

- a. No cuts through the dune will be permitted. Temporary vehicular access for purposes of construction will be permitted only by open-pile or "corduroy" ramps. Permits for temporary vehicular access will be limited as necessary to protect significant natural resources. At expiration of the authorized term all structures, except as noted in subdivision b below, must be removed and the dune restored to its pre-construction contours and revegetated. All plans for temporary construction access must be specified in the application for any construction permit.
- b. Permanent vehicular access across the dune will be permitted only by "corduroy" or open-pile vehicular ramps which allow the natural process of dune growth and migration to occur. An open-pile or "corduroy" ramp developed for purposes of construction access may remain in place for permanent access if it meets the above criteria and is specifically approved. All plans for permanent access must be specified in the application for any construction permit.
- c. Each dwelling will be limited to a maximum of one vehicle for access to and from the island's landings. All vehicles shall be subject to the following conditions:
 - (1) Each vehicle shall have a no-cost annually renewable permit to travel on the beach. The owner shall attest at the time of renewal the vehicle's status and condition.
 - (2) The permit number for each vehicle shall be displayed in two foot high letters on the roof and sides of the vehicle.
 - (3) When a vehicle for a particular dwelling is no longer functional, it must be removed from the island. Evidence of its removal must be provided prior to the issuance of a permit for a new vehicle.
 - (4) All driving will be limited to the intertidal zone and between there and approved dune crossovers. Vehicular use of the beach at periods greater than four hours either side of low water shall be considered a violation of this section.

(5) All bird nesting areas posted by the Virginia Department of Game and Inland Fisheries, U.S. Fish and Wildlife Service, or Department of Conservation and Recreation shall be off limits to all vehicles.

(6) No all terrain vehicles (ATVs) will be permitted on barrier islands.

(7) Evidence of vehicular use in areas other than those authorized shall be cause for revocation of the permit and a requirement that the vehicle be removed from the island.

Any person having his or her permit revoked shall be precluded from reapplication for a one-year period.

3. Roads. No roads or trails will be permitted on or across any coastal primary sand dune or in any wetland.

4. Sand Movement. No artificial relocation of sand will be permitted.

5. Shore Hardening. Structures normally associated with or used for shoreline protection or erosion control, including but not limited to bulkheads, riprap, revetments, gabion baskets, sand bags, groins and jetties, or any other hardening of the shoreline will not be permitted under any circumstances.

6. Point Source Discharges. No point source discharge pipe, structures or other devices will be permitted.

7. Bond Requirement. A reasonable bond or letter of credit will be required prior to granting any permit to assure restoration of any temporary alteration of the coastal primary sand dune including, but not limited to, regrading to the original elevation, resprigging with appropriate vegetation and removal of any and all construction debris.

8. Sand Fence. The use of sand fencing or other artificial barriers is discouraged because of its interference with the natural sand transport and migration on barrier islands.

9. Solid Waste. All solid waste generated on barrier islands must be removed and disposed of appropriately on the mainland.

10. Pets. In order to prevent unrestricted roaming which may result in the disturbance of, or depredation to wildlife, domestic pets must (a) be restrained or under the control of their owner at all times; (b) shall not be allowed off of the owner's property except under leash; and (c) shall not be abandoned on a barrier island.

11. Endangered Species. Encroachment upon the nesting sites of threatened and endangered species identified by the Virginia Department of Game and Inland Fisheries or Department of Conservation and Recreation is prohibited. Evidence of impact or potential impact on threatened and endangered species shall be considered in passing upon any application for a permit.

- 12. Landscaping.** The planting of exotic species or introduction of non-native fauna are impermissible. Broadcast spraying of pesticides or herbicides are impermissible except when necessary to protect the public health or safety as decreed by the appropriate public health official.

D. Public Hearings

The public hearing required by § 6 of the model ordinance may be held in Newport News, Virginia. Such hearing will not be scheduled until the Commission staff has determined that it is in receipt of a complete application.

E. Comments/Advisory Notes

- 1. Risks.** While future events and their impacts on human activity cannot be forecast with any degree of precision, experience in other coastal areas suggest a proclivity to seek public assistance when catastrophic events occur or when services are needed beyond the ability of private resources to provide. The Commission believes that any development on barrier islands should be undertaken only with the full acceptance by the owners of the risks involved.
 - a. No Public Protection of Private Property.** Authorization of structures should in no way serve as justification for the future expenditure of public resources to protect such structures.
 - b. Services.** Any services which may be provided by local government to promote public health, safety and general welfare must be installed, maintained and operated in a manner consistent with the policy, standards and guidelines of both the Wetlands and Dunes Protection Acts.
 - c. Relocation of Structures.** Once local mean high water approaches a structure to within 10 times the average recession rate, a plan for its movement/relocation must be submitted for review. No movement or relocation will be permitted without the written permission of the Commission.
- 2. Interference With Natural Processes.** The serious sand deficiency which currently exists on Virginia's barrier islands is exacerbated by any artificial manipulation, including sand fences, which might render the supply more vulnerable to export offshore or interfere with the natural movement onshore in washover areas during storm events. Private property owners have even more at stake than the public-at-large in assuring that natural processes are not interfered with to any discernible degree.
- 3. Value of Dune Preservation.** Special emphasis is placed on the legislative declaration of public policy that coastal primary sand dunes "in their natural state serve as protective barriers from the effects of flooding and erosion caused by coastal storms, thereby protecting life and property."

- a. Accordingly, every reasonable precaution to avoid permanent alteration is expected to be exercised by all users in gaining temporary access to private property for construction or for continued access to authorized structures.
 - b. All construction, including septic systems, shall be set back from mean high water a distance at the site to assure reasonable survival duration. Setbacks from the dune crest were specified in Section C.1.c(4) of this policy.
- 4. Water Quality.** While the Commission believes that properly functioning septic systems in the limited density anticipated will have no measurable effect, failing systems or greater numbers than now forecast could impact important public shellfish growing areas. Therefore, staff will request at least biannually from the State Health Department an assessment of the cumulative impact and/or catastrophic failure of septic systems they have authorized.

F. Policy with Regard to Private Restrictive Agreements

In addition to the above guidelines and advisory comments and as an additional means to reasonably “preserve and protect coastal primary sand dunes and beaches and to prevent their despoliation and destruction,” and to help achieve the other purposes set forth by the General Assembly in the Coastal Primary Sand Dune Protection Act, the Commission endorses and looks favorably upon restrictive private covenants which “accommodate necessary economic development in a manner consistent with the protection of (coastal primary sand dunes).” For example, the Commission encourages restrictive private covenants which:

1. Protect the “natural habitat for coastal fauna,” “wildlife habitat,” and “vegetation which stabilizes (Coastal Primary Sand Dunes).”
2. Prohibit special exemptions or attempts to obtain such exemptions from the application of controlling statutes.
3. Enhance the “scenic and recreational attractiveness of Virginia’s coastal area,” protect the “important natural habitat for coastal fauna,” and protect the “vegetation which stabilizes such features.”
4. Require cooperation with the state and federal conservation agencies to protect the ecologically significant natural resources including granting permission to post critical bird nesting sites.

Section VIII

Coastal Dune Vegetation

The following dune plants commonly occupy coastal primary dunes and related habitats in Virginia and adjacent states. These plants are important to the dune environment in that they reduce the effects of the wind erosion and in some cases actually aid in dune development. They are an integral part of coastal dune habitat and play an important role in the ecological integrity of this system. Several dune species, such as American Beach Grass and Sea Oats are often planted for dune stabilization or dune creation projects. These two grasses have the capacity of not only surviving but stabilizing accreting sand. When buried by sand, these grasses produce fast growing vertical rhizomes (underground stems) that eventually produce a shock of leaves at the top of the dune. Therefore, if a sand supply is available, a dune can grow and become stabilized through the help of these grasses.

Most dune plants are necessarily very hardy. They must be able to withstand intense heat, reflected light, saltspray, nearly sterile substrate, and strong winds. Many of these species have developed specialized morphological features that have helped them adapt to these adverse conditions. Despite these outstanding features, these plants are highly susceptible to trampling, off-road vehicles and the like.

The dune plants illustrated* and described* in this section are protected by the Coastal Primary Sand Dune Protection Act, Virginia Code Chapter 14 of Title 28.2.

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Sea Oats

***Uniola paniculata* L.**

This tall, stately grass is one of the most important primary dune plants on the Southeast Coast. Sea Oats ranges from Virginia to the Gulf Coast. It's robust seed head (a panicle of numerous wafer-like spikelets) is easily distinguished from Beach Grass which has a rather narrow, dense spike of flowers.

In late summer or early fall the seed head turns a bronze-yellow color whereas the spike of Beach Grass matures to a dull gray. Both grasses are highly adaptive to accreting sand, salt spray, wind and dry conditions. They are very important natural resources in a dune field and should not be disturbed.



American Beach Grass

***Ammophila breviligulata* Fern.**

This grass is the most common plant that grows on primary dunes from New England to North Carolina. It has a very dense narrow flowering spike which distinguishes it from other dune grasses. The spike is surrounded by a dense tuft of long, narrow and pointed leaves. Beach Grass has excellent sand binding capabilities and can tolerate, and even thrives to some degree, on being buried by shifting sand. Seedlings of Beach Grass are often planted in dune restoration projects. Only one other beach plant can withstand such conditions, and that is Sea Oats *Uniola paniculata* which has a more southern range.



Short Dune Grass

Running Beach Grass

***Panicum ararum* Ell.**

The grass is often found on dunes from the New England area to the Gulf Coast. Compared to *Ammophila* and *Uniola*, the leaves of Short Dune Grass have blue green color that is quite distinguishing. The seed head is a rather sparse, narrow panicle of small ellipsoid seeds. Unlike the other two species, this grass is not as highly adapted to accreting sand. Whereas the specialized growth system of *Ammophila* and *Uniola* can keep up with sand build up, *Panicum* will eventually become buried by large amounts of shifting sands. Where there are optimal growing conditions (reduced sand accretion and salt spray), this grass often forms relatively dense mats of vegetation originating from underground rhizomes.



Seaside Goldenrod

***Solidago sempervirens* L.**

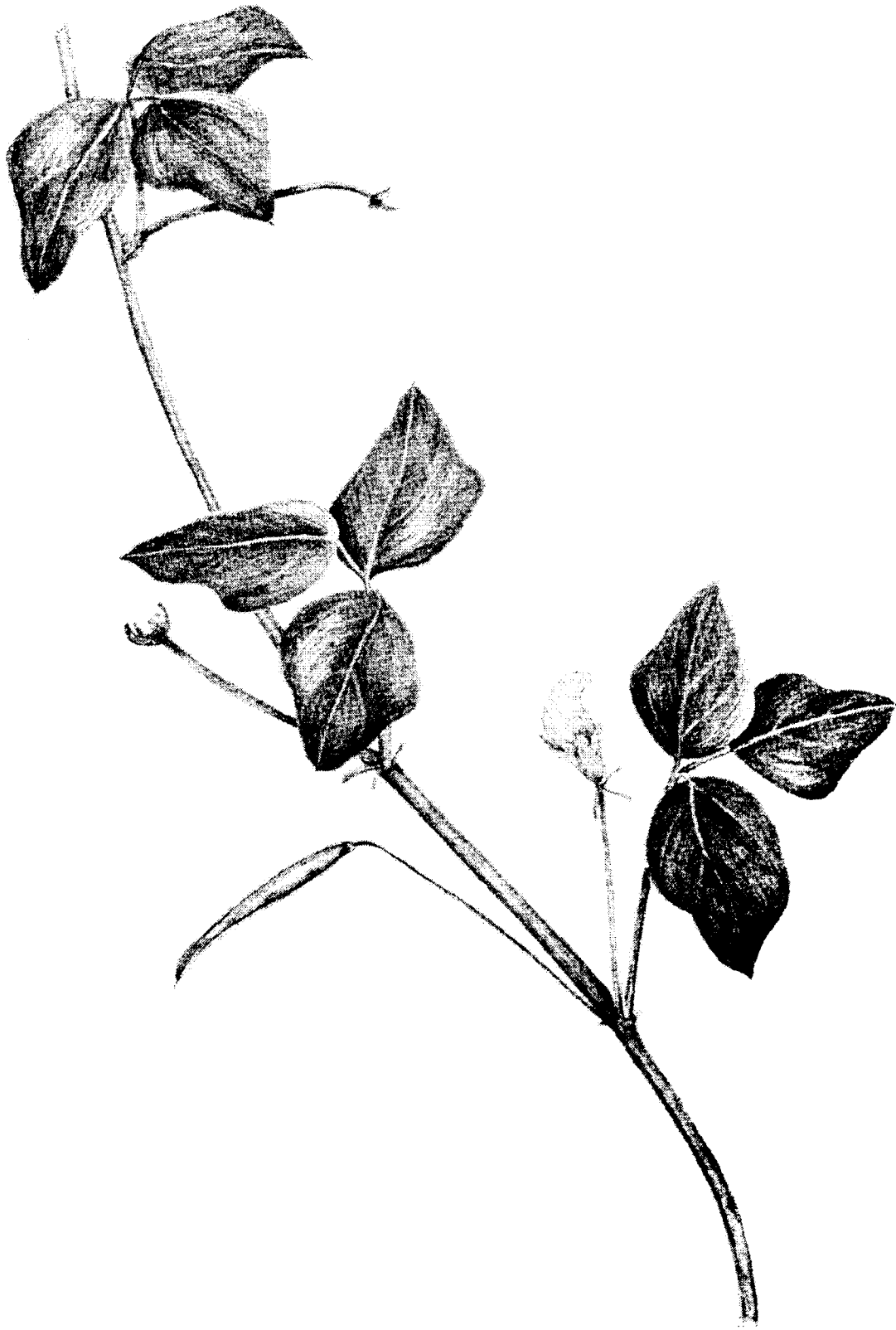
Seaside Goldenrod is one of the most striking plants in the coastal zone during late summer or early fall. This tall, leafy perennial produces a spray of bright yellow blooms that is typical of interior goldenrods. The leaves are dark green and fleshy and are produced in profusion along the entire length of the stem which may be as much as 6 feet long. It is typically found on the more stable part of the dune, on low secondary dunes or along the edges of salt marshes.



Dusty Miller

***Artemisia stelleriana* Besser.**

Dusty Miller is an introduced plant that over the years has invaded and adapted well to coastal dunes from Quebec to Virginia. It is commonly used as a border plant because of its unusual and attractive foliage. The lobed leaves have dense whitish hairs on both sides that gives the foliage a velvety appearance. As are many dune species, this plant is a perennial and spreads by creeping underground stems called rhizomes. Although the foliage is mostly low or creeping in posture, the plant produces a flowering stem at the peak of the growing season that may be over two feet tall. This reproductive stem may have a large number of flower heads. Each head bears many tiny, nearly inconspicuous flowers. This characteristic is typical of the composite or Aster family to which this plant belongs.

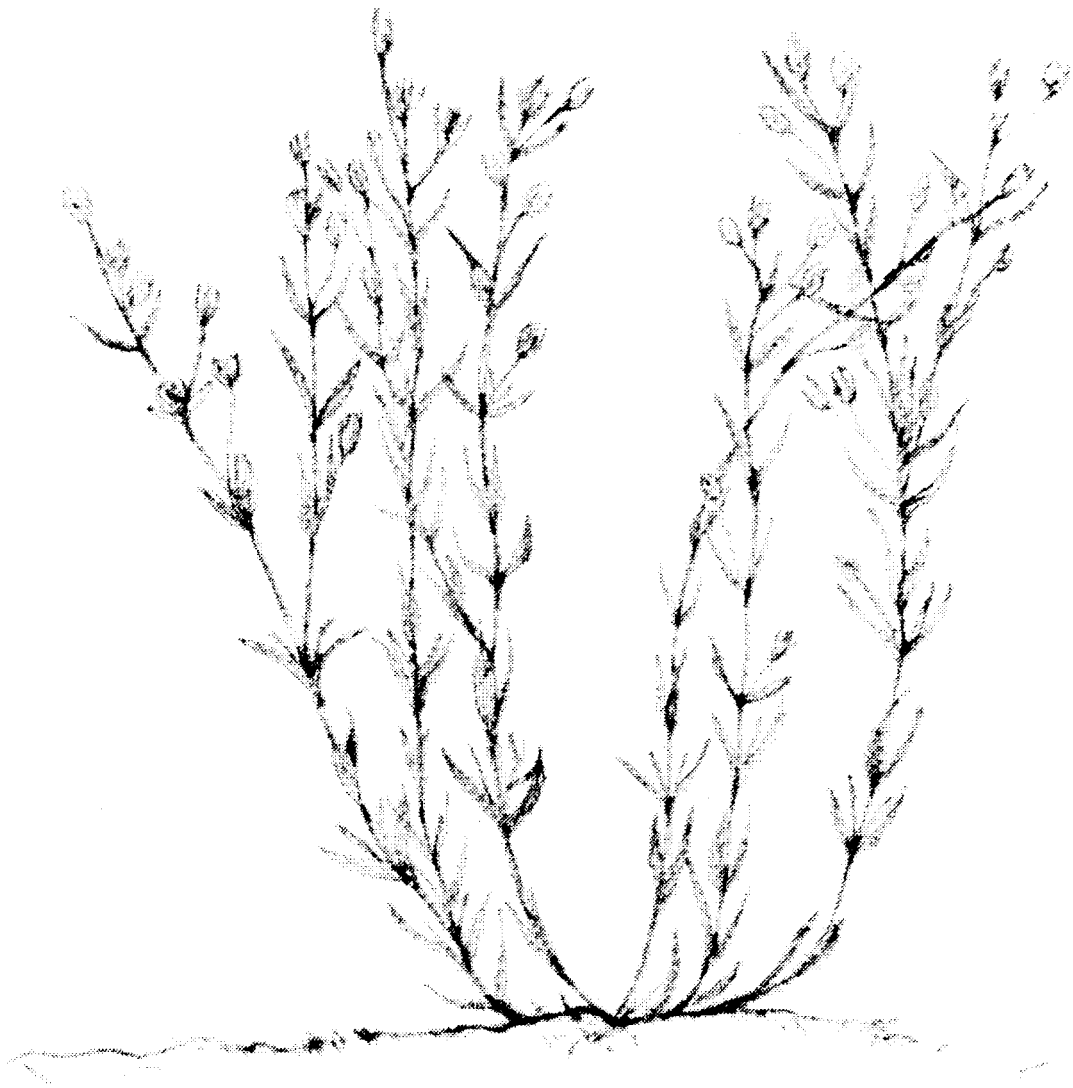


Dune Bean

Beach Bean

***Strophostyles helvola* (L.) Ell.**

Dune Bean is an annual, trailing and twining vine which occupies various habitats in the dune/beach system. It has a characteristic bean or legume flower which is usually rose or purplish when mature. It also produces a typical “bean pod.” The leaves are divided into three separate leaflets. The combination of these three features (flower, pod and leaf) will distinguish this vine from many other plants that live in the beach/dune habitat. This plant is not strictly a dune species but can also be found in maritime forests, and other interior, open woodland habitats.



Seabeach Sandwort

***Arenaria lanuginosa* (Michaux) Rohrbach**

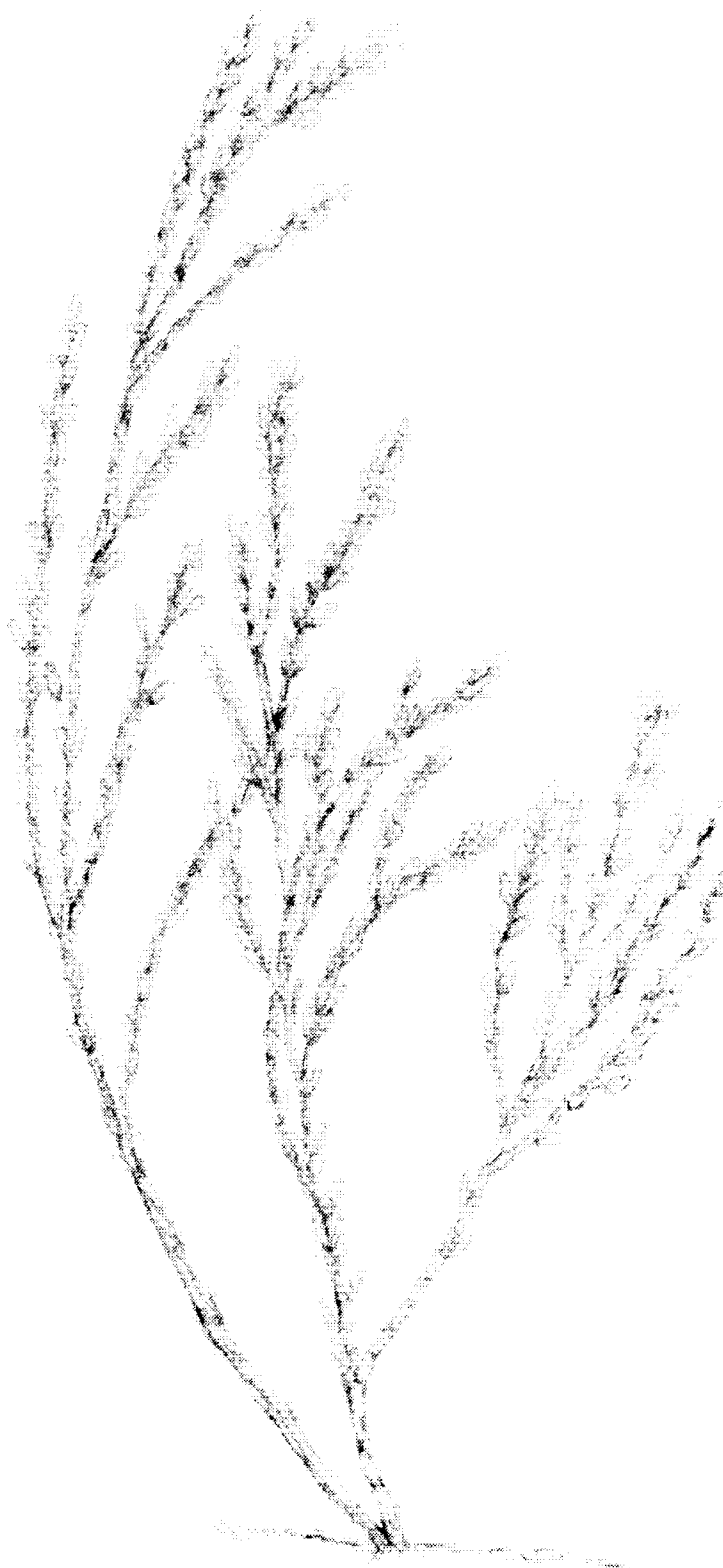
This small plant is usually found on the margin of swales between or behind the primary dunes. Sandwort appears to be too delicate for the rigorous coastal environment and in fact, the plants appear to be more vigorous where they are somewhat protected from salt spray, excessive sand accretion and wind. The leaves are small and narrow and the flowers not very conspicuous. It is found only sparingly in Virginia as this area is the northern extent of its range which continues as far south as South America.



Sea Rocket

***Cakile edentulata* (Bigelow) Hooker**

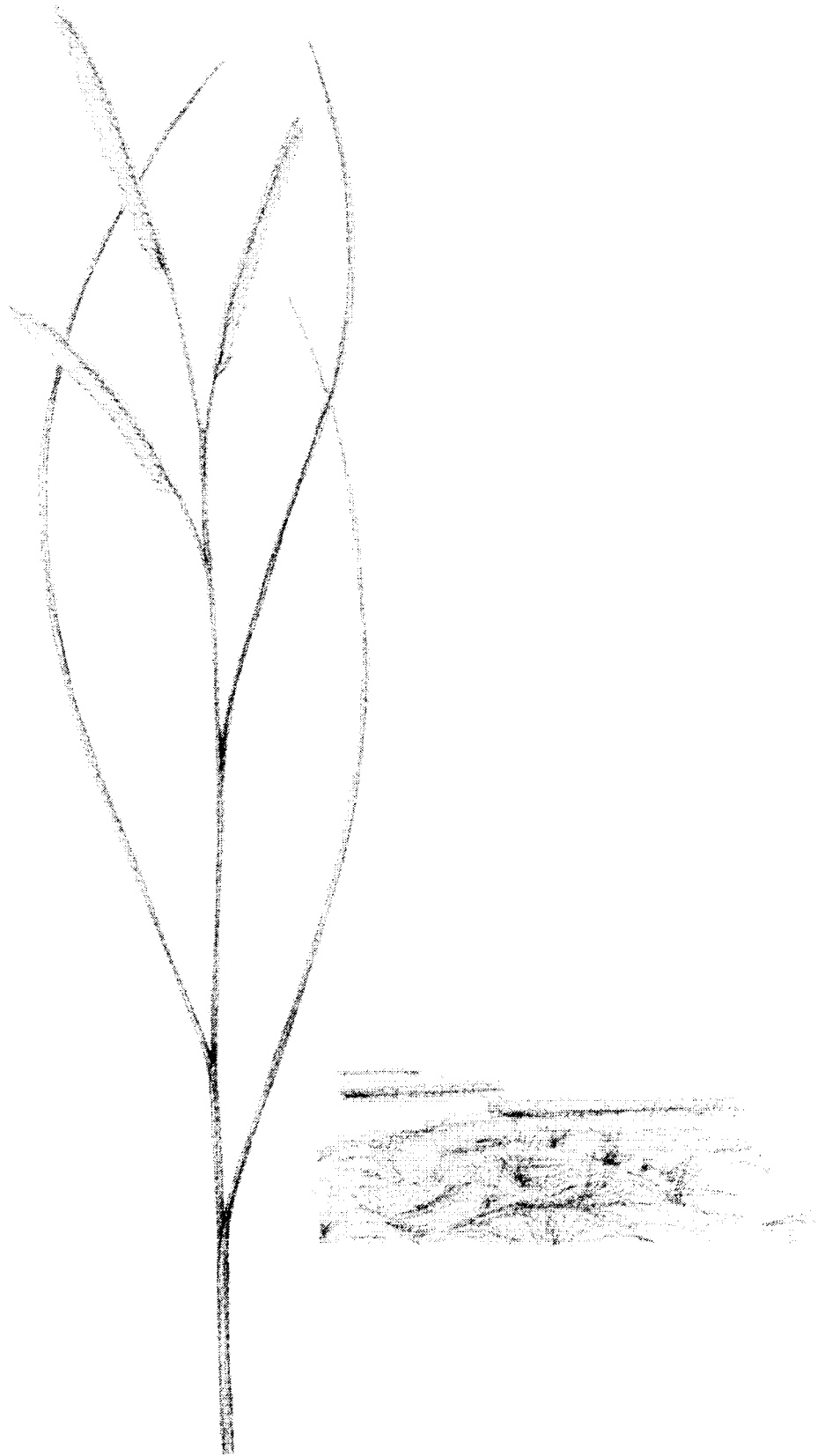
Sea Rocket usually occupies the zone between the toe of the primary dune and wrack line on the beach. *Cakile* is a succulent plant with fleshy stems and leaves. The small flowers are usually lavender or light blue or occasionally white. Thick, fleshy fruits develop late in the growing season. Although Sea Rocket does not have the sand binding qualities of the beach grasses, it is indicative of this dynamic zone between dune and mean high water.



Beach Heather

***Hudsonia tomentosa* Nuttall**

Beach Heather is a low, spreading shrubby plant that rarely grows over a foot tall. The leaves are scale-like, somewhat resembling those of a cedar tree and are covered with very short, dense hairs. The whitish hairs give these little shrubs a “mildewy” appearance. At the peak of the growing season, tiny yellow flowers are evident. Beach Heather generally grows on somewhat moist, compacted sand which is typical around the edge of swales between dunes. *Hudsonia tomentosa* is more common in the New England area but ranges as far south as North Carolina where it is found infrequently.



Saltmeadow Hay

***Spartina patens* (Aiton) Muhl.**

Saltmeadow Hay is short (seldom over knee high) wirey grass that grows in dense clumps on the backside (landward) of primary dunes. It is also found, sometimes profusely, on lower secondary dunes, swales and higher portions of a saltmarsh where it often forms dense meadows. Compared to Beach Grass and Sea Oats, it has a relatively sparse, branching seed head. Its leaves are long, very narrow and are often rolled inward (somewhat trough-like) so that they appear to be round. This mechanism helps reduce water loss (excessive transpiration) in the plant. Most dune plants have adaptive characteristics that help them withstand the rigorous environment of the coastal ecosystem.

Glossary

ACCRETION - growth by accumulation of new material.

BARRIER ISLAND - a low island which, usually in conjunction with other islands, shelters an open area of water or marsh between itself and the mainland.

BACKSHORE - an area in the beach zone between mean high water and the toe of the dune system.

BERM - that part of the beach at the upper limit of the wave wash formed by the deposit of material by wave action.

COASTAL PRIMARY SAND DUNE - mound of unconsolidated sandy soil which is contiguous to mean high water, whose landward and lateral limits are marked by a change in grade from ten per centum or greater to less than ten per centum, and upon any part of which is growing as of July one, nineteen hundred eighty, or grows thereon subsequent thereto, any one or more of the following: American beach grass (*Ammophilla breviligulata*); beach heather (*Hudsonia tomentosa*); dune bean (*Strophostylis umbellata* var. *paludigena*); dusty miller (*Artemisia stelleriana*); saltmeadow hay (*Spartina patens*); seabeach sandwort (*Arenaria peploides*); sea oats (*Uniola paniculata*); sea rocket (*Cakile edentula*); seaside goldenrod (*Solidago sempervirens*); and short dune grass (*Panicum ararum*). For purposes of this chapter, "Coastal Primary Sand Dune" shall not include any mound of sand, sandy soil or dredge spoil which has been deposited by man for the purpose of the temporary storage of such material for later use.

CONTIGUOUS - bordering or adjoining, next to.

DEFLATION - the removal of loose material from a beach or dune by wind action.

DUNE BACKFACE - the zone from the crest of the dune to the point at which the dune grade drops below ten percent.

DUNE CREST - a line connecting the highest points of a dune along its long axis.

DUNE LINE - the line established by several dunes positioned next to one another.

DUNE TOE - a zone on the seaward face of the dune marked by a significant change in grade.

FASTLAND - the comparatively stable upland area adjacent to the shoreline.

FORESHORE - that part of the shore lying between the upper limit of wave wash at high tide and the ordinary low water mark.

GRADE - as used in the Sand Dune Act, the term refers to the rate of change in elevation progressing across a dune; grade is determined by dividing the absolute increase or decrease in the vertical distance occurring over any measured horizontal distance as long as both measures are in the same units.

LANDWARD LIMIT - in the Act, the onshore boundary of the dune.

LATERAL LIMIT - in the Act, the ends of the dune usually found lying perpendicular to the shoreline or the dune boundaries normal to the long axis of the dune.

MEAN HIGH WATER - the average height of high waters over the previous nineteen year period.

MORPHOLOGY - the form and structure of a dune or dune vegetation.

OFFSHORE BAR - one (or more) sand bar(s) running roughly parallel to the shoreline.

ONE HUNDRED YEAR STORM - that storm event which, on the average, may be expected to occur once in one hundred years.

OPEN PILE FOUNDATION - a foundation composed entirely of large poles driven into the ground which support a structure above ground level.

STORM SURGE - the additional depth of water above mean high water which accompanies coastal storms.

TRANSITION ZONE - that area in which physical and/or biological features characteristic of two adjacent areas (e.g., beach and uplands) can both be found.

UNCONSOLIDATED - in the Sand Dune Act, sediments which do not bind together.

WASHOVER DEPOSIT - the material deposited by the passing of water over the beach onto the fastland.

Wetlands Mitigation-Compensation Policy

Virginia Marine Resources Commission

VR 450-01-0051

Section 1. Definitions

The following words, when used in these guidelines, shall have the following meaning unless the context clearly indicates otherwise:

“Compensation” means actions taken which have the effect of substituting some form of wetland resource for those lost or significantly disturbed due to a permitted development activity; generally habitat creation or restoration. Compensation is a form of mitigation.

“Mitigation” means all actions, both taken and not taken, which eliminate or materially reduce the adverse effects of a proposed activity on the living and nonliving components of a wetland system or their ability to interact.

Section 2. Policy

In spite of the passage of the Virginia Wetlands Act and the Federal Water Pollution Control Act in 1972, the pressures to develop lands, including wetlands along Virginia's shoreline, have continued to accelerate as evidenced by the increasing number of permit applications being submitted. At the same time scientific research has demonstrated that certain wetlands can be established or reestablished in areas where wetlands are not found at present. This has led to an increasing number of proposals calling for the destruction of wetlands in one area in order to accommodate development, and the creation of wetlands in another area in order to offset the loss of the natural wetland resource.

Although compensating for the loss of a wetland by establishing another of equal or greater area sounds very attractive in theory and has been regarded as successful in a few specific cases, in general, this form of mitigation has proven difficult to successfully implement. Many questions regarding the ecological soundness and feasibility of substituting one habitat for another remain to be answered. In addition, a number of studies have demonstrated that for various reasons the created habitats either never attain the level of productivity or diversity of the natural systems they replace or simply are not capable of performing the ecological functions of the undisturbed habitat.

Although California and Oregon now require compensation for lost wetlands on all projects, states such as North Carolina and New Jersey have taken a much more limited approach to the mitigation-compensation question. In general, these latter two states rely on wetland compensation only as a last resort to replace wetlands whose loss is highly justified and unavoidable. Virginia to this point has also taken a very conservative tack with regard to the use of wetland compensation as a management tool.

The Commission, and these guidelines, do not require that all wetlands losses be compensated. They do recommend, however, that compensation be required on a limited basis to replace unavoidable wetlands losses. There are three main reasons for this recommendation.

First, a literature survey and experience with implementing compensation on a day-to-day basis reveal a number of significant problems with the concept itself that remain to be resolved.

Second, there are general philosophical and technical questions regarding compensation which have not been answered by the scientific community to this point in time.

Third, and most important, a reading of the Wetlands Act clearly indicates that the General Assembly intended for the Commonwealth's wetland resources to be preserved in their "natural state," and emphasized through its declaration of policy, the importance of an overall ecological approach to wetlands management.

"The Commonwealth of Virginia hereby recognizes the unique character of the wetlands, an irreplaceable natural resource which, in its *natural state*, is essential to the ecological systems of the tidal rivers, bays and estuaries of the Commonwealth." (Emphasis added)

The General Assembly also stated that where economic development in the wetlands is clearly necessary and justified it will be accommodated while preserving the wetlands resource.

".... it is declared to be the public policy of this Commonwealth to preserve the wetlands and to prevent their despoliation and destruction and to accommodate *necessary* economic development in a manner consistent with *wetlands preservation*." (Emphasis added)

In Section 28.2-1308 of the Code of Virginia the General Assembly mandated the preservation of the ecological systems within wetlands of primary ecological significance and then stated:

"Development in Tidewater, Virginia, to the maximum extent possible, shall be concentrated in wetlands of lesser ecological significance, in wetlands which have been irreversibly disturbed before July one, nineteen hundred seventy-two, and in areas of Tidewater, Virginia, apart from the wetlands."

The General Assembly has spelled out clearly that "necessary economic development" is to be accommodated in Tidewater, Virginia, but that the emphasis is on wetlands preservation in their natural state.

Section 3. General Criteria

It shall remain the policy of the Commonwealth to mitigate or minimize the loss of wetlands and the adverse ecological effects of all permitted activities through the implementation of the principles set forth in these Wetlands Guidelines which were promulgated in 1974 and revised in 1982. To determine whether compensation is warranted and permissible on a case-by-case basis, however, a two-tiered mechanism will be implemented. This dual approach will consist first of an evaluation of necessity for the proposed wetlands loss (See Section 4). If the proposal passes this evaluation, compensation will be required and implemented as set forth in the second phase, the Supplemental Guidelines.

The primary thrust of combining the existing Wetlands Guidelines with the two-tiered compensation guidelines is to preserve the wetlands as much as possible in their natural state and to consider appropriate requirements for compensation only after it has been proven that the loss of the natural resource is unavoidable and that the project will have the highest public and private benefit. Commitments to preserve other existing wetlands shall not ordinarily be an acceptable form of compensation.

Section 4. Specific Criteria

In order for a proposal to be authorized to destroy wetlands and compensate for same in some prescribed manner, the three criteria listed below must be met. If the proposal cannot meet one or more of these criteria, the activity shall be denied, or must occur in areas apart from the wetlands. Should it satisfy all three criteria, however, compensation for the wetlands lost is required.

1. All reasonable mitigative actions, including alternate siting, which would eliminate or minimize wetlands loss or disturbance must be incorporated in the proposal.
2. The proposal must clearly be water-dependent in nature.
3. The proposal must demonstrate clearly its need to be in the wetlands and its overwhelming public and private benefits.

Section 5. Supplemental Guidelines

If compensation is required, then the following guidelines should be given due consideration and, if appropriate, may be included as conditions of the permit:

1. A detailed plan, including a scaled plan view drawing, shall be submitted describing the objectives of the wetland compensation, the type of wetland to be created, the mean tide range at the site, the proposed elevations relative to a tidal datum, the exact location, the areal extent, the method of marsh establishment and the exact time frame from initial work to completion.
2. Once the grading is completed at the planting site, it should be inspected by a competent authority to insure that the elevations are appropriate for the vegetation to be planted and that the surface drainage is effective.
3. The compensation plan and its implementation must be accomplished by experienced professionals knowledgeable of the general and site-specific requirements for wetland establishment and long-term survival.
4. A performance bond or letter of credit is required and shall remain in force until the new wetland is successfully established; a minimum of two growing seasons.
5. The compensation marsh should be designed to replace as nearly as possible, the functional values of the lost resource on an equal or greater basis. In general this means creating a marsh of similar plant structure to that being lost. This may not be the case where a lesser value marsh is involved (i.e. Group 4 or 5 wetlands). A minimum 1:1 areal exchange is required in any case.
6. The compensation should be accomplished prior to, or concurrently with, the construction of the proposed project. Before any activity under the permit may begin, the permittee must own all interests in the mitigation site which are needed to carry out the mitigation.
7. All reasonable steps must be taken to avoid or minimize any adverse environmental effects associated with the compensation activities themselves.
8. On-site compensation is the preferred location alternative with off-site in the same watershed as a consideration when on-site is not possible. Locating a compensation site outside the river basin of the project is not acceptable unless it is done as part of a state-coordinated program of ecological enhancement.
9. In selecting a compensation site, one aquatic community should not be sacrificed to "create" another. In cases where dredged material must be placed overboard, the area may be used to create marsh, oyster rock or improve the resource value of the bottom.

10. The type of plant community proposed as compensation must have a demonstrated history of successful establishment in order to be acceptable.
11. The proposed activity should stand on its own merits in the permit review. Compensation should not be used to justify permit issuance.
12. Manipulating the plant species composition of an existing marsh community, as a form of compensation, is unacceptable.
13. Nonvegetated wetlands should be treated on an equal basis with vegetated wetlands with regard to compensation and mitigation, unless site-specific information indicates one is more valuable than the other.
14. Both short- and long-term monitoring of compensation sites should be considered on a case-by-case basis. For unproven types of compensation the applicant will be responsible for funding such monitoring as is deemed necessary.
15. Where on-site replacement for noncommercial projects is not feasible, compensation for small wetland losses (less than 1,000 sq. ft.) should be avoided in favor of eliminating loss of the natural marsh to the maximum extent possible.
16. Conservation or other easements to be held in perpetuity should be required for the compensation marsh. Easements accepted by the Commission will be processed in accordance with the provisions of Section 28.2-1301 of the Code of Virginia.
17. All commercial projects which involve unavoidable wetland losses should be compensated. ♦

Suggested Management Guidance for Implementation of Wetlands Compensatory Mitigation in Tidal Areas of Virginia

The purpose of this document is to provide background and guidance in the implementation of compensatory mitigation within the tidal waters of the Commonwealth. It should be noted that not every one of these guidelines need be employed with every compensation project plan. Some projects, such as the creation of a short section of fringing marsh using one species of marsh grass, will not require all of the recommended implementation steps. While others, such as a large, multi-acre mitigation bank, may require all steps outlined below. Project size and complexity should dictate the level of safeguards required for each compensation proposal plan. All compensation plans should, at a minimum, have clear goals and objectives, detailed plan view and cross-section drawings (including planting elevations relative to tidal heights), success criteria and some degree of monitoring.

Introduction

Since its inception, the use of wetland creation or restoration to replace natural systems lost to development (compensatory mitigation) has been problematical from an implementation standpoint. This continues to be a controversial issue. The underlying reasons for this emanate from a number of sources:

- a. Numerous studies have documented the relatively poor track record of created and restored wetlands in virtually all regions of the country (Race and Christie 1982, Shisler and Sharett 1984, Race 1985, Florida Department of Environmental Regulation 1991, Barnard and Mason 1990, U.S. Fish and Wildlife Service 1990).
- b. No standardized or generally accepted method of measuring successful establishment of created wetland systems is available at present.
- c. Much is yet to be learned in regard to how to establish new wetland systems and in understanding existing systems; their functional dynamics, interdependencies and general complexity (Zedler 1988, Havens *et al.* 1995).
- d. Recent studies in Virginia (Havens *et al.* 1995) have documented significant frequencies of invasion by the opportunistic, and ecologically undesirable, common reed (*Phragmites australis*) in created wetlands. The appearance and spread of this species may have long term adverse effects on replacement-wetland function and future policy decisions regarding the use of compensation.

- e. Highly variable regulatory requirements for location, replacement ratios, plant establishment, defining success, monitoring and even dictating when compensation will be necessary or not. This accompanied by minimal follow-up to determine compliance.

In general the regulatory picture surrounding the implementation of wetland compensation policy is confusing and inconsistent. In addition to the listed factors, policies have been implemented allowing the purchase of existing wetlands (termed “preservation”) to be used as a form of compensatory mitigation. Unless carefully screened and controlled, this policy would certainly mediate against any existing “no net loss” policy such as that of the Chesapeake Bay Program. Although its use appears on the rise in some regulatory quarters in Virginia, the purchase of existing wetlands as compensation would only be recommended under the rarest of circumstances for Virginia's tidal wetland program.

Mitigation Banking

Compensatory mitigation banking is an off-site method that creates wetland credits to be used to offset future wetland losses. The wetlands are created or restored on an “up front” basis and once the wetland is deemed successfully established, compensation credits are sold by the wetland developers to recover their investment. In addition to these private attempts at banking, some wetland banks have been created by government agencies such as departments of transportation and port authorities, for their own needs.

Mitigation banking has the potential to address some of the concerns regarding the generally poor success rates of wetland creation in that it may offer economies of scale, up-front compensation, better planning and design for creation efforts and better monitoring. At the same time, it has the potential to have serious effects if large banks fail or they become a primary form of mitigation through the abandonment of sequencing (*i.e.* regulatory de-emphasis of the protection of natural systems through the existing requirements of avoidance and minimization of encroachment). Wetland banking also loses much of its potential for improving the success record of compensation if large wetlands are placed at random (as a matter of convenience or financial expediency) with no attention to landscape function of either the banked wetland or the natural wetlands being lost.

Implementation Considerations

Several general recommendations should be considered when approaching any wetland compensation decision:

1. Compensation should be considered only as a last resort. As required in the Mitigation/Compensation Policy, “sequencing” should be applied at the beginning of the process so that the emphasis remains on protection of natural systems and only the unavoidable wetlands losses need be compensated.

2. Replacement of wetland function should be the primary aim of the compensation effort. It should be recognized that assessment of wetland function, and in particular its quantification, may make this goal difficult to achieve. Area for area exchanges with increased mitigation ratios and in-kind replacement are, at present, the most heavily utilized approach to addressing the functional replacement question.
3. If compensation is required, all reasonable steps should be taken to ensure long term persistence of the artificial system. This last step is necessary due to gaps in our knowledge base, the difficulties involved in trying to establish a new wetland and the many unknown factors which may come into play once the artificial wetland is in place. The goals and objectives should attempt to incorporate the created wetland into the overall landscape context (spacial pattern) as opposed to making it an appendage or afterthought.

Note: “Sequencing” is the practice of wetland mitigation wherein avoidance of the wetland, if possible, is the first step; followed by minimization of the loss, the second step in the sequence; and finally, compensation which may take a number of forms.

Suggested Guidance

Once the decision has been made that wetland compensation will be required in any given case, the following factors should be considered in determining how the compensation proposal will be managed from a regulatory perspective.

1. Specific goals and objectives need to be determined for the compensation wetland. The goals and objectives must be as clear and detailed as possible. This should determine the criteria by which successful establishment will be judged during the development period of the new wetland. A written description of the targeted wetland function goals, along with specific objectives through which the goals are to be accomplished, should be prepared by the applicant/agent and reviewed by the Board, its staff and advisors.
2. Requirements for each project should be established on a case by case basis. The number and complexity of permit requirements should be dictated by the following considerations, at a minimum: (See Appendix A for example)
 - a. Size and location of replacement wetland.
 - b. Hydrologic and vegetative complexity of proposed wetland construction.
 - c. Whether it is a single project or a bank.
 - d. Likelihood of disruptive contingencies occurring as the new wetland matures.

- e. The structural and functional character of the adversely affected wetland.
 - f. Existing wetlands within the same hydrologic unit.
 - g. Historic wetland losses within the watershed.
 - h. Existing landscape/land use interactions.
3. As recommended in the Mitigation/Compensation Policy, detailed, scaled drawings (plan view and cross section) should accompany the written material. The proposal plans should, at a minimum, depict the following:
- a. Location and areal extent of each wetland species to be planted.
 - b. Tide range at the site.
 - c. Tidal elevations of each planting zone.
 - d. Vegetation establishment methods, with specifications.
 - e. Planned planting time frame.
 - f. Compensation ratio.
 - g. Location of any existing or planned vegetated buffers adjacent or proximate to the created wetland.

Note: The plans and drawings are important because they provide the opportunity to look at overall feasibility and goal implementation (technical merit). Additionally, they allow assessment of adverse impacts and how to minimize them. **Note also** that hydrology is the critical technical parameter in the successful establishment of a wetland. Thus the drawings and plans should clearly show the tide range, plant species and the **tidal datum** elevations at which the plants are to be established. Additionally, the drawings serve as documentation for future reviews and determinations of success applied to the proposal as well as the initial basis for the monitoring program requirements.

Monitoring

Every project will need to be monitored to determine if the success criteria are met and the wetland will survive on its own without further artificial manipulation. Monitoring should last a minimum of three years. The time frame and detail required for the monitoring effort will depend on the complexity of the created wetland. Monitoring may range from an annual photography trip to monthly sampling of the plant and animal communities within the wetland.

Once a wetland is planted, it should not be expected to remain or to develop as merely a denser concentration of the species planted originally. Marshes are dynamic systems; individual plants, even entire populations may come and go over time. This is not a problem unless the monitoring discloses that there are significant shortcomings or problems indicating the wetland will not satisfy the previously determined success criteria. With tidal wetlands such problems should show up in the first one or two years. Replanting, planting a different species or more drastic changes may be necessary if monitoring reveals that the overall goals of the compensation (based on the success criteria) are not likely to be met. If potential invasion by *Phragmites* is of concern, a control plan should be required and monitoring extended to five years or until marsh is fully vegetated.

Note: The potential for failure or partial failure is the primary reason why it is recommended that a performance bond or letter of credit generally be required for compensation projects. Such an action will help ensure that remedial steps are taken when necessary to help effect the long term survival and functional viability of the created marsh.

Of equal import, primarily for the larger creation and restoration projects, is the provision of long-term protection of the wetland through mechanisms such as conservation easements, fee simple acquisition, deed restrictions, etc.

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Appendix A

Example 1. Wetland compensation plan; simple fringe marsh

Goals

To create 200 linear feet of *Spartina alterniflora* fringe marsh to replace 100 linear feet of same type, unavoidably lost due to boat ramp and bulkhead construction. Primary function is erosion control. Secondary function is habitat.

Objectives

Design width of marsh will be 20 feet. Plants will be set on 12 inch centers for fastest infill rate and will be planted in the March-April time frame. Adjacent upland will be graded back on 3H:1V slope and vegetated immediately with upland grasses. Sediment curtain will be installed at toe of slope and maintained until slope and marsh are fully vegetated and substrate is stabilized. Slope will not be mowed to allow colonization by shrubs and other volunteer species (also serve as buffer).

Monitoring

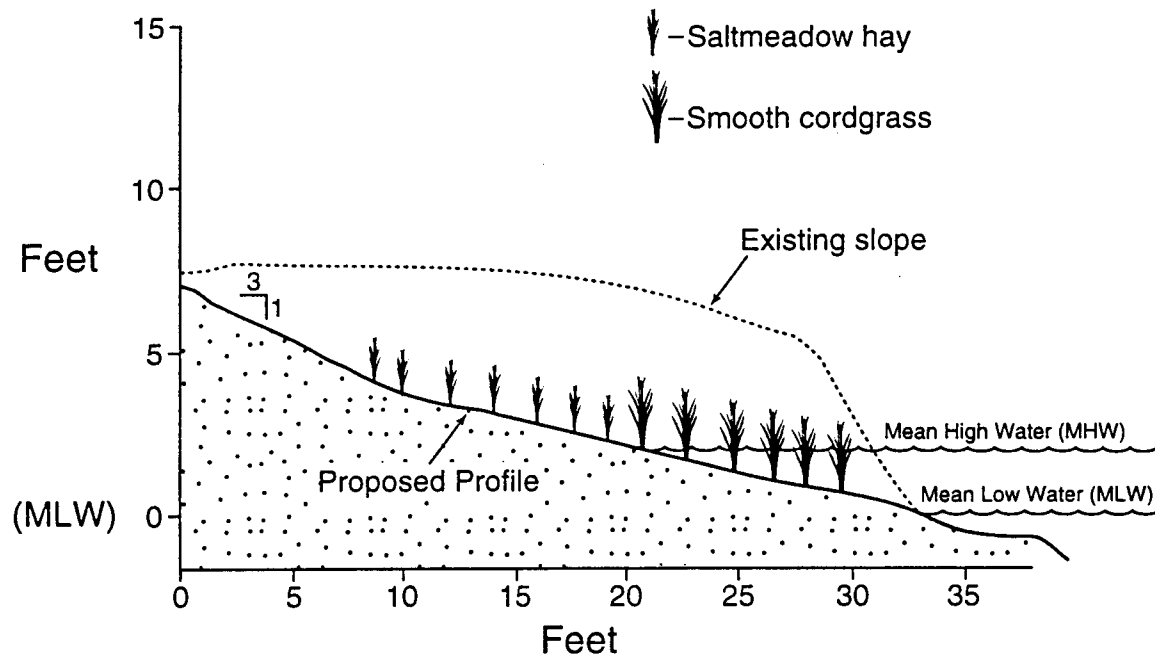
The marsh will be monitored after each growing season. After first growing season all dead plants will be replaced. If the survival rate is less than 50%, the marsh substrate elevation will be examined to determine if it needs to be adjusted. After second and third growing seasons, new sprigs will be placed in any bare areas one square foot or larger. This proposal should be considered a success if the average width is greater than 15 feet after 3 years, no *Phragmites* or other invasive species is present and other volunteer plant species do not occupy more than 20% of the marsh.

Drawings

Scaled plan view and cross-sectional drawings are provided and contain the information necessary to evaluate the success of the marsh creation project over the next one to five years. The cross-sectional drawing depicts elevations, slopes, species to be planted and planting locations, as well as the mean low and mean high water lines.

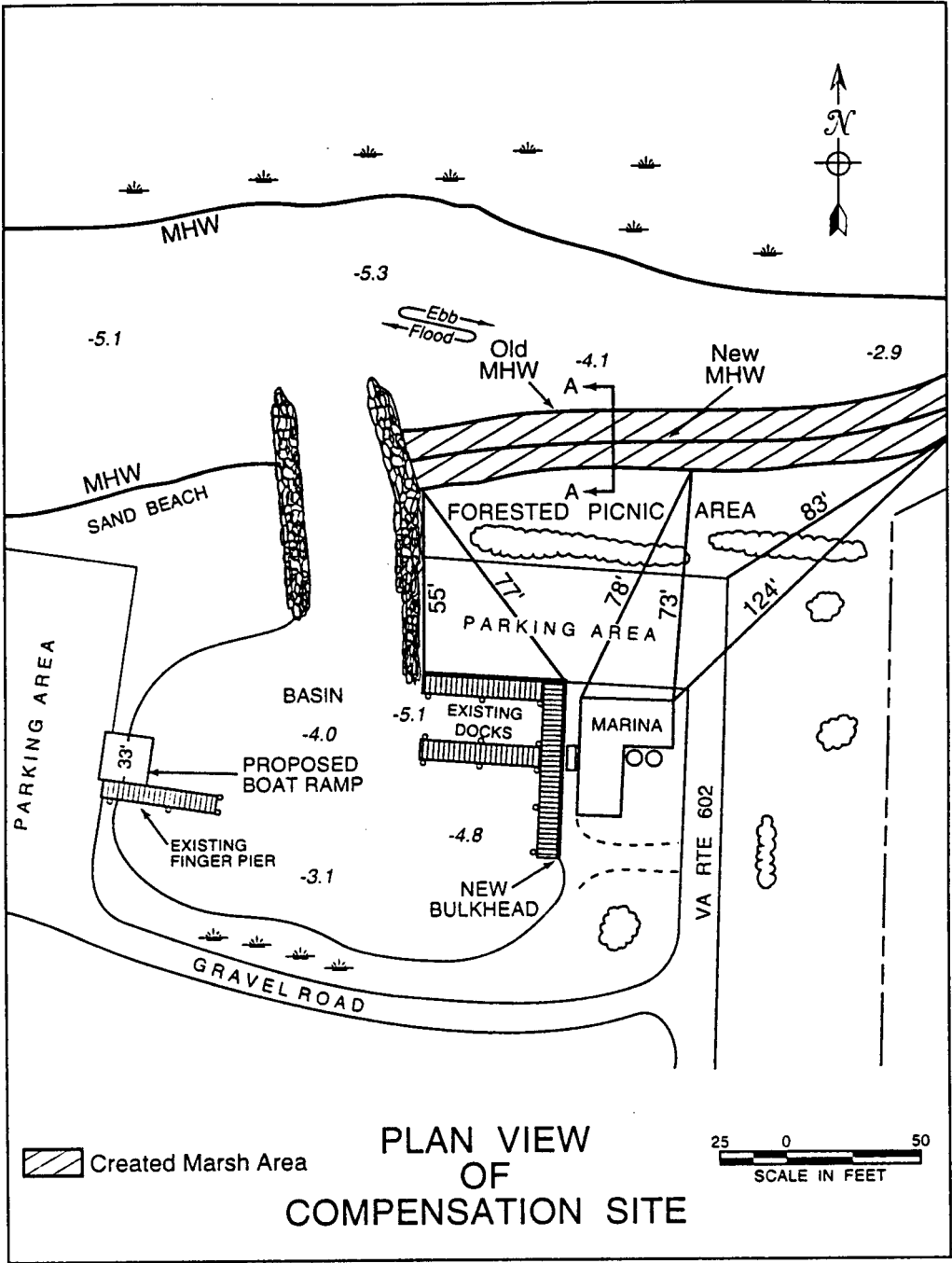
The plan view drawings depict the areal extent of planting with locations relative to permanent reference points. Also depicted in one or both of these drawings are the mean tide range at the site, north arrow, other significant landscape features including vegetation buffers, streams, activity areas, disturbed areas, roads, buildings, etc.

Sample Drawing



Section AA

Sample Drawing



Criteria for the Siting of Marinas or Community Facilities for Boat Mooring

Virginia Marine Resources Commission

VR 450-01-0047

Section I

Objective

As a result of increasingly intensive development through the subdivision of lands adjacent to waters of the Commonwealth, the Commission finds it necessary to develop more detailed criteria for the siting of facilities to serve the needs of boaters in order to protect, conserve and manage properly the natural resources of the Commonwealth for the reasonable and beneficial use of all its citizens.

Section II

Goals

The goals of the Commission are to:

1. Insure that its decisions concerning use of the Commonwealth's natural resources are consistent with the Constitution and laws of Virginia.
2. Develop and administer siting criteria consistent with the Chesapeake Bay Initiatives and the Governor's Commitments contained in the 1987 Chesapeake Bay Agreement.
3. Maintain all fisheries resources, and where possible, enhance production on both public and private currently productive or potentially productive shellfish grounds.
4. Discourage the acquisition of private shellfish leases for any purpose other than the propagation of shellfish.
5. Accommodate, wherever possible, all reasonable and permissible uses of State waters and State-owned bottomlands.
6. Promote navigational safety.
7. Protect private riparian rights while facilitating public access to, and use of State waters to the maximum practicable extent.
8. Promote best management practices which protect and, where possible, enhance water quality.

Section III

Background

The pressures to develop shoreline property and State-owned subaqueous lands are increasing at an unprecedented rate. Boat mooring facilities have become an attractive and effective mechanism to enhance the marketing of subdivided lots in proximity to State waters.

In the process of providing mooring facilities to serve such developments, private benefits are realized but public detriments are often increased. Automatic shellfish closure may result; water quality can deteriorate; habitat values can be irrevocably affected and the character of the water body can be permanently changed.

The Commonwealth is historically a key shellfish producing state. Unfortunately, current shellfish leasing practices encourage the acquisition of shellfish leases by developers in order to eliminate or reduce opposition to seasonal shellfish closures which may result from the siting of mooring facilities.

In order to protect public health, the Bureau of Shellfish Sanitation of the State Health Department has established a policy which requires the establishment of buffer zones around boat mooring facilities within which shellfish cannot be harvested for direct marketing during the months of April through October. These buffer zones are as follows:

0-50 slips - 1/8 mile in all directions

51-100 slips - 1/4 mile in all directions

over 100 slips - 1/2 mile in all directions

As a result of this policy, the State Water Control Board, also as a matter of policy, considers it a violation of water quality standards if a proposed facility will result in a seasonal shellfish closure. The Commission is required by law to give due consideration to water quality standards established by the Water Control Board and to enforce the shellfish closures established by the Health Department.

Section IV

Policy

A comprehensive siting review process for boat mooring facilities requiring permits from the Commission is necessary to insure that permit decisions comply with statutory requirements and the legislative mandate that our natural resources be maintained and conserved for present and future generations. All public and private interests will be carefully considered in this review. As the size, density, complexity and range of services offered by a proposed facility increase, so must the detail in design and implementation of best management practices in its siting, construction and operation. Minimizing adverse environmental impacts must be the ultimate goal in all phases of planning, siting construction and operation. Furthermore, the acquisition of shellfish leases which may be affected by a seasonal shellfish closure around a proposed facility will be given no weight and absent mitigating circumstances will be viewed as a negative factor by the Commission in its evaluation of the facility.

Section V

Definitions

For the purposes of standardization, the definitions contained in Article 1 of Part 1 of the Department of Health Regulation, VR 355-17-01; Sanitary Regulations for Marinas and Boat Moorings; will pertain. For reference purposes, the following two definitions are reproduced herein:

“Marina means any installation operating under public or private ownership, which provides dockage or moorage for boats (exclusive of paddle or row boats) and provides, through sale, rental or fee basis, any equipment, supply or service (fuel, electricity or water) for the convenience of the public or its lessee, renters or users of its facilities.”

“Other places where boats are moored means any installation operating under public or private ownership which provides dockage, moorage or mooring for boats (exclusive of paddle or row boats) either on a free rental or fee basis or for the convenience of the public.”

For purposes of this document, “other place where boats are moored” and “community facility for boat mooring” are interchangeable.

Additionally, since community facilities increase significantly the value of the upland property they are intended to serve, the Commission has a long standing policy that such facilities are classified as commercial in nature. Accordingly, only non-commercial, private piers placed by individual owners of riparian lands in the waters opposite such riparian lands are considered statutorily exempt from public interest review.

Section VI

General Siting Criteria

In addition to the criteria contained on Pages 8 and 9 of the current *Subaqueous Guidelines* promulgated by the Commission in 1979 and revised in 1986, the following should be considered by the applicant in planning and will be considered by the Commission during the public interest review of each application for recreational boat mooring facilities.

1. The physical dimensions and characteristics of the water body should be compatible with the size of the marina and the type of vessels it will house. For example, a shallow cove or basin is not an appropriate site for a deep draft sailboat marina.
2. Marinas must have sufficient upland area to provide all necessary parking, storm-water management BMP's, fuel, and sanitary facilities without filling wetlands or subaqueous bottom.
3. All marinas should be located in areas with good natural flushing to minimize the build-up of organic material and other pollutants on the bottom.
4. Marinas should not be sited close to areas of very high natural resource value such as shellfish beds, seagrass communities and areas frequented by endangered species.
5. The transfer of control of shellfish leases in order to accommodate marina development is generally unacceptable.
6. Projects that by their cumulative impact will result in dense concentrations of boats in one area will be critically evaluated as to their impacts on natural resources; however, in densely populated areas, concentration of slips in a single facility may be justified to prevent disturbance at undeveloped shorelines.

Specific Siting Guidelines

1. For community piers and marina facilities which are appurtenances to residential developments, the number of slips will not necessarily be predicated by the number of units on the property.
2. The dredging of access channels should be limited to the minimum dimensions necessary for navigation and should avoid sensitive areas such as wetlands, shellfish grounds and seagrass beds.
3. Dredged material disposal areas for initial as well as future disposal needs should be clearly defined and designated.
4. Dredged areas should be no more than one foot deeper than controlling depths in the waterway and should be connected to natural channels of similar depth.
5. Piers and wharves crossing vegetated wetland and seagrass areas should be limited to the minimum necessary for water access.
6. Where vegetated areas are crossed, the height of the pier above the substrate should be equal to one foot less than its width with a three foot minimum required.
7. Site specific stormwater management BMP's are required (such as buffer strips, grassed swales, wet detention ponds and permeable parking surfaces.)
8. A solid waste disposal and recovery plan with facilitated marina user access must accompany marina development plans.
9. Sanitary facilities and pumpout facilities convenient to marina users should accompany development plans.
10. All fuel facilities must incorporate automatic shutoff valves and must have spill contingency plans.
11. Methods of insuring against the discharge of wastes, gray water, fuels, bilge wastes and the use of TBT paints shall be provided.
12. Facilities incorporating boat maintenance operations shall include plans for the efficient collection and removal of sand blasting material, paint chips and other by-products of maintenance operations.

Section VII

Best Management Practices (BMP's)

In order to reduce discharge of non-point source pollutants into State waters, the Commission will require the applicant to demonstrate how appropriate BMP's will be incorporated into both the upland development plan associated with the facility as well as the Erosion and Sediment (E&S) Control Plan required by local government.

The Commission may require, as a condition of any permit issued, that BMP structures be completed before any slips can be occupied and that the permittee cooperate fully with local governmental agencies in complying with the E&S Plan, including maintenance of any required BMP structures. An appropriate surety bond or letter of credit may be required to ensure proper installation, stabilization and maintenance of any vegetative or structural measures.

Section VIII

Siting Criteria Check List

The following criteria will be considered by the Commission in determining whether, and upon what condition to issue any permit for a boat mooring facility. In addition, the Commission may consider other factors relevant to a specific project or application.

Criteria	Undesirable	Desirable
Water depth	Less than 3 ft. mlw.	Greater than 3 ft. mlw
Salinity	Suitable for shellfish growth	Unsuitable for shellfish growth
Water Quality	Approved, conditionally approved or seasonally approved for shellfish harvesting	Closed for direct marketing of shellfish. Little or no potential for future productivity.
Designated Shellfish Grounds	Private leases or public oyster ground in proximity	No private leases or public ground within affected area. No potential for future productivity
Maximum Wave Height	Greater than 1 ft.	Less than 1 ft.

Criteria	Undesirable	Desirable
Current	Greater than 1 knot	Less than 1 knot
Dredging	Requires frequent dredging	Does not require frequent maintenance
	No suitable site for dredged material	Suitable site for all dredged material
Flushing Rate (Tidal Exchange)	Inadequate to maintain water quality	Adequate to maintain water quality
Proximity to Natural or Improved Channel	Greater than 50 ft. to navigable water depths	Less than 50 ft. to navigable channel
Threatened or Endangered Species	Present as defined in existing regulations, or project has potential to affect habitat	Absent; project will not affect
Adjacent Wetlands	Cannot maintain suitable buffer	Suitable buffer to be maintained
Navigation and Safety	Water body difficult to navigate or presently overcrowded conditions exist	Navigation not impeded
Existing Use of Site	Presently used for skiing, crabbing, fishing, swimming or other potentially conflicting uses	Not presently used for skiing, fishing, swimming or other recreational use
Submerged Aquatic Vegetation	Present	Absent
Shoreline Stabilization	Bulkheading required	Shoreline protected by natural or planted vegetation or riprap
Erosion Control Structures	Groins and/or jetties necessary	No artificial structures needed
Finfish Habitat Usage	Important spawning and nursery area	Unimportant area for spawning or nursery for any commercially or recreationally valuable species

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THE PERMIT PROCESS

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VIMS Technical Report 91-2 (Revised June 1995)

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Virginia Marine Resources Commission Role



February 1991 No. 91-2
Revised June 1995

Technical Report

College of William and Mary
Virginia Institute of Marine Science
School of Marine Science
Wetlands Program
Gloucester Point, Virginia 23062

Dr. Carl Hershner, Program Director
Thomas A. Barnard, Editor
Harold Burrell, Artwork

The Virginia Wetland's Act:

**"... shall preserve
and prevent the
despoliation and
destruction of
wetlands. . ."**

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the Department of Environmental
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Zone Management
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Coastal Resources and the Permit Process: Definitions and Jurisdictions

Julie G. Bradshaw

This paper reviews the jurisdictions of the various regulatory agencies and the definitions of terms relating to wetlands and other coastal resources in Virginia. The procedure for processing of permits for activities involving coastal resources is outlined.

Regulatory Authority

Activities on Virginia's shoreline are controlled by a number of federal and state laws. The laws create overlapping jurisdictions for the various regulatory agencies.

State/local

Pertinent laws of the Commonwealth of Virginia include the Tidal Wetlands Act (Title 28.2, Chapter 13) and the Coastal Primary Sand Dune Protection Act (Title 28.2, Chapter 14). The Commonwealth's ownership of subaqueous land is established in Title 62.1, Chapter 1 of the Virginia Code. The Virginia Marine Resources Commission (VMRC) is the regulating authority for the coastal resources included in these laws. Localities (i.e., counties, cities, and towns) which desire to regulate their own tidal wetlands or sand dunes have the option of adopting prescribed zoning ordinances and forming citizen Wetlands Boards. VMRC retains an oversight and appellate role for localities which have adopted these coastal resource ordinances.

Federal

Federal laws include Section 404 of the Clean Water Act of 1977 (33 U.S.C. 1251) which addresses dredge and fill operations in wetlands and Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403) which addresses activities affecting navigation. The U.S. Army Corps of Engineers is assigned as the primary federal agency with regulatory authority for these laws. The Corps jurisdiction established by these laws includes waters of the U.S. and their adjacent wetlands.

(continued)

Section 401 of the Clean Water Act is a water quality certification which is required for activities within waters of the U.S. This certification process has been delegated to the Department of Environmental Quality, Water Division, and is known as the Virginia Water Protection Permit. It insures that Virginia Water Quality standards will not be contravened by the permitted activity.

Tidal datums

mean low water (MLW)-the average elevation of low water observed over a specific 19 year period

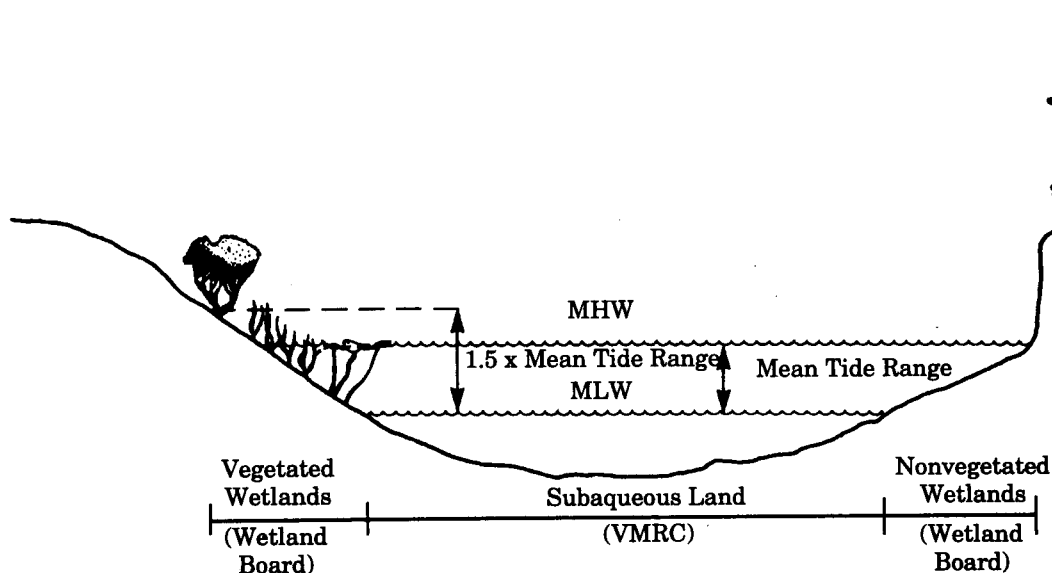
mean high water (MHW)-the average elevation of high water observed over a specific 19 year period

mean tide range-the difference in elevation between MLW and MHW

mean sea level-the average of hourly water elevations observed over a specific 19 year period

Notes: The National Oceanic and Atmospheric Administration's National Ocean Service keeps tidal datum records at a network of gage stations along the coast. The specific 19 year period used for calculating MLW and MHW, called the Metonic cycle or the National Tidal Datum Epoch, incorporates a number of the astronomical cycles which cause variations in tide levels.

The **National Geodetic Vertical Datum (NGVD)** is a fixed reference based on the earth's shape and the distance between the earth's surface and the center of the earth. NGVD is the datum for land elevations on USGS topographic maps. NGVD was formerly known as the Sea Level Datum of 1929. The name was changed because of confusion with the tidal datum Mean Sea Level (defined above). Relationships between NGVD and local tidal datums are variable and are published in conjunction with the tidal bench mark data by the National Ocean Service.



State/local definitions

vegetated wetlands are those lands which satisfy these criteria:

- between MLW and an elevation above MLW equal to 1.5 times the mean tide range
- contiguous to MLW
- vegetated with any of the listed wetland plant species (Appendix A)

nonvegetated wetlands are those lands which satisfy these criteria:

- between MLW and MHW
- contiguous to MLW
- not otherwise considered vegetated wetlands

Subtidal land or **subtidal bottom** refers to the area channelward or seaward of MLW, without regard to political subdivision or land ownership.

Subaqueous land or **subaqueous beds** refer to ungranted beds of the bays, rivers, creeks and

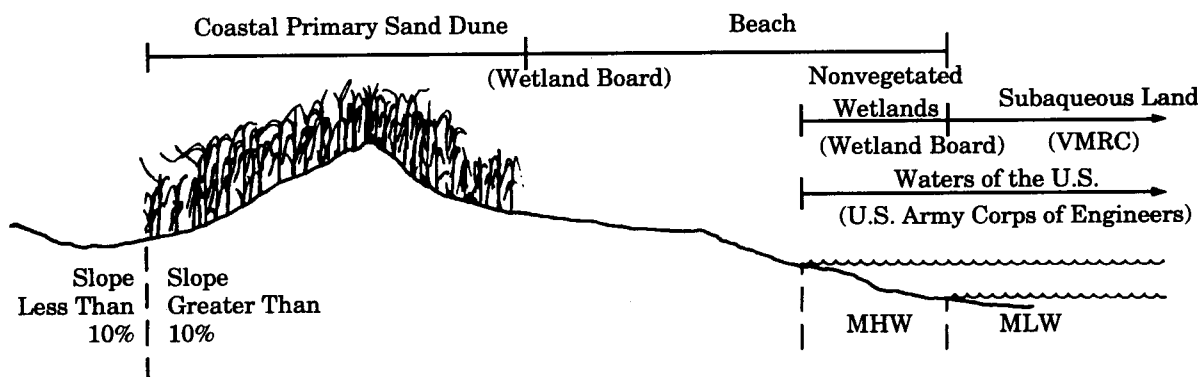
shores of the sea which are owned by the Commonwealth. This includes the beds of tidal and nontidal water bodies. Because property ownership in Virginia extends channelward to MLW in tidal areas, subaqueous land is the land channelward of MLW, with some exceptions:

Potomac River

The Potomac River is owned by the State of Maryland and the District of Columbia. The boundary between Maryland and Virginia is generally at MLW on the Virginia side of the river, except where embayments, creeks and inlets occur, at which the boundary line is from headland-to-headland. Therefore, VMRC often may not have jurisdiction over subtidal land on the Potomac River.

Manmade canals

VMRC does not currently exert jurisdiction over subtidal land in manmade canals. However, the Commonwealth's Tidal Wetlands Act does apply to vegetated and nonvegetated wetlands within manmade canals.



coastal primary sand dunes are those lands which have the following characteristics:

- mound of unconsolidated sandy soil
- contiguous to MHW
- landward and lateral limits marked by a change in grade from 10% or greater to less than 10%
- vegetated with any of the listed dune plant species (Appendix B)
- applies only to Counties of Accomack, Lancaster, Mathews, Northampton, Northumberland, and Cities of Hampton, Norfolk, and Virginia Beach.

beaches are those lands which meet the following criteria:

- the shoreline zone of unconsolidated sandy material
- extends from MLW landward to a marked change in material composition or in physiographic form (e.g., dune, bluff, marsh)

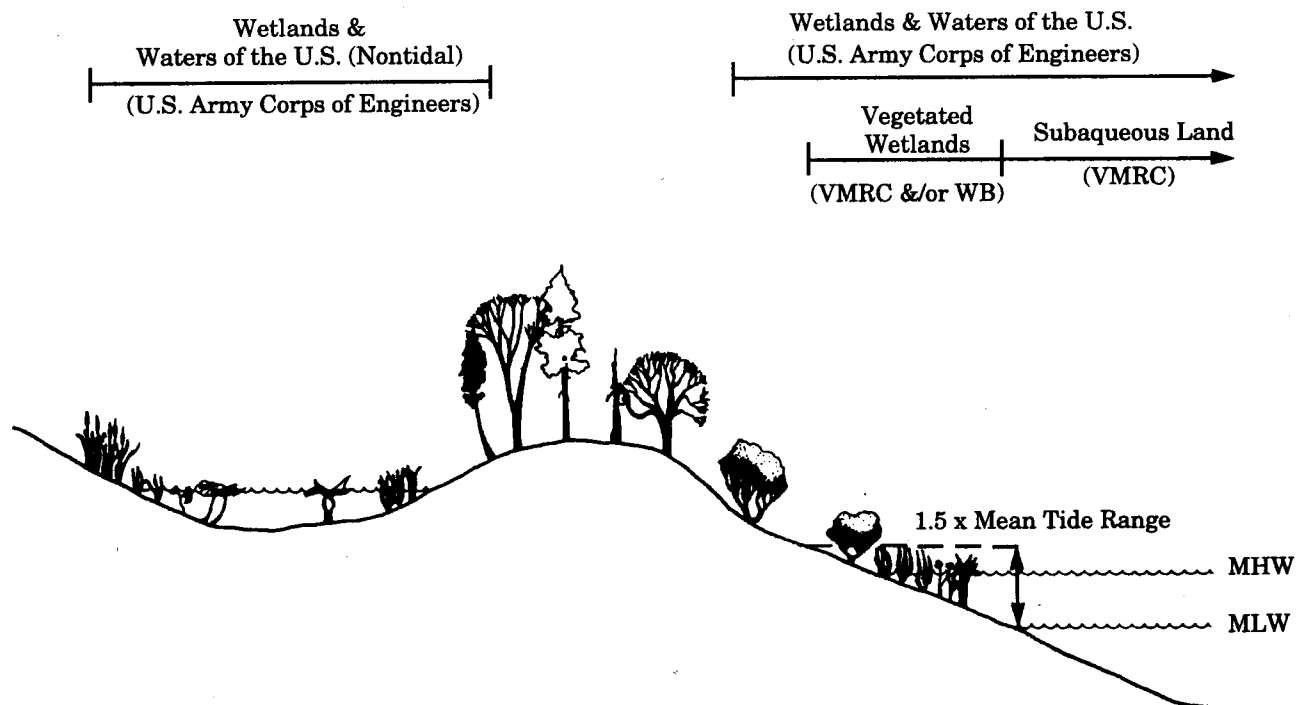
- if no such marked change occurs, then the landward limit of the beach is defined by a line of woody vegetation or the nearest impermeable manmade structure.

Federal definitions

The federal definition of **wetlands** is based on three parameters: soil, hydrology, and vegetation. Specifically, wetlands are: "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The federal definition includes both tidal and nontidal wetlands.

In tidal areas, wetlands under federal jurisdiction may encompass a broader area than the state/local jurisdiction (i.e., federal wetlands may extend to elevations greater than 1.5 times the mean tide range above MLW).



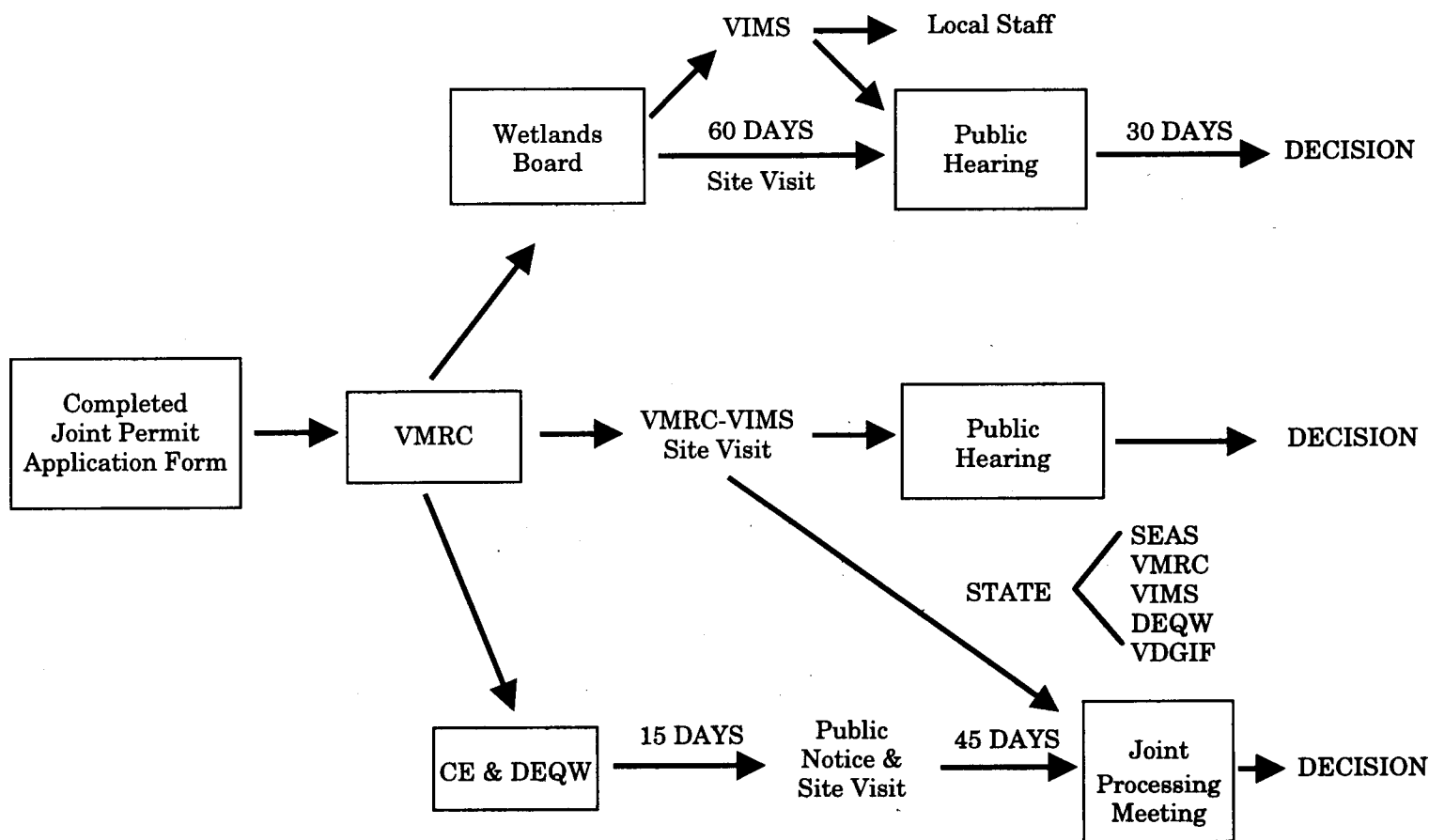
Permit Process

U.S. Army Corps of Engineers, Virginia Marine Resources Commission, and/or local wetlands board permits may be required for activities in Virginia's wetlands, subaqueous beds, sand dunes, and beaches. Activities which may require permits include, but are not limited to, dredging, filling, and construction of bulkheads, riprap revetments, groins, jetties, boat ramps, and piers. Submission of the Joint Per-

mit Application initiates the permit process. Applications are processed independently by each agency.

The VIMS involvement in the permit process is strictly advisory. VIMS provides technical and scientific advice to the Commonwealth's regulatory agencies. Advice generally involves estimation of marine environmental impacts and recommendation of alternatives or modifications to minimize these impacts.

Virginia's Shoreline Permit Process



KEY

VDGIF - Virginia Department of Game and Inland Fisheries
 VMRC - Virginia Marine Resources Commission
 VIMS - Virginia Institute of Marine Science
 DEQW - Dept. of Environmental Quality, Water Division
 SEAS - Shoreline Erosion Advisory Service
 EPA - Environmental Protection Agency
 FWS - Fish and Wildlife Service
 NMFS - National Marine Fisheries Service
 CE - Corps of Engineers

STATE
 SEAS
 VMRC
 VIMS
 DEQW
 VDGIF

FEDERAL
 CE
 EPA
 FWS
 NMFS

Appendix A

List of wetlands plant species in Virginia's Tidal Wetlands Act

saltmarsh cordgrass	(<i>Spartina alterniflora</i>)
saltmeadow hay	(<i>Spartina patens</i>)
saltgrass	(<i>Distichlis spicata</i>)
black needlerush	(<i>Juncus roemerianus</i>)
saltwort	(<i>Salicornia</i> sp.)
sea lavender	(<i>Limonium</i> sp.)
marsh elder	(<i>Iva frutescens</i>)
groundsel bush	(<i>Baccharis halimifolia</i>)
wax myrtle	(<i>Myrica</i> sp.)
sea oxeye	(<i>Borrichia frutescens</i>)
arrow arum	(<i>Peltandra virginica</i>)
pickerelweed	(<i>Pontederia cordata</i>)
big cordgrass	(<i>Spartina cynosuroides</i>)
rice cutgrass	(<i>Leersia oryzoides</i>)
wildrice	(<i>Zizania aquatica</i>)
bulrush	(<i>Scirpus validus</i>)
spikerush	(<i>Eleocharis</i> sp.)
sea rocket	(<i>Cakile edentula</i>)
southern wildrice	(<i>Zizaniopsis miliacea</i>)
cattails	(<i>Typha</i> spp.)
three-squares	(<i>Scirpus</i> spp.)
buttonbush	(<i>Cephalanthus occidentalis</i>)
bald cypress	(<i>Taxodium distichum</i>)
black gum	(<i>Nyssa sylvatica</i>)
tupelo	(<i>Nyssa aquatica</i>)
dock	(<i>Rumex</i> sp.)
yellow pond lily	(<i>Nuphar</i> sp.)
marsh fleabane	(<i>Pluchea purpurascens</i>)
royal fern	(<i>Osmunda regalis</i>)
marsh hibiscus	(<i>Hibiscus moscheutos</i>)
beggar's tick	(<i>Bidens</i> sp.)
smartweed	(<i>Polygonum</i> sp.)
arrowhead	(<i>Sagittaria</i> spp.)
sweet flag	(<i>Acorus calamus</i>)
water hemp	(<i>Amaranthus cannabinus</i>)
reed grass	(<i>Phragmites communis</i> , now called <i>P. australis</i>)
switch grass	(<i>Panicum virgatum</i>)

Appendix B

List of dune plant species in Virginia's Coastal Primary Sand Dune Protection Act

American beach grass	(<i>Ammophila breviligulata</i>)
beach heather	(<i>Hudsonia tomentosa</i>)
dune bean	(<i>Strophostyles umbellata</i> var <i>paludigena</i>)
dusty miller	(<i>Artemisia stelleriana</i>)
saltmeadow hay	(<i>Spartina patens</i>)
seabeach sandwort	(<i>Arenaria peploides</i>)
sea oats	(<i>Uniola paniculata</i>)
sea rocket	(<i>Cakile edentula</i>)
seaside goldenrod	(<i>Solidago sempervirens</i>)
short dune grass	(<i>Panicum amarum</i>)

Contacts

U.S. Army Corps of Engineers	
Norfolk District	(804) 441-7656
Northern Neck Field Office (Lively)	(804) 462-7891
Northern Virginia Field Office (Dumfries)	(703) 221-6967
Richmond Field Office (Ashland)	(804) 752-7464
Eastern Shore Field Office (Accomac)	(804) 787-3133
U.S. Fish and Wildlife Service, Gloucester field office	(804) 693-6694
Virginia Marine Resources Commission (Newport News)	(804) 247-2252
Shoreline Erosion Advisory Service	
Suffolk Field Office	(804) 925-2468
Tappahannock Field Office	(804) 443-6752
Dept. of Environmental Quality, Water Division (Richmond)	(804) 367-9763
Virginia Dept. of Game and Inland Fisheries (Richmond)	(804) 367-1000
Virginia Dept. of Health (Richmond)	(804) 786-7937
Virginia Institute of Marine Science (Gloucester Point) Wetlands Advisory Program	(804) 642-7380



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School of Marine Science
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The Role of VIMS in the Permit Process

The Virginia Institute of Marine Science/School of Marine Science of the College of William and Mary is, as its name would indicate, unique in its blend of activities stemming from Title 28, Chapter 9 of the Code of Virginia. Sometimes called Virginia's Oceanographic Law, this section of the Code mandates three principal areas of responsibility to VIMS:

- Applied and fundamental research on the resources and environment of the tidal waters of the Commonwealth.
- Advice and assistance for the public and private managers and users of these environments and resources.
- Educational programs at all interest levels fostering marine science scholarship, informed decision-making in resource management and an enlightened public.

The linkage of these three areas of responsibility is a major strength and allows VIMS to provide necessary technical input to the shoreline permit process.

The Virginia Wetlands Act stipulates that VIMS will evaluate wetlands by type and maintain a continuing inventory of vegetated wetlands. VIMS is also charged with advising and assisting the VMRC with producing guidelines which scientifically evaluate wetlands by type and set forth the consequences of use of each type. These activities have been completed, and in the case of the guidelines completely revised in 1984. VIMS also assisted in the preparation of the Coastal Primary Sand Dune Guidelines adopted in 1980.

VIMS' educational and advisory mandates dictate several other activities in which the Institute is involved with the state shoreline permit system. Wetlands workshops and field trips are offered for board members, staff persons and other resource managers on the state and federal levels. Subjects covered include the types and values of wetlands, wetland delineation, impacts of man's activities, etc. VIMS prepared a detailed wetland curriculum during 1991 which serves as the basis for its education efforts on behalf of local resource managers, planners and staff. The Wetlands Program at VIMS also publishes *The Virginia Wetlands Report*, a quarterly bulletin which features news and articles of interest to Virginia resource managers. In addition, a technical report series presents detailed background information on wetlands and other resources in the coastal zone. A series of publications describing the common and not so common plants found in wetland habitats is also produced bi-monthly and distributed to managers and other interested persons throughout the Commonwealth.

VIMS' technical advisory role in the process consists of preparing environmental assessments for each application considered by a wetlands board or the VMRC. After visiting the site, a report is prepared outlining the resource impacts involved and describing alternatives and mitigating measures which would materially reduce the adverse effects of the proposal. This report serves as the principal environmental input to the wetlands public interest review and thus is an integral part of the decision-making process.

The Wetlands Program at VIMS is involved in ongoing research which contributes to the management effort overall. Studies involving the identification of the values and functions of wetlands, the impacts of man's activities in wetlands, the monitoring of created marshes, the effects of fire and the use of wetlands by estuarine organisms, as well as birds and other wildlife contribute to informed decision-making. VIMS scientists are available as needed to answer questions regarding wetlands and the marine environment generally.

Virginia Marine Resources Commission Role

The regulation of Virginia's tidal wetlands and coastal primary sand dunes is a joint responsibility of the Virginia Marine Resources Commission (Commission) and individual wetlands boards. In addition to assisting the local wetlands boards where possible, the role of the Commission involves the review of wetlands board decisions, the review of appeals filed by applicants or freeholders and the original consideration of applications for use or development of state-owned wetlands as well as wetlands and dunes in localities without boards. The Commission also acts as the "clearing house" for the Joint Permit Application which must be submitted for all wetlands projects (a separate application must be submitted for projects involving primary dunes which should be filed at the local level). The Commission is responsible for assigning a joint permit processing number to each wetlands application and distributing the application to the local wetlands boards. These duties and functions are carried out by the Commission's Habitat Management Division.

As required by Code, the Commission must review each board decision for projects involving both wetlands and coastal primary sand dunes. Commission staff must evaluate whether or not the local board properly considered and applied the policy, standards and guidelines of the wetlands and dunes act. If the Commissioner concludes that the decision of the board does not comply with the policy, standard or guidelines, the board chairman will be notified and the decision will be reviewed by the full Commission within 45 days.

A decision of a local board may also be appealed by an applicant or 25 freeholders in the county, city or town. All appeals must be filed within 10 days of the wetlands board decision. Upon receipt of an appeal or decision for review, the Commissioner will require that the record of the board proceedings (transcript of testimony, application, exhibits, photos, etc.) be forwarded to the Commission.

In order to develop an efficient working relationship with the various wetlands boards, each environmental engineer on staff within the Habitat Management Division is assigned a geographic area of responsibility. The engineer in each political jurisdiction is responsible for tracking the progress of each application and providing assistance to the local government. The engineer visits each project site and generally attends each wetlands board meeting. While the engineer can provide assistance regarding procedures and the processing of applications, they cannot make recommendations to the board as this would prejudice the Commission's required review of each board decision. The engineers are also available for consultation regarding violations of the wetlands or dunes ordinances.

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Wetlands Act And Land Office Act— Use or Encroachment Upon State-owned Wetlands of Eastern Shore— Public Right to Fish, Fowl or Hunt.

May 25, 1978

**The Honorable James E. Douglas, Jr.
Commissioner, Marine Resources Commission**

You ask whether § 41.1-4 of the Code of Virginia (1950), as amended, which is a provision of the Land Office Act, would prevent the Virginia Marine Resources Commission from permitting any use or encroachment upon the State-owned wetlands of the Eastern Shore.

Section 41.1-4 requires that the ungranted marsh or meadowlands of the Eastern Shore remain in public ownership and that they remain accessible to the public for fishing, fowling or hunting.¹ The Wetlands Act is directed primarily at the use and development of privately-owned wetlands by private property owners. The Act also permits, however, the granting of permits to use or develop ungranted, publicly-owned wetlands areas. Thus, § 62.1-13.9 provides that if “an applicant desires to use or develop wetlands owned by the Commonwealth, he shall apply for a permit directly to the Commission.”

Sections 41.1-4 and 62.1-13.9 both address the same subject matter—activities which may take place on wetlands. Statutes relating to the same subject or object must be construed together so that, if it can reasonably be done, effect is given to every provision of each. The provisions of one statute should not be construed to control those of another on the same subject matter unless, upon comparison, they are in irreconcilable conflict. II Sutherland, *Statutory Construction* § 5201 (1943); 73 Am. Jur.2d *Statutes* §§ 187-190 (1974).

I am of the opinion that these statutes do not conflict and that effect may be given to each. The Marine Resources Commission may grant a permit to “use or develop” the wetlands of the Eastern Shore. *See* § 62.1-13.9. Because no use may be permitted on any ungranted wetlands which would injure their public character, only limited activities or uses which do not require development of a private character may be authorized. Furthermore, no permit may be issued for an activity which would interfere with the public right to fish, fowl or hunt in the Eastern Shore marsh or meadowlands protected by § 41.1-4. Accordingly, the Commission should review each permit application for the use or development of these wetlands to determine that such interference will not occur. Any use listed in subsection 3 of § 62.1-13.5 must also be denied if it would interfere with public fishing, fowling, or hunting.

¹Section 41.1-4 provides as follows:

“All unappropriated marsh or meadowlands lying on the Eastern Shore of Virginia, which have remained ungranted, and which have been used as a common by the people of this state, shall continue as such common, and remain ungranted. Any of the people of this State may fish, fowl or hunt on any such marsh or meadowlands.

Wetlands Act. Public Notice and Hearing Required When Permittee Seeks Modification in Conditions and Limitations of Permit.

June 20, 1979

**The Honorable James E. Douglas, Jr., Commissioner
Marine Resources Commission**

You ask whether a local wetlands board followed lawful procedure when it modified a permit at an "administrative" meeting. The permit had been granted over a year earlier after a public hearing held pursuant to §§ 6 and 7 of the Wetlands Zoning Ordinance prescribed by § 62.1-13.5 of the Code of Virginia (1950), as amended.

You have advised me that the board follows the practice of holding an administrative meeting on the first Tuesday of each month. These meetings are scheduled on the annual calendar of the local government as to date and location, and are open to the public. There is no compliance, however, with § 6 of the Ordinance, as no agenda items are advertised for these meetings. The board also holds a public hearing or meeting on the third Tuesday of each month. Agenda items for these meetings are advertised in compliance with § 6 of the Ordinance.

The permit in question had been granted over a year earlier, but changed circumstances now prevent the permittees from complying with the conditions and limitations of the permit. At two recent administrative meetings, the permittees requested modifications in spoil sites and bond requirements. There was to be no change in the encroachment on the wetlands. At the first administrative meeting, the board decided to set the matter for public hearing. At the second administrative meeting, the board reconsidered and granted the modification. Appeal has been taken to the commission by 25 or more freeholders pursuant to § 62.1-13.11(3), alleging the modification was made upon unlawful procedure. *See* § 62.1-13.13(2)(c). I am advised that these appellants were not at the second administrative meeting, and did not know the modification was then under consideration.

Section 8 of the Ordinance provides that if a permittee fails to comply with the conditions and limitations in an issued permit, the permittee is entitled to a hearing before the permit can be suspended or revoked. Also, under § 9(a) of the Ordinance, the board may grant applications in modified form, but in so doing the board shall base its decision on matters raised through testimony of any person in support of or in rebuttal to the permit application. *See* Ordinance § 9(a)(1). Without notice pursuant to § 6 of the Ordinance, there may be no opportunity for rebuttal testimony.

Accordingly, I find that the decision of the board was made upon unlawful procedure. The commission should modify or reverse the decision of the board if the commission finds that the substantial rights of appellants have been prejudiced because of the unlawful procedure. *See* § 62.1-13.13(2).

Wetlands Act. Counties, Cities and Towns. Ordinances. Authority to Repeal Standard Wetlands Zoning Ordinance Once Adopted.

February 9, 1981

The Honorable Daniel M. Stuck
County Attorney for New Kent County

You ask whether a county, city or town is authorized to repeal the standard Wetlands Zoning ordinance provided for in § 62.1-13.5 of the Code of Virginia (1950), as amended, once the governing body has adopted the ordinance.

Section 62.1-13.5 provides that any county, city or town may adopt a standard Wetlands Zoning Ordinance, as set out in the statute. I find no specific provision in the wetlands law (Ch. 2.1 of Title 62.1) that authorizes repeal, but at the same time, I find no specific provision that prohibits repeal.

The adoption of ordinances is a legislative act, and ordinarily the legislative power of a local governing body is not limited or exhausted by one exercise, and an ordinance once adopted may be amended or repealed.¹

Accordingly, in the absence of any express statutory prohibition against repeal, I find that a county, city or town is authorized to repeal the standard Wetlands Zoning Ordinance provided for in § 62.1-13.5.²

¹See Opinion to the Honorable Stephen C. Harris, Commonwealth's Attorney for Louisa County, dated March 24, 1976, found in Report of the Attorney General (1975-1976) at 26; Opinion to the Honorable J. Richmond Low, Jr., Commonwealth's Attorney for King George County, dated July 14, 1980 (copy enclosed).

²Section 62.1-13.9 provides that when a county, city or town has not adopted the standard ordinance, applications for permits shall be made directly to the Marine Resources Commission, and the Commission shall process such applications in accordance with the standard ordinance. In the event a county, city or town repeals the standard ordinance, applications for permits shall again be made directly to the Commission under § 62.1-13.9.

Wetlands Act. Towns Do Not Have Option of Adopting Their Own Wetlands Zoning Ordinance Where County of Which They are a Part Has Had Wetlands Zoning Ordinance In Effect For Over One Year and Amends Such Laws To Conform With 1982 Amendments of § 62.1-13.5.

May 25, 1982

**The Honorable James E. Douglas, Jr., Commissioner
Marine Resources Commission**

You ask whether towns which previously lost their option to adopt a wetlands ordinance pursuant to § 62.1-13.6(b) of the Code of Virginia (1950), as amended, will again, in view of changes made in § 62.1-13.5, Ch. 300 [1982] Acts of Assembly, have authority to adopt their own ordinances if the county of which they are a part (1) amends its ordinance to conform with the recently enacted form of ordinance in § 62.1-13.5, or (2) fails to so amend its ordinance.

Chapter 300 requires the conformation of existing wetlands zoning ordinances to the new Act. Any non-conforming wetlands zoning ordinances will become ineffective January 1, 1983.

Section 62.1-13.6(b) provides that a town which “does not enact a wetlands zoning ordinance within one year from the time the county in which such town is found enacts a wetlands zoning ordinance, application for wetlands found in such town shall be made to the county wetlands board.” It is keyed to enactment of “a wetlands zoning ordinance.” It says nothing about later amendment. Towns were given an option by the original legislation to choose to administer their own programs, but this option was of limited duration. The provisions of § 62.1-13.6(b) suggest that, once a decision on local administration of the wetlands program was made, the need for certainty precluded leaving the town option perpetually available.

The fact that new legislation requires the conformance of all wetlands zoning ordinances to the amended law does not change this situation. Chapter 300 does not amend § 62.1-13.6(b). That provision clearly refers to enactment, not amendment. I am, therefore, of the opinion that your first question must be answered in the negative. A town does not have the option of adopting its own wetlands zoning ordinance merely because the county of which it is a part amends its wetlands zoning ordinance, as is required by the recent amendments to § 62.1-13.5.

The situation would be different, however, in the case posed by your second question. If the county should fail to bring its wetlands zoning ordinance into compliance with the amended law, that county would have no wetlands zoning ordinance in effect as of January 1, 1983. Section 62.1-13.6(b) only limits the adoption of town wetlands zoning ordinances where a county has enacted such an ordinance. Where a county enactment is no longer valid, there is nothing to prevent the town from enacting its own wetlands zoning ordinance. Because the obvious intent of the Wetlands Act is that the wetlands program be ultimately administered at the local level (*see* §§ 62.1-13.5 and 62.1-13.9), and because there would be no county regulations governing wetlands, the town would then be able to enact a wetlands zoning ordinance.

I am, therefore, of the opinion that your second question must be answered in the affirmative. If the county of which a town is a part does not amend its wetlands zoning ordinance to conform to the recent amendments to § 62.1-13.5, it will cease to have a wetlands zoning ordinance and a town may, at that time, adopt its own wetlands zoning ordinance.

**Wetlands Act. Subdivision Plat is Not a Plan as Contemplated By
Exemption Provision of Wetlands Act Unless it is a Monument to
Developer's Intention Diligently Pursued and it Represents Substantial
Expenditure.**

September 1, 1982

**The Honorable James E. Douglas, Jr., Commissioner
Marine Resources Commission**

You have asked that I reconsider a previous Opinion of this Office, found in the 1972-1973 Report of the Attorney General at 513, which discussed the meaning of the term “plan or plan of development” as used in the Wetlands Act.¹ Section 62.1-13.20 of the Code of Virginia provides, in pertinent part, that

“[n]othing in this chapter shall affect...(2) any project or development...for which, prior to July 1, 1972... a plan or plan of development thereof has been filed pursuant to ordinance or other lawful enactment....”

The 1973 Opinion stated that “a subdivision plat which clearly indicates lot lines and streets, the confines of which are identifiable, would constitute a plan or plan of development...” required for the exemption. You point out that a recent decision of the Circuit Court of Virginia Beach, in a case styled *City of Virginia Beach v. Virginia Marine Resources Commission, et al.* (C81-Z366-A), found a subdivision plat not to be a plan or plan of development for purposes of the above-quoted exemption from the provisions of the Wetlands Act.

The circuit court, in its Memorandum opinion issued May 19, 1982, interpreted “plan or plan of development” to mean either a “plan of development” submitted under a zoning ordinance adopted pursuant to § 15.1-491,² or a plan which would be equivalent to a plan of development, such as a site plan which had been filed and diligently pursued.

¹The Wetlands Act, § 62.1-13.1, *et seq.*, provides generally that all development of wetlands shall require prior permit from either a local wetlands board or the Marine Resources Commission.

²When the plat which was the subject of that case was recorded, State law did not require localities to enact subdivision ordinances, and Princess Anne County, which is now a part of the City of Virginia Beach, did not enact such an ordinance until December 22, 1952.

See Fairfax County v. Medical Structures, Inc., 213 Va. 355, 357-358, 192 S.E.2d 799, 801 (1972). The court reserved decision on whether a subdivision plat meeting the necessary criteria would be regarded as a “plan” for purposes of § 62.1-13.20.

The court's test for equivalency to a plan of development was a document filed pursuant to law, diligently pursued, which represented (1) a monument to the developer's intention (that is, his intended use of the property), and (2) a substantial good faith expense. The court determined the plat in the Virginia Beach case was only a schematic representation of land divided and had no purposes other than to facilitate the transfer of ownership of land within the plat. The developer was free to vacate the plat, resubdivide the property, or convey all or part of the parcels identified on it. The court further noted that the plat in that case did not dedicate property or serve to meet any of the other commitments required of developers recording subdivision plats under modern subdivision ordinances. Hence, it did not satisfy either the requirement of showing what the developer intended to build, or the requirement of a substantial expense. Accordingly, it was not exempt from the provisions of the wetlands ordinance.

The court's opinion limits the exemption from regulation to those projects for which developers have filed plans which represent a monument to the developer's intention diligently pursued and for which the developer has expended a substantial sum. This construction is sufficiently restrictive to accomplish the protection of undisturbed wetlands intended by the Wetlands Act. It also provides the protection intended by § 62.1-13.20(2) for those who have not yet begun construction but have so altered their position that in fairness they should be permitted to construct their project.

I am, therefore, of the opinion that a subdivision plat, standing alone, is not a plan or plan of development for purposes of the exemption provided in § 62.1-13.20(2), unless it is a monument to the developer's intention which has been diligently pursued and it represents a substantial good faith expense. This Opinion supersedes the Opinion found in the 1972-1973 Report of the Attorney General at 513 to the extent that the two Opinions are inconsistent.

Wetlands Act. Marine Resources Commission and Local Wetlands Boards Have No Authority to Regulate Federal Activities Affecting Federally Owned Wetlands.

September 1, 1982

**The Honorable James E. Douglas, Jr., Commissioner
Marine Resources Commission**

You have asked for my opinion as to whether, under the Wetlands Act and the Coastal Primary Sand Dune Protection Act, §§ 62.1-13.1, *et seq.*, and 62.1-13.21, *et seq.*, of the Code of Virginia, respectively,¹ local wetlands boards or the Marine Resources Commission can exercise jurisdiction over vegetated and non-vegetated wetlands and coastal primary sand dunes on lands owned by the federal government.

Article VI of the United States Constitution provides that federal law is the supreme law of the land. Thus, states cannot regulate or control the functioning of the federal government within their boundaries in any manner to impede the execution of constitutionally granted federal power, except where the federal government has voluntarily subjected itself to state regulatory processes. 1978-1979 Report of the Attorney General at 174. As pointed out in that Opinion, the 1977 Clean Water Act amended § 404 of the Federal Water Pollution Control Act, 33 U.S.C. § 1344(t), to expressly require that federal agencies comply with all substantive and procedural state requirements concerning the discharge of dredged or fill material. Therefore, to the extent that any project involves the discharge of dredged or fill material in any portion of the navigable waters within Virginia's jurisdiction, that activity is subject to regulation by State law.

The Coastal Zone Management Act of 1972, 16 U.S.C. § 1451, *et seq.*, does not waive federal immunity from state requirements, but § 1456(c)(2) directs federal agencies to ensure that any development project in the coastal zone is consistent, to the maximum extent practicable, with *approved* state coastal zone management programs. The requirements or approval are found in 16 U.S.C. § 1455(c). Because Virginia elected not to have an approved coastal zone management program, this provision is not applicable.*

¹Both acts require permits for use or development of "wetlands" and "coastal primary sand dunes" from either the Virginia Marine Resources Commission, or a wetlands board created pursuant to § 62.1-13.6. See §§ 62.1-13.5 §4(a) and 62.1-13.26.

*Virginia now has an "approved" coastal zone management plan and thus the directive to be consistent with state plans now applies in Virginia.—*Editor*

I am unaware of any federal laws which specifically waive federal immunity from state regulations for wetlands and primary sand dunes, as was done in the Clean Water Act of 1977. I am, therefore, of the opinion that the Marine Resources Commission and the local wetlands boards have no jurisdiction to regulate federal activities on federally owned wetlands and primary sand dunes unless (1) such activities involve the discharge of dredged or fill materials in any portion of the navigable waters within Virginia's jurisdiction or (2) federal immunity from state environmental requirements has been specifically waived in the legislation authorizing the project in question.

Fees. Local Wetlands Board May Charge Second Fee for Processing Modified Permit Application Where Justified By Cost of Processing Such Modified Application.

September 28, 1982

The Honorable Glenn B. McClanan
Member, House of Delegates

You have asked two questions concerning the processing of an application before a local wetlands board. You first ask whether an applicant for a permit from a local wetlands board must pay a second application fee for processing a modified application following the local board's denial of the first permit application, which denial was with leave to resubmit in modified form. The applicant appealed the ruling to the Marine Resources Commission, which, in turn, remanded the application to the local board for a review on the merits of the modified application.

The Wetlands Act, § 62.1-13.1, *et seq.*, of the Code of Virginia, provides generally that all non-exempt development of wetlands requires a prior permit from either a local wetlands board or the Marine Resources Commission. Section 62.1-13.5 provides the only form of Wetlands Zoning Ordinance allowed. Section 4(c) of that form deals with fees as follows:

“A nonrefundable processing fee to cover the cost of processing the application, set by the applicable governing body with due regard for the services to be rendered, including the time, skill, and administrator's expense involved, shall accompany each application.”

Section 9(b) provides that if the local board denies the application, it shall do so “with leave to the applicant to resubmit the application in modified form.”

The statute authorizes the applicable governing body to set a fee to cover the cost of processing the application including the time, skill and administrator's expense involved. I am of the opinion that, if the amended application is equivalent to a new application which must be processed, the local wetlands board can determine that the cost involved in processing such amended application justifies the imposition of an additional fee.

You also ask whether consideration of the modified proposal must be readvertised. Sections 6 and 7 of the Wetlands Zoning Ordinance, as provided in § 62.1-13.5, require a hearing on each application after newspaper publication and mailed notification to certain designated persons. Any person may be heard at the hearing. This provision is clearly intended to

allow anyone interested to be heard, and to provide them with notice of their opportunity to be heard.

Because the modified application in the case referred to in your letter proposes to use pilings rather than fill, I assume that it is equivalent to a new application for purposes of advertising the hearing. The public has not had the statutorily required opportunity to be heard on the new proposal. *See* 1978-1979 Report of the Attorney General at 326. I am, therefore, of the opinion that a hearing on a modified application, which substantially differs from the original, must be advertised as required by the Wetlands Zoning Ordinance, as provided in § 62.1-13.5 (§ 6).

Wetlands Act. Members of Local Wetlands Board May Appear and Testify Before Marine Resources Commission Where Such Commission, in its Discretion, Decides to Hear Such Evidence.

December 16, 1982

The Honorable Glenn B. McClanan
Member, House of Delegates

You have asked whether it is appropriate for members of a local wetlands board to (1) appear and (2) testify before the Marine Resources Commission (the "Commission") in connection with a hearing of an appeal from a denial of an application by such local board where the local board members appearing and testifying previously participated in the vote to deny the application.

Decisions of a local wetlands board are subject to review by the Commission under the circumstances enumerated in § 62.1-13.11 of the Code of Virginia. The Commission is empowered by § 62.1-13.13 to modify, remand or reverse the decision of the wetlands board.¹

If the review by the Commission could be equated with appeals from lower courts, or limited to the record prepared by the board, I would be inclined to view as improper an appearance by a board member before the Commission. However, appeals from the board are not so limited. The procedure for review by the Commission is provided in § 62.1-13.12, which provides in pertinent part as follows:

¹Section 62.1-13.13 provides: "The Commission shall modify, remand or reverse the decision of the wetlands board:

- (1) If the decision of the wetlands board will not adequately achieve the policy and standards of this chapter or will not reasonably accommodate any guidelines which may have been promulgated by the Commission hereunder; or
- (2) If the substantial rights of the appellant or the applicant have been prejudiced because the findings, conclusions or decisions are
 - (a) In violation of constitutional provisions; or
 - (b) In excess of statutory authority or jurisdiction of the wetlands board; or
 - (c) Made upon unlawful procedure; or
 - (d) Affected by other error of law; or
 - (e) Unsupported by the evidence on the record considered as a whole; or
 - (f) Arbitrary, capricious, or an abuse of discretion."

“The Commission shall hear the appeal or conduct the review on the record transmitted by the board...and such additional evidence as may be necessary to resolve any controversy as to the correctness of the record. And the Commission, in its discretion, may receive such other evidence as the ends of justice require.”

This section gives the Commission full discretion to receive any evidence which the ends of justice require. If the Commission decides that testimony of members of the local wetlands board which adopted the position being challenged on appeal would be helpful, the Commission has the discretion to receive it. As long as the appellant has an opportunity to be present to hear and to rebut any adverse evidence presented, he will not be improperly prejudiced by such testimony.

I am, therefore, of the opinion that it is not inappropriate for members of a local wetlands board who participated in a vote denying an application to appear and testify in the appeal of such application before the Commission, provided the Commission, in its discretion, determines that such evidence is appropriate to permit it to render a proper decision.

Wetlands Act. Wetlands Permit Required for Setting of Pilings, for Construction of Residence on Pilings, for Construction on Pilings of Adjoining Open Wooden Deck.

January 10, 1983

The Honorable Owen B. Pickett
Member, House of Delegates

You have inquired whether the Wetlands Act (§ 62.1-13.1, *et seq.*, of the Code of Virginia) requires that a permit be obtained from the local wetlands board under the following fact situation: An owner of a parcel of wetlands proposes to improve his parcel by constructing a two-story frame residence on pilings with an adjoining open wooden deck on pilings. No fill dirt will be placed in the wetlands, and the pilings will permit the reasonably unobstructed flow of the tide and preserve the natural contour of the wetlands. The Army Corps of Engineers has advised that no Department of Army permit will be required.

You ask the following three questions. (1) Is a permit required for setting the pilings? (2) Is a permit required for construction of the dwelling on pilings? (3) Is a permit required for construction on pilings of the open wooden deck adjoining the dwelling?

Section 62.1-13.9 of the Wetlands Act requires a permit for any activity in wetlands if the local wetlands zoning ordinance contained in § 62.1-13.5 requires a permit for such activity. Section 4(a) of the local wetlands zoning ordinance requires a permit for “[a]ny person who desires to *use or develop* any wetland...other than for those activities specified in § 3 above....” (Emphasis added.) Section 3 sets forth the uses and activities on wetlands which are permitted without a permit. The pertinent portion of § 3 is subsection (a) which exempts:

“The construction and maintenance of non-commercial catwalks, piers, boathouses, boat shelters, fences, duckblinds, wildlife management shelters, footbridges, observation decks and shelters and other similar structures; provided that such structures are so constructed on pilings as to permit the reasonably unobstructed flow of the tide and preserve the natural contour of the wetlands[.]”

I will address your first and second questions together, inasmuch as the pilings are to be set as part of the construction of a residence. The setting of pilings for a residence, and the construction of the house built on pilings, would clearly be a use or development of wetlands. Because no exemption is provided for such use or development, I am of the opinion that set-

ting pilings and building a house on pilings over wetlands would require a permit from the local wetlands board.

The last question is whether the construction on pilings of an open wooden deck adjoining the dwelling would be exempted. Section 3(a) permits the construction of observation decks and similar structures as long as they are built on pilings so as to permit the flow of the tide and preserve the contour of the wetlands. The exemptions listed describe small, isolated structures which are used intermittently and which would have minimal effect on the wetlands. The exemptions are not applicable to decks constructed in conjunction with residential development, where the effects of the pilings and the covering of wetlands by the deck would have to be added to the effects resulting from the construction of the dwelling house. I am, therefore, of the opinion that a permit must be obtained for the construction of an open wooden deck adjoining a residence.

Wetlands Act. Political Subdivision's Ownership of Easement or Right-of-Way Over Wetlands Exempts Its Governmental Activity Therein from Requirement to Get Wetlands Permit.

January 18, 1983

The Honorable William T. Parker
Member, Senate of Virginia

You have asked if a political subdivision undertaking governmental activities in wetlands through which it has an easement or right-of-way is exempt from the permit requirements of the Wetlands Act, § 62.1-13.1, *et seq.*, of the Code of Virginia.

Section 3(i) of the local wetlands zoning ordinance contained in § 62.1-13.5 reads as follows:

“§ 3. The following uses of and activities on wetlands are permitted, if otherwise permitted by law:

* * *

(i) Governmental activity on wetlands owned or leased by the Commonwealth of Virginia, or a political subdivision thereof...”

The question is whether wetlands subject to a political subdivision's easement or right-of-way are wetlands “owned or leased” by a political subdivision for the purpose of being permitted by this section. While your letter did not describe the easement or right-of-way, I will assume that such easement or right-of-way has been obtained by properly recorded deed or condemnation proceedings. I further assume that the proposed activity falls within the permissible limits of the terms of the deed.

An easement or right-of-way is a different estate from that which an “owner” is normally thought to have. Possession of an easement or right-of-way is, however, ownership of some of the rights to the land. The owner of an easement or right-of-way is the “dominant” tenant and has a right to use the land, thus making the record owner a servient tenant. In tax cases, the word “owner” has covered various types of ownership.

“The word ‘owner’ includes any person who has the usufruct, control or occupation of the land, whether his interest in it is an absolute fee, or an estate less than a fee,” *Stark v. City of Norfolk*, 183 Va. 282, 289, 32 S.E.2d 59 (1944), quoting from *Powers v. Richmond*, 122 Va. 328, 335, 94 S.E.803 (1918).

Interpreting “owned or leased by...a political subdivision” to include the ownership of an easement or right-of-way will not subvert the legislative purpose expressed in § 62.1-13.1, because the Commonwealth's political subdivisions will necessarily be guided by the wetlands policy established by the General Assembly.

For the foregoing reasons, I am of the opinion that local governmental activity on wetlands over which the local government has an easement or right-of-way is authorized by § 3(i) of the local wetlands zoning ordinance contained in § 62.1-13.5.¹

¹As previously stated, this conclusion is based upon an assumption that the activity falls within the permissible limits and terms of a properly recorded deed or condemnation proceeding.

**Parliamentary Procedure. local Wetlands Board May Adopt
Procedures Not Inconsistent With Local Ordinances or State Law.**

February 27, 1984

**The Honorable Owen B. Pickett
Member, House of Delegates**

You have requested my opinion on the Virginia Beach Wetlands Board's proposed procedure for acting on permit applications under Chapter 2.1 (§ 62.1-13.1 *et seq.*) of Title 62.1 of the Code of Virginia (the "Wetlands Act").

Virginia Beach has adopted the wetlands ordinance found in § 62.1-13.5 and has recently expanded its wetlands board to seven members as authorized by § 62.1-13.6. Section 62.1-13.5(4)(a) provides that anyone wishing to use or develop wetlands for purposes not otherwise permitted must file an application for a permit with the local wetlands board. Section 62.1-13.5(6) requires the wetlands board to hold a public hearing within 60 days of receipt of the application. Section 62.1-13.7 provides that a quorum of four members of a seven-member board is required for conducting a hearing or "taking of any action." Section 62.1-13.5(7) provides that:

"In *acting* on any application for a permit, the board shall grant the application upon the concurring vote of...four members of a seven-member board.... The board shall *make its determination* within thirty days from the hearing. If the board *fails* to *act* within such time, the application shall be deemed approved." (Emphasis added.)

Before considering the proposed procedure, it is helpful to consider the legislature's policy in the Wetlands Act. Section 62.1-13.1 sets forth this policy as one of preserving an irreplaceable resource and accommodating necessary development in a manner consistent with such preservation. To ensure this protection, the legislature required a majority vote of the whole board rather than just a majority vote of a quorum, for permits to alter wetlands. At the same time, the legislature wished to protect wetlands owners from indefinite procedural delays, by providing in § 62.1-13.5(7) for the automatic approval of applications not acted on within thirty days after the hearing. With the legislative intent in mind, I turn to the proposal.

As I understand the proposed procedure enclosed with your request, the chairman of the Virginia Beach Wetlands Board will call for a vote on an application after all persons have been heard and all deliberations completed. If four members of the seven-member board vote favorably, the application is approved, and the permit will issue. If less than four members vote favorably, even if there should be a 3-2 or a 3-1 majority for approval, or a 3-3 or

2-2 tie, the application will be deemed to be denied because of the lack of the statutorily required four concurring votes.

The taking of a vote on the application will be considered “acting” on the application, and the resulting approval or non-approval will be considered the “determination” of the board. If the application receives less than four concurring votes, this will be considered a board determination to deny the permit, and the board will so notify the applicant within forty-eight hours of its determination as required by SS 62.113.5(7). The vote on the application must, of course, be taken when there is a quorum present and must be taken within the applicable time limits.

Section 62.1-13.7 provides in part that “the board may make, alter and rescind rules and forms for its procedures, consistent with ordinances of the county, city or town and general laws of the Commonwealth, including this chapter.” Inasmuch as this section specifies that wetlands boards may make their own rules, the procedures selected by the Virginia Beach Wetlands Board will comply with statutory requirements if they are consistent with local ordinances, general laws of the Commonwealth and Chapter 2.1 of Title 62.1. The procedures are not inconsistent with any requirements of local ordinances or general law of which I am familiar. They are also consistent with the requirements of the Wetlands Act.

The procedures meet the requirement of § 62.1-13.5(7) that the board grant the application upon the concurring votes of four members of the seven-member board. Even if there is no such concurring vote, the procedures are sufficient to comply with the § 62.1-13.5(7) requirement of taking action or making a determination within thirty days of the public hearing. The “action” is the board’s vote. The “determination” required by that section is the action of granting or denying the application.

Section 62.1-13.5(7) contains no language expressly referring to the denial of an application. Nevertheless, I think it is clear that an application which is not approved by at least four concurring votes is necessarily denied. There is a third possibility, however, and that is when the board does not bring an application to a vote with a quorum present within the time limit. In that case the board has not taken any action, and the application is deemed approved 30 days after the hearing.

I am, therefore, of the opinion that the procedure proposed by the Virginia Beach Wetlands Board is consistent with its authority to form its own procedures and complies with the general laws of the Commonwealth including the Wetlands Act.

Wetlands. Local Wetlands Board May Consider Effects on Wetlands of Portions of Project Beyond Jurisdiction.

October 31, 1984

The Honorable William A. Pruitt
Commissioner, Marine Resources Commission

You have requested my opinion regarding the authority of a local wetlands board to regulate the length of structures known as groins (structures built out from a shore to prevent erosion) and other similar structures constructed as part of a single project extending beyond the wetlands in both the intertidal zone and below mean low water.

The Wetlands Act, § 62.1-13.1 *et seq.* of the Code of Virginia, provides for local wetlands boards and gives them authority to regulate wetlands which are contiguous to and above mean low water, including the intertidal zone.

The lands below mean low water, unless previously conveyed away, are owned by the Commonwealth. *See* § 62.1-1. Section 62.1-3 allows certain uses of these lands and gives the Marine Resources Commission (the “Commission”) authority to permit other uses. *See* 1981-1982 Report of the Attorney General at 242.

The Wetlands Act prohibits any use or development of wetlands without a wetlands permit issued by a wetlands board. *See* §§ 62.1-13.9 and 62.1-13.5(4)(a). A wetlands board must base its decision to issue or deny a permit on the impact the use or development will have on the public health and welfare as expressed by the Act's policy of preserving wetlands. Sections 62.1-13.5(9) and 62.1-13.1. The Commission is empowered by § 62.1-13.13 to modify, remand or reverse the decision of the wetlands board. *See* 1982-1983 Report of the Attorney General at 761.

In granting or denying any permit for the use of State-owned bottom lands, the Commission must consider the effect of the project “upon the wetlands of the Commonwealth, except when its effect upon said wetlands has been or will be determined under the provisions of Chapter 2.1 (§ 62.1-13.1 *et seq.*) [The Wetlands Act]....” Section 62.1-3, ¶ 6.

By reading a wetlands board's authority to carry out the Commonwealth's strong policy favoring wetlands preservation, together with the deference to Wetlands Act decisions contained in § 62.1-3, I conclude that a local wetlands board should consider the impact on wetlands from the total project, including that portion of the project resting on subaqueous lands beyond the wetland. Although not expressly authorized to do so by statute, regulation of the length of a structure is vital to exercising the authority to regulate the use of wet-

lands. Whether such consideration will require imposition of a limitation on the length of structures located below mean low water is a factual determination which must be made on a case-by-case basis. That decision is subject to review by the Commission. If the wetlands board does not consider the wetlands impact of the total project, the Commission must consider, pursuant to § 62.1-3, the effect of such a subaqueous project on wetlands, when it determines whether or not to grant a permit to use subaqueous lands.

I am, therefore, of the opinion that a local wetlands board is authorized to regulate the length of a structure which is constructed through both the intertidal zone and channelward of mean low water, subject to superior jurisdiction of the Commission to modify or reverse the decision.

Wetlands. Repair or Replacement of Bulkheads Exempt from Permit Requirements as Long as No Additional Wetlands Covered.

December 19, 1984

The Honorable John H. Foote
County Attorney for Prince William County

This letter is in response to your request for an interpretation of the Wetlands Act, § 62.1-13.1 *et seq.* of the Code of Virginia, as it pertains to bulkheads and their repair. Your inquiries are motivated by a proposal to completely remove an existing wooden bulkhead and replace it with new metal materials. Such operation will disturb nonvegetated wetlands. You did not indicate if additional wetlands will be covered by the construction.

Section 62.1-13.5 authorizes counties, cities and towns to adopt a wetlands zoning ordinance. The provisions are specified in the statute. Section 3 of the ordinance exempts certain uses of wetlands from the necessity of obtaining a wetlands permit. It reads, in pertinent part, as follows:

“The following uses of and activities on wetlands are permitted, if otherwise permitted by law:

* * *

(h) The *normal maintenance, or addition* to presently existing roads, highways, railroad beds, or the facilities of any person, firm, corporation, utility, federal, State, county, city or town abutting on or crossing wetlands, *provided* that no waterway is altered and *no additional wetlands are covered....*” (Emphasis added.)

Your first inquiry is whether bulkheads are “facilities,” as described in SS 3(h) of an ordinance authorized in § 62.1-13.5. When reading a statute, the general rule is that its words should be given their usual, commonly understood meaning. *See The Covington Virginian v. Woods*, 182 Va. 538, 29 S.E.2d 406 (1944); 1980-1981 Report of the Attorney General at 58. The commonly understood meaning of “facility” is “something...that is built...installed, or established to perform some particular function....” *Webster’s Third New International Dictionary* 812 (1968). The same publication defines “bulkhead” as a device designed to resist pressure or shut off water, especially “the retaining wall along a waterfront.” A bulkhead is commonly used to perform a particular function: to prevent the erosion of the bank of a waterway or to contain fill material; accordingly, a bulkhead comes within the broad definition of “facility.” I am, therefore, of the opinion that bulkheads are included within the word

“facilities” in § 3(h), and that the normal maintenance, repair or additions to a bulkhead would be permitted under that section if no further wetlands were covered.

Your second question is whether the phrase “normal maintenance, repair or addition to” in § 3(h) would include the complete replacement or reconstruction of a bulkhead in the same location. It is my understanding that such replacement may disturb existing nonvegetated wetlands, but you did not state whether it will result in the *covering of any additional wetlands*. The answer to your inquiry hinges upon that fact.

The exemption contained in § 3(h) applies not only to maintenance and repair but also to an “addition to” a facility, the key condition being that “no additional wetlands are covered.” I am advised that when a bulkhead begins to suffer serious deterioration, a common practice is to completely replace it. The replacement may occupy the exact location or it may be constructed seaward of the existing bulkhead. If not built on the same location, it would necessarily mean that additional wetlands will be covered by the facility.

I am, therefore, of the opinion that replacement of a bulkhead is within the contemplation of “normal maintenance, repair or addition to presently existing...facilities....” If, however, any additional wetlands will be covered, such replacement will require a wetlands permit inasmuch as it would not then be exempted as provided in § 3(h) of the wetlands ordinance.

Counties, Cities and Towns. Zoning. Restrictions on Private, Noncommercial Piers Constructed By Riparian Landowners. Permissible Exercise of Zoning Power.

October 22, 1985

The Honorable W. Tayloe Murphy, Jr.
Member, House of Delegates

You inquire as to a local governing body's authority to regulate, by zoning ordinance, private, noncommercial piers constructed by riparian landowners beyond the mean low water line of their properties into State waters. You also inquire as to other sources of regulation affecting riparian landowners who wish to construct private, noncommercial piers.

There are three possible sources of regulation at the State and local level, including the local governing body, the Virginia Marine Resources Commission ("VMRC"), and the local Wetlands Board.¹

Comprehensive zoning powers have been delegated by statute to counties and municipalities. *See* Art. 8, Ch. 11, Title 15.1 of the Code of Virginia, § 15.1-486 *et seq.* Section 15.1-486 authorizes local governing bodies to restrict and otherwise regulate:

- "(a) The use of land, buildings, structures and other premises for agricultural, business, industrial, residential, flood plain and other specific uses;
- (b) The size, height, area, bulk, location, erection, construction, reconstruction, alteration, repair, maintenance, razing, or removal of structures;
- (c) *The areas and dimensions of land, water, and air space to be occupied by buildings, structures and uses....*" (Emphasis added.)

¹A riparian landowner must also comply with the general permit requirements of the United States Army Corps of Engineers.

The purpose of zoning ordinances is to promote the health, safety or general welfare of the public. Among the purposes to be considered by such ordinances are:

“(1) to provide for adequate light, air, convenience of access, and safety from fire, flood and other damages;

* * *

(3) to facilitate the creation of a convenient, attractive and harmonious community;

* * *

(6) to protect against one or more of the following: overcrowding of land, undue density of population in relation to the community facilities existing or available, obstruction of light and air, danger and congestion in travel and transportation, or loss of life, health, or property from fire, flood, panic or other dangers....”

Section 15.1-489.

A prior Opinion of this Office addressed the similar question of whether a local government may enact a zoning ordinance restricting the erection of structures on the beaches and shores of the locality. The Opinion concludes that such a restriction is permissible and consistent with the purposes for which a zoning ordinance may be enacted. *See* 1977-1978 Report of the Attorney General at 518.² In my opinion, a local government may, by ordinance, *reasonably* regulate the construction of private, noncommercial piers, consistent with the purposes for which zoning ordinances may be enacted.³

²Compare 1983-1984 Report of the Attorney General at 475 (flood plain regulations in local zoning ordinances which restrict property development not facially invalid).

³As described in the concluding paragraph of this Opinion, the locality's zoning regulations must be reasonable. They may not be arbitrary. If a landowner believes the zoning ordinance to be arbitrary, he may seek judicial review in an appropriate proceeding.

Accord People v. Anton, 431 N.Y.S.2d 807, 105 Misc.2d 124 (1980); *Harbor Island, Etc. v. Bd. of Cty. Com'rs*, 407 A.2d 738 (Md. 1979); *Itasca County v. Rodenz*, 268 N.W.2d 423 (Minn. 1978); *Town of Islip v. Powell*, 358 N.Y.S.2d 985, 78 Misc.2d 1007 (1974); *Brady v. Board of Appeals of Westport*, 204 N.E.2d 513 (Mass. 1965).⁴

The General Assembly also has enacted in Title 62.1 a comprehensive statutory scheme concerning the uses of watercourses and wetlands, and the Commonwealth's policies concerning such uses. Certain of the materials which were provided to you suggest that a local governing body has no authority to regulate private, noncommercial piers because such structures are statutorily authorized and exempted from regulation by any local wetlands board. See § 62.1-13.5. I do not share that conclusion.

A riparian landowner has a common law right to construct a pier or wharf opposite his riparian lands, subject to reasonable regulation by the State. See *Grinels v. Daniel*, 110 Va. 874, 877, 67 S.E. 534 (1910); *Taylor v. Commonwealth*, 102 Va. 759, 771, 47 S.E. 875 (1904); 1975-1976 Report of the Attorney General at 215. This common law right has been codified in § 62.1-164 as the right to erect a private, noncommercial pier or wharf in a watercourse opposite the land, subject to the conditions that navigation not be obstructed nor the private rights of any person injured. The existence of a riparian landowner's right to "wharf out" is not absolute under the common law or under § 62.1-164. Where the legislature has delegated to localities the authority to regulate the rights of riparian landowners, such regulation is not inconsistent with § 62.1-164.

Section 62.1-3(10) provides statutory authorization for "the placement of private piers for noncommercial purposes by owners of the riparian lands in the waters opposite such riparian lands, *provided such private shall not extend beyond the navigation line or lawful private pier lines established by proper authority.*" (Emphasis added.) This authority operates to exempt private piers from the permit requirements of VMRC for encroachments on subaqueous beds which are the property of the Commonwealth.

⁴Section 15.1-1031 provides that the boundary of every county, city or town bordering on the Chesapeake Bay and its tidal tributaries or the Atlantic Ocean shall embrace all wharves, piers and docks. See also § 15.1-11.3, which authorizes counties, cities and towns to adopt ordinances requiring the removal, repair or securing of wharves and piers which might constitute an obstruction or hazard.

Section 62.1-13.5 sets out a “Wetlands Zoning Ordinance” which may be adopted by a local governing body. Section 3 of the Wetlands Zoning Ordinance provides, in pertinent part, as follows:

“The following uses of and activities on wetlands are permitted, *if otherwise permitted by law*:

(a) The construction and maintenance of noncommercial catwalks, piers, boathouses, boat shelters, fences, duckblinds, wildlife management shelters, footbridges, observation decks and shelters and other similar structures; provided that such structures are so constructed on pilings as to permit the reasonably unobstructed flow of the tide and preserve the natural contour of the wetlands....” (Emphasis added.)

Those uses permitted by § 3 of the Wetlands Zoning Ordinance are exempted from the application and permit process set out in § 4. The exemption of private piers from the permit requirements of VMRC and the permit process under a local Wetlands Zoning Ordinance is based on the legislative determination that piers and other structures built on pilings permit the continued flow of the tide and preserve the contour of the wetlands. Also, such structures are generally small, isolated structures which are used intermittently and which would have minimal effect on the wetlands. *See* 1982-1983 Report of the Attorney General at 765. Finally, they must be otherwise permitted by law.

To summarize, in enacting § 62.1-164, the General Assembly intended to preserve the common law right of riparian landowners to erect private, noncommercial piers and wharves, subject to reasonable State regulation. Private piers are exempted by § 62.1-3(10) from VMRC permit requirements which restrict most uses which encroach on subaqueous beds owned by the Commonwealth. Under a Wetlands Zoning Ordinance adopted by a locality, a private pier is a use of right and, therefore, is exempt from the application and permit procedure of that particular ordinance. *See* § 62.1-13.5 (§§ 3 and 4). In § 15.1-486(c), however, the General Assembly has delegated to localities the authority through zoning ordinances to regulate water space to be occupied by structures and uses.

It is a basic rule of statutory construction that when construing statutes on the same subject matter *in pari materia*, the statutes should be harmonized if possible. See, e.g., 1982-1983 Report of the Attorney General at 484. Construing the above statutes together in accordance with this basic rule, I am of the opinion that the regulation of private, noncommercial piers and wharves is a permissible exercise of a locality's zoning power, subject to the same requirements as to reasonableness and constitutional limitations as are other zoning restrictions.⁵ See generally 1983-1984 Report of the Attorney General, *supra* note 2. In the event a riparian landowner is subject to arbitrary or unreasonable action by zoning officers or subject to an arbitrary or unreasonable provision of a zoning ordinance, he may apply for judicial review. See *City of Richmond v. County Board*, 199 Va. 679, 687, 101 S.E.2d 641 (1958).

⁵A related question is whether local limitations on a riparian landowner's right to construct private, noncommercial piers are inconsistent with the principle that the property of the Commonwealth is not subject to local zoning restrictions. See Reports of the Attorney General: 1981-1982 at 467; 1971-1972 at 103. As noted above, the subaqueous beds of the bays, rivers, creeks and shores of the sea are the property of the Commonwealth unless conveyed by special grant. See § 62.1-1. Riparian landowners, however, have substantial property rights derived from their status. These rights include the right to "wharf out," discussed above, and to sever and alienate riparian rights as a separate property interest. See *Marine Resources Commission v. Forbes*, 214 Va. 109, 197 S.E.2d 195 (1973); *Thurston v. City of Portsmouth*, 205 Va. 909, 140 S.E.2d 678 (1965). The character of an area could not be preserved if a riparian landowner were to be permitted to use property rights derived from his status to circumvent other validly enacted limitations on his property rights. Compare *Harbor Island, Etc.*, 407 A.2d at 747. In other words, the State's use of State-owned bottom is not subject to local regulation, but the exercise of a riparian landowner's property rights which encroach on State-owned bottom is validly subject to local regulation.

Waters, Ports And Harbors: Wetlands - Coastal Primary Sand Dune Protection Act.

No conflict exists between compliance with time requirements to hold hearing and make decision on application under Wetlands Act and concurrent prosecution of violations; issuance of permit and decision to prosecute separate issues.

August 5, 1988

The Honorable Robert Tata
Member, House of Delegates

You ask two questions concerning how the Virginia Beach Wetlands Board (the "Board") should administer the Wetlands Act, §§ 62.1-13.1 through 62.1-13.20 of the Code of Virginia, and the Coastal Primary Sand Dune Protection Act, §§ 62.1-13.21 through 62.1-13.28, in light of the time requirements established in these Acts and the need to take enforcement action against persons who are in violation of either Act.

1. Applicable Statutes

The Wetlands Act and the Sand Dune Protection Act are similar in structure, and § 62.1-13.27 provides for enforcement of the Sand Dune Protection Act under Wetlands Act provisions.

Section 62.1-13.9 of the Wetlands Act prohibits any person from conducting "any activity which would require a permit under a wetlands zoning ordinance unless he has a permit therefor." Section 4(a) of the Wetlands Zoning Ordinance in § 62.1-13.5 (the "Ordinance") provides that "[a]ny person who desires to use or develop any wetland ... other than for those activities specified in § 3 ... shall first file an application for a permit with the wetlands board." The activities specified in § 3 of the Ordinance are exempted from the permit requirement. Section 6 of the Ordinance requires the Board to hold a public hearing not later than sixty days after receipt of the application. Section 7 requires the Board to make its decision within thirty days of the hearing. If the Board fails to act in thirty days, the application is deemed approved.

Section 62.1-13.18 provides for the enforcement of certain violations of the Wetlands Act.

Any person who knowingly, intentionally, negligently or continually violates . . . any provision of this chapter or of a wetlands zoning ordinance enacted pursuant to this chapter or any provision of a permit granted by a wetlands board or the [Virginia Marine Resources] Commission pursuant to this chapter shall be guilty of a misde-

meanor. Following a conviction, every day the violation continues shall be deemed a separate offense.

II. No Conflict Exists Between Compliance with Time Requirements to Hold Hearing and Make Decision on Application Under Wetlands Act and Concurrent Prosecution of Violations

You first ask whether the Board is required to hear applications within the time limits in §§ 6 and 7 of the Ordinance if the application is for a nonexempt use or development of a wetland which has already been completed or begun without a permit.

It is important to separate the regulatory provisions of the Wetlands Act from its enforcement provision. The regulatory provisions require in evaluation of the project, as described in the application, under the standards in the Wetlands Act. Nonexempt construction without a permit is a violation of this Act. *See* § 62.1-13.18. The enforcement provision authorizes criminal punishment for such a violation, to encourage compliance with the Wetlands Act and to vindicate and maintain the authority of the wetlands program.

Except in § 4(a) of the Ordinance, which specifies that an application shall “first” be filed, the Wetlands Act provides for applications without referring to whether the application is filed before or after any nonexempt use or development is begun. Nevertheless, this Act clearly requires that an application be filed and a permit issued before any nonexempt use or development of a wetland is begun. *See* § 62.1-13.9. It is my opinion, however, that nothing in the Wetlands Act requires that the Board treat a particular application differently because it was untimely filed. It is further my opinion, therefore, that when an application is filed after any nonexempt use or development of a wetland is begun, the Board must consider that application under the time schedules set forth in §§ 6 and 7 of the Ordinance, but that such consideration does not prevent and should not delay any prosecution of the nonexempt use or development under § 62.1-13.18.¹

¹I am aware that the United States Army Corps of Engineers does not accept applications for such an after-the-fact permit where legal action is deemed appropriate until such legal action has been completed. *See* 33 C.F.R. § 326.3(e)(1)(ii) (1987). A similar policy by the Board, in my opinion, would serve to delay a final resolution of the application and would be contrary to the intent of the Wetlands Act that decisions are to be made within the times specified.

You next ask whether the Board is required to hear an application to amend a permit where the permittee is alleged to have violated the permit and court action is pending. As discussed above, there is nothing in the Wetlands Act to exempt this type of application from the time limits placed on applications in general. It is my opinion, therefore, that acting on the application within the time limits specified in §§ 6 and 7 of the Ordinance should have no effect on the court action, since court action concerns a violation which is alleged to have occurred previously.

III. Issuance of Permit and Decision to Prosecute Are Separate Issues

In summary, the failure to secure the necessary permits in the facts you present is a violation of the Wetlands Act which may be referred for prosecution pursuant to § 62.1-13.18. Whether a permit should issue is a separate question which should be determined in the most efficient manner possible as provided in the Wetlands Act. If the application is denied, and the violation is not corrected, a suit may be brought pursuant to SS 62.1-13.18:1 to enjoin the violation.²

²I also note that § 8 of the Ordinance grants the Board, after a hearing, the authority to suspend or revoke a permit if the permittee has not complied with its terms and conditions. *See* 1978-1979 Att'y Gen. Ann. Rep. 326, 327.

Waters of the State, Ports and Harbors: State Water Control Law.

State Water Control Board may define surface water by regulation to include wetlands. Authority to regulate wetlands in water quality management program limited to extent allowable under § 401 of federal Clean Water Act of 1977 and State Water Control Law. When granting without condition or denying § 401 water quality certification, Board must consider those water quality considerations found in § 401; when issuing conditional § 401 certifications, Board may apply § 401 water quality considerations and any other state law requirements consistent with water quality standards.

June 19, 1991

**The Honorable Joseph V. Gartlan Jr.
Member, Senate of Virginia**

You ask three questions about the authority of the State Water Control Board (the “State Board”) to regulate wetlands in Virginia:

1. May the State Board define “state waters” or “surface water” by regulation to include wetlands?
2. May the State Board establish a comprehensive wetlands regulatory program pursuant to either §401 of the federal Clean Water Act of 1977 (the “Clean Water Act”), 33 U.S.C.A. § 1341 (West 1986) (“§ 401”)¹ or existing state authority?
3. Does the State Board have the authority, pursuant to § 401, to certify or refuse to certify on a basis other than water quality those permits issued by federal agencies pursuant to § 404 of the Clean Water Act, 33 U.S.C.A. § 1344 (West 1986 & Supp. 1991) (“§ 404”)?²

1. Applicable Statutes and Regulations

A. State Water Control Law

The State Water Control Law, §§ 62.1-44.2 through 62.1-44.34:28 of the Code of Virginia, establishes the responsibilities of the State Board. Its purpose is set forth in § 62.1-44.2:

It is the policy of the Commonwealth of Virginia and the purpose of this law to: (1) protect existing high quality state waters and restore all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them, (2) safeguard the clean waters of the Commonwealth from pollution, (3) prevent any increase in pollution, (4) reduce existing pollution, and (5) promote water resource conservation, management and distribution, and encourage water consumption reduction in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

¹Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, § 401, 86 Stat. 816, 877-80 (1973), amended and commonly referred to as the Clean Water Act of 1977, Pub. L. No. 95-217, §§61(b), 64, 91 Stat. 1566, 1598-99 (1980), codified at 33 U.S.C. § 1341 (1989).

²*Id.* §404, 86 Stat. at 884, amended *supra* note 1, § 67(a)-(b), 91 Stat. at 1600, codified at 33 U.S.C. § 1344 (1989).

Under § 62.1-44.5, it is unlawful for any person to discharge wastes or otherwise alter water quality except as authorized by a permit. That section provides:

Except in compliance with a certificate issued by the [State] Board, it shall be unlawful for any person to (1) discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances, or (2) otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the uses of such waters for domestic or industrial consumption, or for recreation, or for other uses. [Emphasis added.]

In order to achieve these purposes, the State Board is authorized, among other things, to “issue certificates for the discharge of sewage, industrial wastes and other wastes into or adjacent to or the alteration otherwise of the physical, chemical or biological properties of state waters under prescribed conditions.” Section 62.1-44.15(5). The State Board, therefore, has the power to limit water pollution, in part, by issuing certificates to allow such discharges into, or alteration of, state waters.

B. State and Federal Definitions of “Waters”

Section 62.1-44.3 defines “state waters” as “all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction.” (Emphasis added.)

One State Board regulatory program, which implements the State Board’s water pollution control permit program under the national pollutant discharge elimination system (“NPDES”), 33 U.S.C.A. § 1342 (West 1986 & Supp. 1991), uses a definition of “surface water” that includes wetlands. While this definition does not have direct application to the § 401 state certification program, it nonetheless demonstrates the extent to which the State Board has regulated wetlands in another water quality program.

In that program, “surface water” means

- (i) all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (ii) all interstate waters, including interstate “wetlands”;
- (iii) all other waters such as inter/intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands,” sloughs, prairie pot-holes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (iv) all impoundments of waters otherwise defined as surface waters under this definition;

- (v) tributaries of waters identified in paragraphs (i)-(iv) of this definition;
- (vi) the territorial sea; and
- (vii) “Wetlands” adjacent to waters, other than waters that are themselves wetlands, identified in paragraphs (i)-(vi) of this definition.

St. Water Control Bd. Regs., Permit Reg. VR 680-14-01 § 1.1 (eff. Sept. 27, 1989) (“Permit Regulation” or “Permit Reg.”) (emphasis added).

In a definition that is virtually identical to the State Board’s definition of state “surface water,” both the United States Environmental Protection Agency (“EPA”) and the United States Army Corps of Engineers (the “Corps”) define “waters of the United States” to include wetlands.

The EPA definition, which relates to the administration of the NPDES program, is set forth in 40 C.F.R. § 122.2 (1990):

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including interstate “wetlands,”
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of [the Clean Water Act] (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. [Emphasis added.]

The Corps definition, relating to the §404 permitting program, is set forth in 33 C.F.R. § 328.3 (1990):

- (a) The term “waters of the United States” means

- (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (2) All interstate waters including interstate wetlands;
- (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie pot-holes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (iii) Which are used or could be used for industrial purpose by industries in interstate commerce;
- (4) All impoundments of waters otherwise defined as waters of the United States under the definition;
- (5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;
- (6) The territorial seas;
- (7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of [the Clean Water Act] (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States. [Emphasis added.]

C. Water Quality Certification Program Administered by State Board

As part of its program to control pollution, the State Board, as the designated state certifying agency under the Clean Water Act, administers the water quality certification program established under § 401. Section 401 authorizes the State Board to consider the effects of certain projects requiring a federal license on water quality. Specifically, the State Board is authorized to grant or deny a water quality certification for federally licensed activities that may result in a discharge to navigable waters. Under § 401, the State Board may place conditions on a water quality certification to ensure compliance with Clean Water Act limitations and standards and with “any other appropriate requirement of State law.” 33 U.S.C.A. § 1341(d). The State Board has issued a number of these § 401 water quality certifications that include wetland protection measures as a condition of certification.

The State Board acts on these water quality certifications in connection with, among other matters, water pollution permits issued by the EPA, 33 U.S.C.A. § 1342, and hydroelectric projects licensed by the Federal Energy Regulatory Commission, 18 C.F.R. § 4.38(e)(2) (1990). The most common water quality certification applications considered by the State Board, however, are those reviewed under § 404 in connection with dredge and fill permits issued by the Corps. Those permits allow the Corps to manage the discharge of dredged or fill material into navigable waters. The Clean Water Act defines “navigable waters” as “waters of the United States” 33 U.S.C.A. § 1362(7) (West 1986). As noted above, the Corps, in turn, defines “waters of the United States” by regulation to include wetlands. 33 C.F.R. § 328.3(a). In conjunction with this permit program, the State Board certifies whether dredge and fill per-

mits, issued under § 404, comply with certain provisions of the Clean Water Act and any other appropriate requirement of state law.

In 1989, the General Assembly enacted § 62.1-44.15:5 requiring the State Board to issue a Virginia Water Protection Permit (“State Permit”) to serve as the Commonwealth’s § 401 certification. Section 62.1-44.15:5(A) authorizes the State Board to implement the State Permit program by adopting regulations. When issuing a State Permit, the State Board must assure that the proposed activity is consistent with the provisions of the Clean Water Act and will protect instream beneficial uses under state law. Section 62.1-44.15:5(B). “Beneficial uses” of state waters are defined in the State Board regulation establishing water quality standards to include “recreational uses, e.g., swimming and boating; and production of edible and marketable natural resources, e.g., fish and shellfish.” St. Water Control Bd. Regs., Water Quality Standard VR 680-21-01.2(A) (eff. July 1, 1988) (“Water Quality Standard”); *see also* § 62.1-44.2. To implement the State Permit, the State Board has proposed regulations, but has not yet promulgated final regulations that establish a comprehensive management scheme for the protection of nontidal wetlands in Virginia. The proposed regulations include “wetlands” within their definition of “state waters.”

II. State Board May Define Surface Water by Regulation to Include Wetlands

The definition of “state waters” in the State Water Control Law includes “all water, on the surface and under the ground.” Section 62.1-44.3 (emphasis added). The State Water Control Law contains no definition, however, of “surface water.” In another regulatory program, not directly related to § 401 state certification, the State Board has defined “surface water” to include wetlands. Permit Reg., *supra* Pt. I(B), § 1.1. The Permit Regulation was promulgated, as authorized by 1972 amendments to the State Water Control Law, to conform to EPA’s requirements for Virginia to assume responsibility for the NPDES program. 33 U.S.C.A. § 1342. EPA also requires periodic amendments to the Permit Regulation in order for Virginia to maintain its authority to administer the NPDES program. As noted above, the definition of “surface water” was included in the Permit Regulation in 1988 to conform to EPA’s regulatory definition of “waters of the United States,” which includes “wetlands.”³ This same definition appears in the proposed State Permit regulations.

The Supreme Court of Virginia has recognized a presumption in favor of an administrative agency’s regulatory interpretation of the statutes that agency implements. *Commonwealth v. Wellmore Coal*, 228 Va. 149, 320 S.E.2d 509 (1984); *Peyton v. Williams*, 206 Va. 595, 145 S.E.2d 147 (1965); *Aetna Ins. Co. v. Commonwealth*, 160 Va. 698, 169 S.E. 859 (1933). It is well within an administrative agency’s power to interpret statutory terms of doubtful meaning. *Huffman Co. v. Unemploy. Comm.*, 184 Va. 727, 36 S.E.2d 641 (1946). Regulations are required, however, to be consistent with the provisions of the statute, and an agency may not issue regulations that are arbitrary, unreasonable or inconsistent with the controlling statute. *Dickerson v. Comm.*, 181 Va. 313, 24 S.E.2d 550 (1943), *aff’d sub nom. Carter v. Virginia*, 321 U.S. 131 (1944).

In this instance, the State Water Control Law defines “state waters” broadly to include “all” waters in the state, including surface water. The Corps’ counterpart definition of “waters of the United States” includes wetlands and has been upheld by the Supreme Court of the United States. *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985). Since 1974, the State Board has had a written policy to protect wetlands⁴. Wetlands involve “water” to some

³ 40 C.F.R. § 122.2.

⁴ St. Water Control Bd. Regs., Wetlands Policy (eff. June 23, 1974).

degree,⁵ and the State Board is charged with control of all the waters of the Commonwealth. Section 62.1-44.3. Since 1988, the reference to “surface water” contained in the definition of “state waters” in § 62.1-44.3 has been construed in the Permit Regulation to include wetlands. Based on the statutory construction principles and easements discussed above, that interpretation is entitled to great weight. *See Lee v. Employment Commission*, 1 Va. App. 82, 335 S.E.2d 104 (1985).

Based on the above, it is my opinion that the State Board has the authority to define “surface water” by regulation to include “wetlands.”

III. State Board May Regulate Wetlands in State Permit Regulatory Program Only to Extent Allowed by § 401 and State Water Control Law

The language of § 62.1-44.15:5 requiring the State Board to issue the State Permit does not, on its face, provide any additional authority to the State Board regarding wetlands. Section 62.1-44.15:5 can be read, moreover, as a legislative affirmation of the State Board’s previous regulatory determination that preservation of instream flows is a beneficial use of state waters. That determination was made by the State Board in 1988 when it adopted regulations establishing water quality standards. Those standards provide that “[m]anmade alterations in stream flow shall not contravene reasonable, beneficial uses including protection of the propagation and growth of aquatic life.” Water Quality Standard, *supra* Pt. I(C), VR 680-21-01.4; *see also* § 62.1-44.5. Section 62.1-44.15:5(C) requires an interagency consultation to ensure a full analysis of the effect of an activity receiving a State Permit on these instream beneficial uses.

The legislative history of § 62.1-44.15:5 supports the conclusion that it grants the State Board no additional power. In a 1989 report, the State Water Commission recommended establishment of a state water quality permit to “clarify the state legislature’s emphasis on protecting a range of instream values [and] give Virginia a higher profile in the regulatory process and . . . bring those state agencies with jurisdiction over water use into a cooperative relationship.” 4 H. & S. Docs., *Report of the State Water Commission*, H.D. No. 69, at 10 (1989 Sess.). The Commission indicated, however, that the new permit “would not expand the current [§ 401 certification] procedure or create a new administrative process,” and further acknowledged that the permit “may not add to the authority of the [State Board], since it may already have been delegated such authority under federal law.” *Id.* (emphasis added). This report supports the conclusion that the General Assembly did not intend § 62.1-44.15:5 to provide the State Board with any broader authority than it possesses under § 401.

This conclusion is further supported by actions of the General Assembly involving proposed nontidal wetlands legislation.⁶ In 1988, legislation was introduced in the House of Delegates which, if enacted, would have established a comprehensive regulatory program to protect nontidal wetlands, H.B. No. 1037 (1988 Reg. Sess.). The program was to be administered by the Departments of Forestry and Conservation and Historic Resources. That legislation passed the House but was carried over to the 1989 Session by the Senate Committee on Agriculture, Conservation and Natural Resources. The bill was not acted upon by the 1989 General Assembly. The failure of the General Assembly to enact proposed legislation granting an entity

⁵ *See Riverside Bayview Homes, Inc.*, 474 U.S. at 132-35. *See generally* Odum, *Non-Tidal Freshwater Wetlands in Virginia*, 7 Va. J. Nat. Resources L. 421 (1988).

⁶ The General Assembly previously enacted wetland management legislation for tidal wetlands. Va. Code Ann. §§ 62.1-13.1 to 62.1-13.20. Although subject to a separate state permit, development in these wetlands also may be subject to § 404 federal permits and, therefore, § 401 state certification by the State Board.

authority for a particular action can raise an inference that the General Assembly did not intend the entity to have that authority. See *Commonwealth v. Arlington County Bd.*, 217 Va. 558, 580-81, 232 S.E.2d 30, 44 (1977); see also 1974-1975 Att’y Gen. Ann. Rep. 77, 77-78; 2A Norman J. Singer, *Sutherland Statutory Construction* § 48.14 (Sands 4th ed. 1984). In my opinion, therefore, it would be inconsistent with the intent of the General Assembly to construe § 62.1-44.15:5 of the State Water Control Law to authorize the State Board to implement by regulation the kind of comprehensive nontidal wetlands program the General Assembly impliedly rejected when it failed to enact House Bill No. 1037.

Because the State Permit is intended to serve as the § 401 certification, it is necessarily limited in scope. Because wetlands may properly be a component of “surface water” and, therefore, constitute “state waters,” it is my opinion that the State Board is entitled to grant, deny, or grant conditionally, certifications for those projects affecting Virginia wetlands that require § 401 certification. For these reasons, and based on the legislative history discussed above, however, it is further my opinion that the State Board is not empowered by § 62.1-44.15:5 to expand its regulation of wetlands beyond the scope contemplated by § 401 and the State Water Control Law, and, therefore, that the State Board may regulate wetlands in its State Permit program only to the extent allowed by those statutes.

IV. State Board Must Relate Any Grant, Denial or Conditional Grant of Certification to Authority Granted It by Statute

Section 401 allows state regulatory agencies to consider several water quality issues specified in the Clean Water Act when making the determination whether to grant or deny certification. 33 U.S.C.A. § 1341(a). As the § 401 certifying agency in Virginia, the State Board also is allowed to consider “any other appropriate requirement of State law” when conditioning a certification. 33 U.S.C.A. § 1341(d). The scope of water quality certifications under this latter provision, therefore, must be determined by examining the authority granted to the State Board by state law.

Courts in other states have addressed the proper scope of § 401 water quality certifications. In *Arnold Irrigation Dist. v. DEQ*, 79 Or. App. 136, 717 P.2d 1274 (1986), the Oregon Court of Appeals held that the Oregon Department of Environmental Quality, in deciding whether to grant or deny certification, is limited to considering sections of the Clean Water Act related to effluent limitations, water quality standards and other water protection provisions listed in § 401(a)(1) (33 U.S.C.A. § 1341(a)(1)). The Oregon court held, however, that the state agency could condition certification under § 401(d) (33 U.S.C.A. § 1341(d)) on any provision of state law relating to water quality. The court emphasized that “an ‘other appropriate requirement of State law’” in § 401(d) (33 U.S.C.A. § 1341(d)) refers only to those Oregon laws related to water quality. 79 Or. App. at 142, 717 P.2d at 1279. Courts in other states, however, have taken the opposite view, approving the imposition of conditions that reach beyond traditional water quality concerns.⁷ In my opinion, the Oregon Court of Appeals’ opinion is the better view.

The water quality duties of the State Board appear in the State Water Control Law⁸. Under Virginia law, agencies may not act beyond the authority granted them by the General Assembly.

⁷ See *Hollis v. Tenn. Water Quality Control Bd.*, slip op. No. 83-1352-1 (Tenn. Ch. App. Feb. 28, 1984); *Marmac Corp. v. Dep’t Nat. Resources W. Va.*, slip op. No. 81-1792 (Cir. Ct. Kanawha Co., W. Va., June 9, 1982).

⁸The State Board implements several statutes in addition to the State Water Control Law, including Conservation of Water Resources (§§ 62.1-44.36 to 62.1-44.44); the Groundwater Act of 1973 (§§ 62.1-44.83 to 62.1-44.107); and Surface Water Management Areas (§§ 62.1-242 to 62.1-253), but these statutes are not part of Virginia’s water quality management program.

Segaloff v. City of Newport News, 209 Va. 259, 163 S.E.2d 135 (1968). The State Board is bound, therefore, by the State Water Control Law when conditioning permits under § 401. The State Water Control Law empowers the State Board to “adopt such regulations as it deems necessary to enforce the general water quality management program of the [State] Board,” § 62.1-44.15(10), and to “establish... standards and policies for any state waters consistent with the general policy set forth in [the State Water Control Law].” Section 62.1-44.15(3a) (emphasis added). The purpose of State Board’s “water quality management program” and the stated policy of the Commonwealth includes protecting public uses of water, protecting propagation and growth of all aquatic life, preventing and reducing pollution of state waters, and promoting water resource conservation, management and distribution, all for the protection of the health, safety and welfare of the citizensof the Commonwealth. Section 62.1 44.2.

In response to your third question, therefore, it is my opinion that the State Board may consider the impact on surface water of a federally permitted project requiring a § 401 certification, based upon those water quality related considerations found in 401(a)(1) (33 U.S.C.A. § 1341(a)(1)), when granting without condition, or denying, a certification. It is further my opinion that the State Board also may condition certification on “any other appropriate requirement of State law” under the State Water Control Law, consistent with its water quality management program. 33 U.S.C.A. § 1341(d). That program includes water quality, maintenance of instream flows, maintenance of recreational uses, support of propagation and growth of all aquatic life, and other uses identified by the State Water Control Law and its implementing regulations.

V. Summary

In summary, it is my opinion that the State Board is authorized to define “surface water” by regulation to include “wetlands.” The State Board authority to regulate wetlands is limited, however, to those federally permitted activities that require § 401 certification. Neither § 401 nor § 62.1-44.15:5 authorizes establishment of a comprehensive nontidal wetlands program beyond the authority granted in § 401. When granting without condition or denying a § 401 certification, the State Board may consider only those water quality considerations found in § 401(a)(1). When issuing a conditional § 401 certification, the State Board may apply those water quality considerations found in § 401(d) and “any other appropriate requirement of State law” included in the State Water Control Law that is consistent with its water quality management program. 33 U.S.C.A. S 1342(d).

Enforcement Procedures

—Update—

Introduction

The purpose of this document is to provide a review of the enforcement procedures and penalties set forth in Chapters 12, 13, and 14 under Title 28.2 of the Code of Virginia. These chapters represent the various code sections governing the regulation of Virginia's submerged lands, tidal wetlands, and coastal primary sand dunes and beaches. This review is designed to be used as a guide to aid your interpretation of the law and should therefore not take the place of advice from knowledgeable counsel.

In the past, violations of the aforementioned code sections usually resulted in either voluntary restoration or more frequently, the submittal of an after-the-fact application for a permit. Violators were usually asked to appear before the Commission or wetlands board and reprimanded for their actions with the intent of producing a lasting impression through public admonishment. The prospect of prosecution within the judicial system was previously and remains a viable option. Unfortunately, the inherent problems associated with preparing a case to go to Circuit Court remained unchanged. The difference now is that once in Circuit Court, a judge can levy a civil penalty up to \$25,000 for each day of a violation.

This hopefully will serve as a strong deterrent to violating the law and a powerful incentive for resolving the matter at an administrative level. In that regard, Sections 28.2-1213, 28.2-1320, and 28.2-1420, of the Code of Virginia, grant the Commission and/or local wetland boards the authority to assess civil charges of up to \$10,000 per violation. Civil charges are to be paid in lieu of any appropriate civil penalty and can be assessed only with the consent of the person in violation. The obvious intent of both civil penalties and charges is to provide financial disincentives against violating the law while at the same time providing the impetus to resolve these issues at an administrative level. A \$10,000 civil charge may seem extreme but when compared to perhaps a \$500,000 civil penalty (\$25,000 x each day of the violation, 20 days in this example) the more cost effective solution remains at the administrative level. It should be noted that civil charges may be in addition to the cost of any restoration so ordered.

The adoption of financial disincentives not only commands the attention of those parties involved in coastal development but also those responsible for administering Virginia's coastal law. Enforcement procedures within Virginia's 35 wetland boards has in the past reflected the varying degrees of complexity found in each local government. Unifying these procedures to conform to rigid standards is perhaps not desirable but a review of the basic enforcement components does provide a basis from which localities can refine an enforcement mechanism which is legally complete and reflects the unique character of each locality.

Enforcement

Figure 1 - Enforcement Procedures, represents an outline of the enforcement components incorporated into Subtitle III of Section 28.2 of the Code. This approach is intended to be used only as a guide and is not a substitute for a more comprehensive review and understanding of individual Code sections.

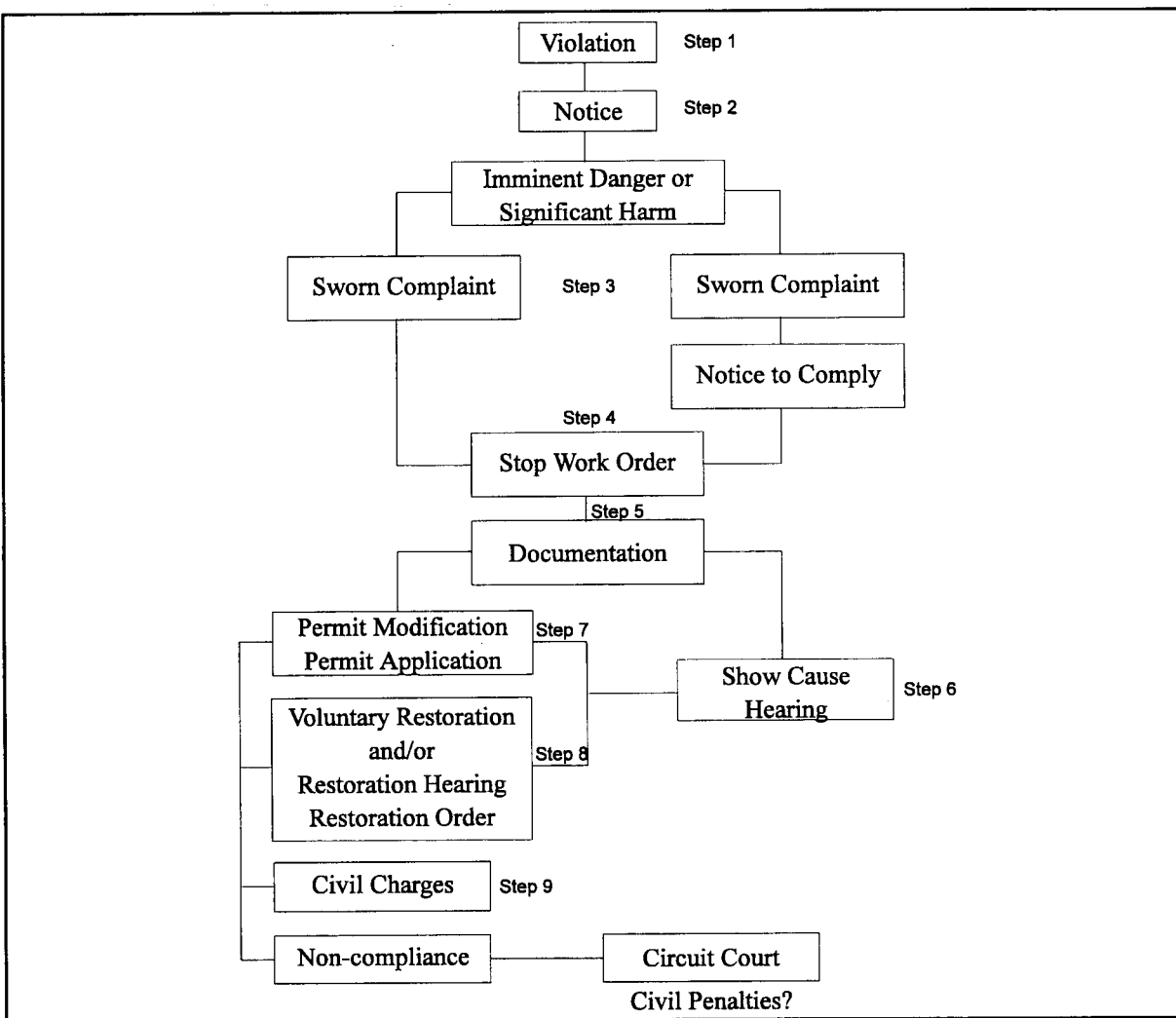
Report of a violation (Step 1), either through citizen response or staff awareness, usually requires a thorough site inspection by staff to determine the extent, if any, of the potential violation. Such an inspection is preceded by providing notice of staff's inspection to the resident owner, occupier or operator with an opportunity for said individual to accompany the site inspector (Step 2). Upon determination that a substantial violation exists, staff must evaluate whether the activity is causing or is in imminent danger of causing significant harm to the protected resource. If the potential violation appears to involve substantial impact to natural resources and further delay could lead to increased despoliation, it may be necessary to forgo the standard Notice to Comply requirement and proceed with the issuance of a Stop Work Order. Otherwise, code dictates that a Stop Work Order may only be issued after failure to comply with a Notice to Comply.

If it is determined there is failure to comply with a permit or that unauthorized activities have transpired, a Sworn Complaint (Step 3) from the designated enforcement officer should be completed. Upon receipt of a Sworn Complaint, the board chairman issues a Notice to Comply (Step 4), indicating the measures needed for compliance and a specified time within which such measures shall be completed. Non-compliance can also result in the issuance of a Stop Work Order from the board chairman. The effect of a Stop Work Order is directly related to the desired outcome of any given situation. A Stop Work Order is usually viewed administratively as an "attention getter" designed to reinforce the need for compliance with the law. As such, Stop Work Orders can be issued in conjunction with the Notice to Comply. In the absence of compliance, the Stop Work Order serves as the precursor to application for appropriate relief to a Circuit Court in the jurisdiction wherein the violation was alleged to have occurred.

The Sworn Complaint is an important component of the violation procedure and is required as a precursor to the issuance of a Stop Work Order or a Restoration Order. Care should also be taken at this time to completely document and photograph the violation (Step 5).

Compliance can reasonably involve one of two separate approaches. In one instance the Board can request the property owner appear before the Board during the next regularly scheduled meeting and show cause why he or she is not in violation (Step 6). The show cause hearing allows the Board members an opportunity to bring forth and put to record pertinent facts. On the other hand, the Board might also recognize the project was not constructed in a fashion which warrants removal. In such a case, the Board could move to accept an application and permit a project with the appropriate application of civil charges (Step 7).

Figure 1 - Enforcement Procedures



In the former example, a Notice to Comply would request the party responsible for the violation to cease the activity and for the owner to appear before the Board to show cause at a specified date and time. It should be understood, however, that the show cause hearing is not the public interest review. Rather, it is merely a fact finding session. At its conclusion, the Board must decide which path is most reasonable. A move toward immediate restoration could be viewed as depriving the property owner of due process and a full public interest review under the law. This approach stems from *Petzinger vs. VMRC 1980*. In this proceeding, VMRC, on advice from counsel, vacated its own order to restore and allowed the appellant, Frederick J. Petzinger, III the opportunity to apply for an after-the-fact permit. In this case, the appellant had knowingly installed a number of mooring pilings in excess of that authorized by an existing permit. The VMRC originally moved for immediate restoration, but upon further consideration from the Attorney General's office, decided to subject the project to a full public interest review providing the

property owner with due process. The application was subsequently denied during review and the applicant was directed to remove the offending structures. The decision was later upheld on appeal to the Circuit Court.

The submission of an application or allowance thereof is not a predilection for approval. It is an affirmation of due process which now also allows for the application of civil charges (Step 9) for projects which might reasonably have been approved in normal channels.

Restoration

Sections 28.2-1212, 28.2-1317 and 28.2-1417 provide the Boards with additional remedies under the law in the form of a Restoration Order. The restoration order should not be considered a position of last resort. In cases where restoration is a desirable outcome, a Notice to Comply with voluntary restoration may preclude a formal restoration hearing.

A restoration hearing is appropriate in those instances where substantial damage to resources, beyond that which would normally have been permitted, has occurred. Even in instances where voluntary restoration is deemed a viable alternative, the restoration order may be useful in specifying the details necessary to ensure an effective restoration effort.

A restoration order results from the issuance of a Sworn Complaint along with the provision of the necessary 30 day notice to the affected party including the time, place and purpose of the restoration hearing. Such an order should require the submission of a complete restoration monitoring plan to ensure successful re-establishment of the affected resources. In general, these plans define project details and formalize the performance standards by which the restored area will be evaluated over the long term. The restoration order *may* also require a prepaid contract acceptable to the board be in affect for the purpose of carrying out a Monitoring Plan. In addition, the board *may* require a reasonable bond or letter of credit in an amount and with surety and conditions satisfactory to securing compliance with the conditions set forth in the Restoration Order. Failure to complete the required restoration constitutes a separate violation.

Compliance Monitoring

The adoption of financial disincentives places a burden not only on developers but also on individual wetlands boards. As briefly touched on earlier, many of the problems previously associated with enforcement efforts remain today. While it may prove relatively easy to determine that a bulkhead was constructed without authorization, it is somewhat harder to determine the extent of encroachment beyond that which was authorized by a particular permit. The basis for such determinations frequently hinges on the permit drawings that became a part of the permit document at issuance.

As such, it would certainly behoove each local board to adopt a more demanding stance in determining adequacy of application drawings. Effective enforcement of permit noncompliance can only be achieved with more rigorous application standards. In a report produced by the Wetlands Advisory Program at VIMS, "Monitoring of Compliance with Permits Granted by Local Wetlands Boards," they concluded that without compliance monitoring for permitted projects, the regulatory process may be undermined by unnecessary wetland losses. Thus producing a false impression of the degree to which wetland resources are being protected (Bradshaw, 1990).

Civil Penalties and Civil Charges

The provision in code for the issuance of civil penalties and civil charges does nothing to ease the burden of identifying and legally documenting the existence of a violation. As previously discussed, application drawings become the only reliable standard by which permit compliance can be determined.

The review of enforcement procedures identified two available paths for invoking civil penalties or charges, step 7 or step 8. Both paths involve identifying the presence of a violation. Only after a violation has been determined and sufficiently documented can the board proceed. In cases where restoration is a desirable conclusion, the individual has the option of restoring the area to pre-existing conditions. (Voluntary restoration in this manner may still benefit from a restoration hearing to establish the formal conditions for restoration. A minimum 30 day notice of a restoration hearing applies.) Otherwise, application for a permit modification or after-the-fact approval is necessary. The show cause hearing again provides the setting for discussion of the available options.

Any violation, whether voluntarily restored or not, should be considered an agenda item and fully discussed during a regularly scheduled meeting of the wetlands board. Standard notification procedures apply. The party involved should be contacted and informed that the violation in question will be discussed at the following board meeting and that their presence is requested at the hearing.

In the absence of complete and satisfactory restoration, individuals found in violation of these Code sections may subject themselves to either a civil penalty (Circuit Court) or to a civil charge (Commission/local wetland board). These are the only options available under this Code section. The ramifications of each need to be clearly explained to the individual(s) in violation. Only with the individual's concurrence can the board assess a civil charge.

Table 1 - Civil Charge Determination

Environmental Impact	Relative Degree of Deviation or Non-Compliance		
	<u>Minor</u>	<u>Moderate</u>	<u>Major</u>
Significant	\$5,000	\$7,500	\$10,000
Moderate	\$1,500	\$3,000	\$4,500
Minimal	\$500	\$1,000	\$1,500

Section 28.2-1320 indicates that a board may order a one-time payment of civil charges for each violation not to exceed \$10,000. Table 1 - Civil Charge Determination, has been developed to help ensure continuity between the boards as they individually arrive at an actual dollar amount representative of the violation in question. This assessment is designed to contain the flexibility necessary for the Board to arrive at a conclusion based on the specific terms of each specific violation. These amounts are by no means absolute and are intended to be used as a guide rather than a template.

Environmental Impact in this table refers more to the relative environmental value of the resource lost and less to the actual square footage of area impacted. The values for each wetland type may be found in the *Wetlands Guidelines*. For example, 100 square feet of impact to two stands of vegetated wetlands may be viewed differently depending on the dominant plant species. A Group One wetland ranks higher in value than a Group Five wetland and therefore would tend to be a more significant loss even though on an areal basis the impacts might at first appear relatively equal, (Wetland Guidelines 1974, amended 1982).

Relative Degree of Deviation or Non-compliance refers to the extent of a violation. This could include not only the magnitude of the area of impact but other mitigating factors such as:

- ▷ Good Faith
- ▷ Degree of Willfulness
- ▷ History of Non-compliance
- ▷ Cooperation

(Professing an ignorance of the law should *not* be considered a mitigating factor.)

Conclusion

While it is appealing to believe that successful implementation of these Code changes will solve all of the problems with respect to wetland violations and after-the-fact applications, such a situation is unlikely. As long as individuals choose to live along the shores, development activities within this coastal fringe will continue to exert tremendous pressure on Virginia's tidal wetlands and submerged lands.

The success or failure of these Code changes will be directly related to each of Virginia's local wetlands boards. Enforcement needs to be accomplished in as uniform and consistent a manner as possible. At a minimum, each board should thoroughly review its present enforcement procedures and determine how the current changes need to be incorporated within their existing administrative infrastructure.

This expanded authority is not the ultimate answer. A great deal of the problem with enforcement and permit compliance rests in a lack of attention to detail, crossed communication, and poor follow-up. Remember, "as close to the bank as possible" may be viewed in a variety of ways. It may mean within three feet to the wetlands board, but it could mean "as far as I care to go" for someone building the structure.

Literature Cited

- Bradshaw, J.G. 1990, Monitoring of compliance with permits granted by local wetlands boards. Technical Report No. 90-1. 7p. College of William and Mary, Virginia Institute of Marine Science, School of Marine Science, Wetlands Program, Gloucester Point, Virginia.
- Virginia Marine Resources Commission. 1974. Wetlands Guidelines. Available from VMRC, Newport News, Virginia.

SWORN COMPLAINT

SAMPLE

No. _____

Date _____

Pursuant to Section 28.2-1212 (B) of the Code of Virginia, I hereby certify that a substantial violation of Chapter 12, Article 2 of the Code of Virginia has occurred at

_____. (Location).

I have personally inspected the site and noted the following unauthorized activity:

_____.

_____, 19_____

(Designated Enforcement Officer)

Appropriate Wetlands Board

I, _____, a Notary Public within and for
_____, hereby certify that
_____, a designated Enforcement Officer whose
name is signed to the foregoing, has acknowledged the same before me.

Given under my hand this _____ day of _____, 19_____.

My Commission expires: _____.

Notary Public

NOTICE TO COMPLY

SAMPLE

No. _____

Date _____

Pursuant to Section 28.2 - 1212 (B) of the Code of Virginia, my field staff inspected your construction site at _____ (Location), on _____ (Date), at _____ (Time), having provided prior notice of such inspection to _____ on _____.

The following discrepancies were noted: _____.

The following corrective measures are needed to bring you into compliance:

_____.

These measures are to be completed by _____ (Date).

Notice ordered by _____ (Wetlands Board Chairman)

on _____, 19____.

Notice served to _____ (Signature of Person Notified)

on _____, 19____.

STOP WORK ORDER

SAMPLE

No. _____

Date _____

Pursuant to Section 28.2-1212 (C) of the Code of Virginia, having received a Sworn Complaint from my designated Enforcement Officer (Copy Attached), issued Notice to Comply No. _____ on _____, (Copy Attached), that a substantial violation of Chapter 12 of Subtitle III of the Code exists as noted on the attached, you are hereby notified that further work at _____ (Site Location),

must be **IMMEDIATELY DISCONTINUED**.

Work may be resumed under the following conditions:

Ordered by _____ (Wetlands Board Chairman)

on _____, 19____.

Notice served to _____ (Signature of Person Notified)

on _____, 19____.

Signature of Enforcement Officer

General Permit VGP #2

Commonwealth of Virginia

Virginia Marine Resources Commission

VMRC general permit for groin projects designed to control shoreline erosion, which conform to certain criteria and are undertaken by riparian owners in, on or over state-owned subaqueous lands in waters of the Commonwealth.

1. Authority - Effective Date:

- (a) This General Permit is promulgated pursuant to the authority contained in Sections 28.1-23 and 62.1-3 of the Code of Virginia, as amended.
- (b) This General Permit conforms with current Commission policy in its establishment of general permits for projects which meet certain restrictive criteria.
- (c) This General Permit is consistent with the official opinion of the Attorney General issued on October 31, 1984 and attached hereto.
- (d) The effective date of this General Permit is July 1, 1985.

2. Discussion:

- (a) A principal objective of the permit streamlining efforts of this agency is the achievement of a single permit wherever possible for minor projects with minimal cumulative impacts.
- (b) The Norfolk District U.S. Army Corps of Engineers has approved a general permit for groin projects in Virginia waters which are authorized by a local wetlands board and/or VMRC (83 GP-19).
- (c) Local wetlands boards now process applications and issue permits for groins under the 1982 amendments to the Wetlands Act which placed the non-vegetated intertidal area of the "Tidewater Virginia" shoreline under their jurisdiction.
- (d) The Virginia Institute of Marine Science reviews all applications for groins in tidal waters and submits a written evaluation to local boards for their use in the decision process.
- (e) All local wetlands board decisions are made at public hearings which are public noticed in accordance with Section 62.1-13.5 of the Code of Virginia.
- (f) The Commissioner reviews all decisions of local wetlands boards in compliance with Section 62.1-13.10.
- (g) Any applicant, or 25 or more freeholders of property within the locality, aggrieved by a final decision of the local board, whether such decision is affirmative or negative

in form, may appeal that decision to the Commission which will then review the local record in accordance with Sections 62.1-13.11, 13.12, and 13.13.

(h) The Commission has promulgated guidelines to assist local boards in determining the appropriateness and suitability of proposed groin structures.

3. Procedures:

The Chief, Habitat Management Division will administer the General Permit and assure:

(a) That the approved Local-State-Federal Joint Permit application form is completed and filed in accordance with the instructions contained therein.

(b) That applications are processed in accordance with the procedures established in Section 62.1-13.5 of the Wetlands Act and the local ordinance adopted thereunder.

(c) That groin projects authorized by this permit achieve the policy and standards implicit in Title 62.1 of the Code of Virginia, reasonably accommodate guidelines promulgated by the Commission and are consistent with the attached opinion of the Attorney General.

(d) That groins authorized by local boards meet the following criteria: (1) are of "low profile" design, (2) do not extend more than 48 feet channelward of mean high water, (3) if constructed of riprap or stone material do not exceed 6 feet in base width, and (4) any spur associated with an approved groin must be properly designed and located.

Projects which do not meet the criteria in (a) through (d) above will be processed for an individual VMRC permit with appropriate fees and royalties.

4. Authorization/Conditions:

All proposals for groin structures to encroach in, on or over State-owned subaqueous land which meet the criteria in paragraph 3 (a) through (d) above are hereby permitted subject to the following standard conditions:

(1) This permit grants no authority to the Permittee to encroach upon property rights, including riparian rights, of others.

(2) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purposes of inspecting the work being done pursuant to this permit.

- (3) The Permittee shall comply with the water quality standards as established by the State Water Control Board and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the project.
- (4) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fowling and the catching of and taking of oysters and other shellfish in and from the bottom of areas and waters not included within the terms of this permit.
- (5) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.
- (6) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.
- (7) There is expressly excluded from this permit any portion of the waters within the boundaries of the Baylor Survey (Public Oyster Ground).
- (8) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.
- (9) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.
- (10) All structures authorized by this permit which are not maintained in good repair shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.
- (11) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment operation or maintenance of said project.
- (12) This permit authorizes no claim to archaeological artifacts which may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn, notify the Virginia Historic Landmarks Commission. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

5. This General Permit should be retained by the Permittee for the life of his project as evidence of authorization.

Criteria for the Placement of Sandy Dredged Material Along Beaches in the Commonwealth

Virginia Marine Resources Commission

VR 450-01-0052

Section 1

Objective and Goals

- A. The objective is to assure that all suitable dredged material is utilized on eroding beach shorelines to the maximum extent practicable.
- B. In considering dredging permit applications, the Commission will endeavor to:
 - 1. Support Section 10.1-704 of the Code of Virginia which provides that the beaches of the Commonwealth be given priority consideration as sites for the disposal of that portion of dredged material determined to be suitable for beach nourishment.
 - 2. Coordinate and cooperate with the appropriate state and federal agencies to the extent that VMRC regulatory actions can support those agencies in administering House Joint Resolution No. 223, 1987 session, regarding the use of dredged material for beach nourishment.
 - 3. Resolve or minimize legal, environmental and engineering problems which can result from inadequate planning of dredged material placement.

Section 2

Purpose

The purpose of this is to develop manageable criteria and threshold levels for use by Commission staff in determining which projects justify a requirement for the expenditure of funds by an applicant for sediment tests as well as investigation of legal, environmental and engineering implications inherent in every dredged material placement proposal.

Section 3

Policy

The Commission will strive to achieve maximum beneficial uses of suitable dredged material for those projects which qualify under criteria established herein while protecting the interests of the Commonwealth in the land and the resources lying channelward of the

mean low water shoreline which land and resources are owned by the Commonwealth and are to be held as a common for use by all its citizens.

Section 4

General Criteria

Increasing interest in the beneficial uses of dredged material dictates a more structured approach to the processing of dredging permit applications. Parameters to be considered in attempting to utilize suitable material for beach nourishment are frequently economic, legal, political, or technical, as well as environmental, and most often a combination of all these factors.

Because of the complexity of interests involved, certain threshold levels are needed to more readily define projects which justify the time and expense of determining whether beach nourishment is a reasonable alternative.

The following general criteria should be used to determine candidate projects suitable for detailed evaluation:

1. More than 7,500 cubic yards of material are to be removed and, based on previous experience, there is a reasonable expectation that usable quantities of suitable beach nourishment material free from toxic compounds is present in the material to be dredged.
2. Beaches with a demonstrated need for and capability of accepting all or a part of the available material are within proximity of the dredging site.
3. The political subdivision within which the potential placement site is located has expressed an interest in obtaining beach nourishment material.
4. The applicant understands that he will be required to undertake the research necessary to locate private property owners willing to accept the material if no publicly owned shoreline is in reasonable proximity.
5. When beach nourishment is incorporated into a dredging project, a more comprehensive subsurface investigation plan is required than if dredging is the only consideration.

Section 5

Specific Criteria

1. Sufficient borings must be made and analyzed to develop a clear picture of the vertical and horizontal limit of sand deposits in the dredging area. Such borings are the responsibility of the dredging applicant.
2. Shoreline investigations at the nourishment site must determine the characteristics of the native material, the location of utilities, structures, outfall pipes, property lines along shore transport, and other basic engineering considerations.
3. Engineering information must be analyzed to determine acceptable grain size range of fill material, design berm height, width and length, probable fate of the material, expected loss rates and the resulting maintenance requirements.
4. Legal easements and public rights-of-way must be obtained from property owners which preserve public use and State ownership of all State-owned submerged land existing channelward of mean low water shoreline prior to the placement of any material. These legal documents are the responsibility of the dredging applicant or property owners, or both.
5. The project should be engineered in a manner which results in the least environmental impact while providing an efficient and cost effective construction plan. Consideration will be given, but not limited to, the project's potential impacts on existing natural resources and habitats. These include, *inter alia*, existing finfish, shellfish, turtle and avian species and their critical time periods for spawning, nesting and nursery functions in areas of submerged aquatic vegetation, wetlands and submerged or intertidal and beach habitat.

Memorandum of Agreement between the U.S. Army Corps of Engineers, Norfolk District and the Virginia Marine Resources Commission for the Implementation of a Certificate of Compliance with Norfolk District's Regional Permit 90-17

I. Purpose

The United States Army Corps of Engineers, Norfolk District (COE) and the Virginia Marine Resources Commission (VMRC) hereby establish cooperative procedures for the implementation of a Certificate of Compliance with Norfolk District's Regional Permit (RP) 90-17. Regional Permit 90-17 regulates the construction, maintenance, and repair of private, non-commercial piers and mooring piles in certain navigable waters of the United States within the Commonwealth of Virginia.

II. Procedures

Applicants will complete, sign, and submit a copy of the Certificate of Compliance along with their permit application to the VMRC. Applications which have a completed certificate of compliance attached when received at VMRC will be processed without copies of the applications or related correspondence being furnished to the COE.

The Certificate of Compliance may be reproduced locally and is approved by the COE for immediate use. The responsibility for certifying compliance with the conditions outlined in the permit rests with either the applicant or the agent. This certification will constitute legal documentation from the COE that a project meets the conditions of RP 90-17. No additional COE documentation will be provided.

Shoreline Erosion Guidance For Chesapeake Bay: Virginia

C. Scott Hardaway Jr.

I. Introduction

The tidal shorelines of the Chesapeake Bay estuarine system are an important resource. The land, water, and air interface defines the wetted perimeter where land use and clearing practices have, since colonial times, often taken on an adversarial role with regard to the conservation/management of marine resources. With groundwater seepage, the rise and fall of the tide, wave action from storms and rain generated surface runoff, the shoreline is in a state of constant change.

The most active changes occur where wave action against the shore is most intense. Shoreline erosion and accretion are the result of this wave activity; the local wave climate. The highest rates of shoreline erosion occur along the shorelines of the main stem of the Chesapeake Bay where the fetch exposures are the greatest.

The purpose of this chapter is to describe and illustrate the geological processes and physical evolution of Chesapeake Bay and its tidal shorelines and the relative impacts of the strategies that are employed to abate shoreline erosion. Included in the discussion will be the role of marshes, beaches, dune systems, and sea level rise in shoreline evolution and shoreline erosion. Shoreline erosion treatment methods include but are not limited to: bulkheads, stone revetments, groins, beach nourishment, breakwaters, the establishment of marsh fringes, and/or any combination of the foregoing.

Over the years landuse conversion along the rivers, creeks and bays has been predominantly woodland to agricultural with pockets of residential development ever increasing (Hardaway et al. 1992). Waterfront property values have increased and control of shoreline erosion has become expensive. Traditional methods or strategies to abate shoreline erosion include the use of wood bulkheads and groins as well as stone revetments. More recently the use of beach fill, marsh grasses and offshore breakwaters and sills has increased for a variety of reasons including environmental, financial and social preferences.

Addressing shore erosion has often been done in a haphazard fashion without a basic understanding of the temporal and spatial parameters involved. It is at this point that we find

ourselves needing to provide a framework from which to assess what is being done along the shorelines of the Commonwealth with an eye toward water quality and habitat preservation as well as coastal hazards and property loss.

II. Shoreline Evolution (History)

Management of Virginia's Chesapeake Bay shorelines needs to start with a detailed understanding of how today's shorelines have reached their present state. The Chesapeake Bay and its tributaries are drowned river valleys of the ancestral Susquehanna River system (Figure 1). The Chesapeake Bay estuarine system is a geologically young portion of the Virginia coastal system with over 5,000 miles of tidal shoreline.

It is important to understand that the long term driving process affecting the shore zone and shoreline erosion is the slow rise in sea level. About 15,000 years ago the ocean coast of Virginia was about 60 miles to the east of its present location and sea level was about 300 feet lower. The coastal plain of Virginia was broad and low. The estuarine system was a meandering series of rivers working their way to the coast. As sea level rose these fluvial systems (rivers) were inundated and the shorelines receded. This recession, often called shoreline erosion, was accelerated by the seasonal occurrence of storms such as northeasters and the occasional hurricane. Today, relative sea level continues to rise and it is still the storm events that cause the greatest changes along the estuarine and ocean shorelines.

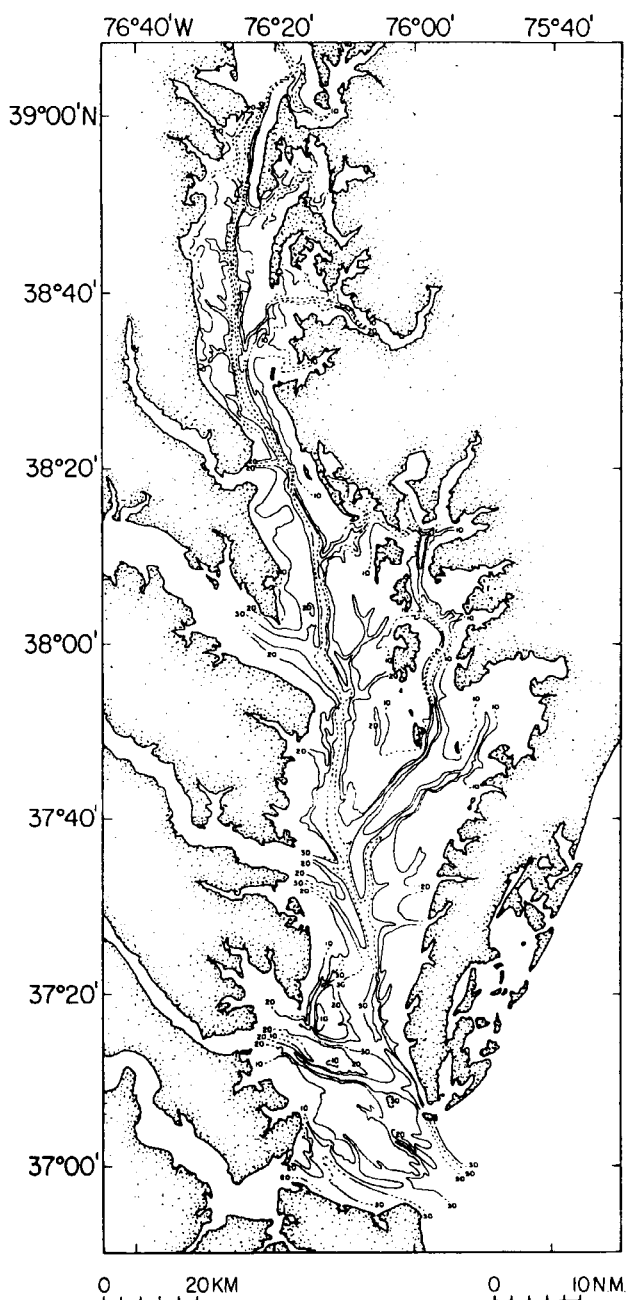


FIGURE 1. Map showing the Chesapeake Bay today with the ancestral Susquehanna drainage.

The major shore types associated with the latest oceanic transgression include marsh and upland banks and to a lesser extent dunes, beaches and spits. The marshes occupy the fringes of watersheds and low regions of the coastal system in front of, or bayward of, upland regions. Marshes and their associated peat substrates are important geomorphic features. Marshes grow vertically and laterally landward in response to sea level rise. The shoreline of the marsh will erode in response to wave action but will also protect the upland areas from the same erosive forces.

As shoreline recession continues, fetch exposures increase and the potential wave energy impacting a given shoreline increases as well. If the rate of marsh shore erosion exceeds the rate of lateral and vertical landward movement, then the marsh will eventually become too thin or non-existent and unable to protect the upland region. The upland then becomes exposed to wave action and begins to erode. Erosion of upland banks then provides additional sediment into the estuarine system helping create beaches and spits. Wetland and upland vegetation may colonize these newly created substrates helping stabilize the unconsolidated sediments.

Nearshore regions also evolve with time. The position of tidal flats, offshore sand bars and shoals are a function of shoreline erosion patterns, wave climate, sediment supply and tidal currents. Nearshore depth or bathymetry is a critical parameter in wave attenuation. Wave action can be significantly reduced across shallow flats and sand bars.

The underlying geology is the major factor in the height and composition of eroding upland banks, the position and extent of marshes define the areas more prone to tidal flooding. One major defining coastal feature called the Suffolk Scarp runs the length of the Virginia Coastal plain along the west side of Chesapeake Bay (Figure 2, page 4). The Suffolk Scarp is an old beach feature, formed during a high stand in sea level approximately 2 million years ago (Pleistocene epoch).

West of the Suffolk Scarp the shoreline banks rise to heights of 25 to 50 feet. Other scarps to the west, like the Surry Scarp, cause the land and shoreline banks to rise even higher (70 to 100 ft) as is the case with Nomini Cliffs in Westmoreland County. East of the Suffolk Scarp the land drops to areas that may be less than 5 ft above sea level. Extensive marshes occupy the lowland drainages. These areas include much of the Bay fronting shoreline of the cities of Norfolk, Hampton and Poquoson as well as York, Gloucester, Mathews and Middlesex counties.

The Eastern Shore of Virginia is a geologic feature that was created by progressive sedimentation at the distal end of the Delmarva Peninsula. The bay side of the Eastern Shore has experienced a similar shoreline evolution sequence. Large expanses of embayed tidal marsh occur in and around Pocomoke Sound. As one proceeds south along the bayside shoreline, the land rises around Onancock Creek to expose eroding sandy upland banks. Eroding upland necks of the southern Eastern Shore provide large amounts of sediments to adjacent downdrift shorelines and help supply extensive offshore bar systems.

Added to the general evolutionary pattern of Chesapeake Bay shorelines are the many sub-estuaries more commonly known as tidal creeks. These are an integral component of the Bay's flooded dendritic watershed. These creeks are of varying size and where they enter the Bay or major estuary there is often an impact to littoral processes and shoreline evolution in the form of flood and ebb shoaling. This shoaling often restricts navigation and dredging or jetties are required to maintain the desired channel. Adjacent shorelines are usually directly affected by these measures, either by sand accretion or sand deprivation and consequent shoreline erosion.

The impact of shoreline protection installations on the recent shoreline evolution process is several fold. First of all, the eroding sediment banks that had provided sands for beaches, spits and offshore bars are removed by erosion protection measures. The once eroding bank no longer supplies its "natural" input of sand. Secondly, since the protected shoreline does not erode, at least for several years, the impinging wave climate is altered by wave reflection. This is especially true for defensive structures like bulkheads and seawalls. The sloped face of a rock revetment tends to reduce reflection but it may still occur.

Wave reflection can increase the loss of existing beaches and marsh features immediately seaward of shoreline protection structures. As well, the combination of beach loss and increased nearshore depth may allow increased impinging wave heights and increase the potential for bottom scour and shoreline retreat.

Protected segments of shoreline can remain essentially as hard points or headland features while adjacent unprotected properties continue to erode sometimes at an accelerated rate.

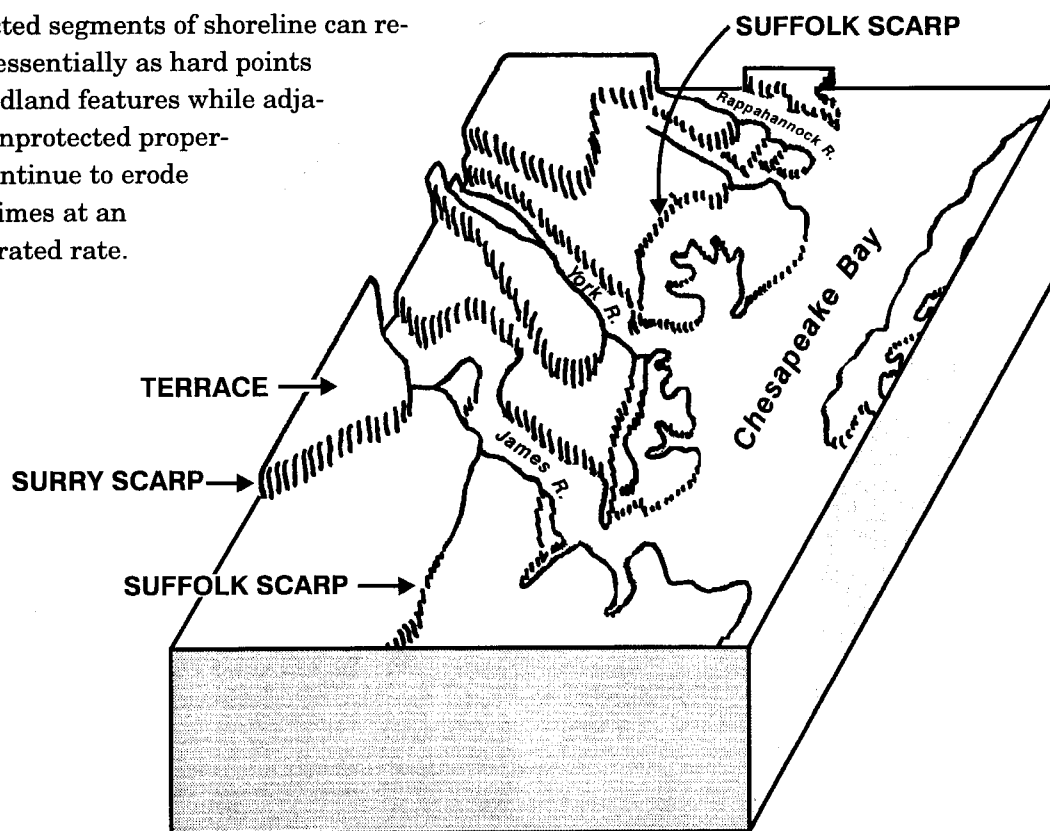


FIGURE 2. Ancient scarp features of the Virginia Coastal Plain. (After Pebbles, 1984)

III. Shoreline Erosion Processes

A. Wave Climate

Shoreline erosion on a daily basis is on average minimal. Severe erosion occurs during periods of high energy storms such as northeasters and hurricanes during which high winds blow across the Bay and generate increased wave conditions. Therefore, the rate of erosion at any specific location depends upon the following conditions (Riggs et al. 1978):

1. Storm frequency
2. Storm type and direction
3. Storm intensity and duration
4. Resulting wind tides, currents, waves and storm surge

Seasonal wind patterns vary in the Chesapeake Bay region. From late fall to spring the dominant wind direction is from the north and northwest. During the late spring, the dominant wind shifts to the southwest and continues so until the following fall. Northeast storms which occur from late fall to early spring are associated with eastward moving storm fronts. Frequently, there is a period of intense north to northwest wind following the passage of the front. Hurricanes, with sustained winds of at least 74 mph, can occur from mid-summer to mid-fall. Although they generally have higher winds and storm surge, they will often pass a given region faster than a northeaster.

The wave climate impacting a particular shoreline along the Chesapeake Bay estuarine system is dependent upon numerous factors including fetch exposure, shore orientation, shore type and nearshore bathymetry. Fetch is defined as the distance of open water over which wind can blow and generate waves. In Chesapeake Bay, the wave climate is both fetch-limited and depth-limited.

Fetch exposure and water depth can be used as simple measures of relative wave energy in the Bay. Hardaway et al. (1984) categorized relative potential wave energy acting on a given shore reach into three general categories based on average fetch exposure.

1. Low energy shorelines have average fetch exposures of less than 1 nautical mile (nm). These are generally found along tidal creeks and smaller tributary rivers.
2. Medium energy shorelines occur mostly along the main tributary estuaries and have average fetch exposure of 1 to 5 nm.
3. High energy shorelines are adjacent to the main stem of the Bay and the mouths of the tributary estuaries with average fetch exposures of over 5 nm.

Storm surge is another critical element for consideration in determining local wave climate. In the lower Chesapeake Bay storm surges for a 10 yr, 25 yr, 50 yr and 100 yr storm are 4.5 ft, 4.8 ft, 5.5 ft and 6.1 ft mean sea level (MSL) (Boon et al. 1978). According to Basco, 1993, wave heights during moderate northeast storm conditions (every 2 years) with sustained winds of 30 to 40 mph can be 5 ft to 8 ft in the Bay (high), 2 ft to 5 ft in the main tributary estuaries (medium) and about 1 ft in small tidal creeks (low).

B. Shoreline Erosion

There are over 5,000 miles of tidal shoreline in the Commonwealth of Virginia (Byrne and Anderson, 1978). Land loss to shoreline erosion since 1850 amounts to over 40,000 acres. Some of the most dramatic shore erosion losses occur along the Bay main stem where fetch exposures and impinging waves are highest. Figure 3 is an example of a Bay shoreline-change map for southeast Mathews County. Of note is the 1852 shoreline, showing the marsh islands along Chesapeake Bay and the extent of New Point Comfort at that time.

The fastland or upland areas adjacent to the estuarine shorelines of Chesapeake Bay vary in height and composition. They come under direct wave attack when shore zone features such as beaches, fringing marsh and beach/dune systems are absent or not wide enough to offer protection. The shore zone features themselves are either eroding, stable or accreting. These features may protect upland properties during annual storm events but may not adequately protect during lower frequency but more severe storms (i.e. 10, 25, 50 or 100 year events).

For the purpose of this discussion, the tidal shorelines of the Commonwealth

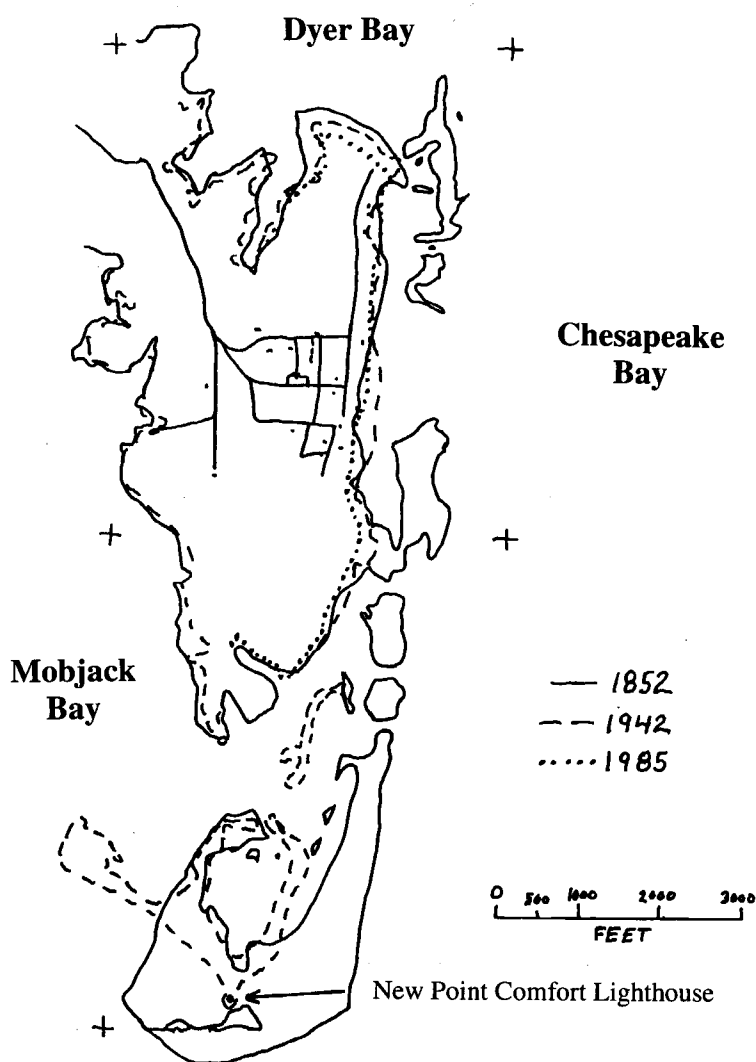


FIGURE 3. Historic shoreline change in southeast Mathews County. (VIMS Shoreline Studies)

are classed into six basic types (Figure 4, page 8). This classification, after Hardaway and Byrne, (1996), is based on fastland bank height where there is a high and low bank situation. The high bank is any fastland elevation greater than 10 ft above mean low water (MLW) and the low bank is any fastland 10 ft above mean low water (MLW) or less. The rationale for this is that low fastland banks will be potentially susceptible to frequent flooding whereas the high banks will not. Wave attack on low banks may occur landward of the top of the bank where property improvements may be directly threatened by storm surge and wave action. Property improvements on high bank situations will not be impacted directly by storm surge or wave action. However, if the improvements are near the edge of the bank, bank erosion and slumping from wave undercutting may pose a threat.

Shore zone features will vary in type and width depending on the particular shore setting. This will in turn determine the bank face stability and the potential need to protect the bank from erosion. Wide fringing marshes, beaches and dunes will attenuate wave action during storms and upland banks may only be impacted by the most severe events (i.e. 100 yr storm). Narrow shore zone features will allow more frequent wave impact to the upland banks, causing chronic instability and continual erosion. There are various combinations of these six situations and they will occur adjacent to each other and will change through time.

Fetch exposure and the present condition of any given shoreline situation will dictate what shoreline protection measure can be reasonably employed. The landowner's desires and funding resources are also a factor. Building shoreline protection structures to completely stop upland wave attack is usually not feasible along low bank situations where the storm surges overtop the fastland. However, emplacing a shore protection system that will withstand the waves and storm surge as well as remain intact after a severe storm is quite feasible. These factors must be considered in the design phase of any shoreline strategy.

IV. Reach Assessment

Before any shoreline management strategy can be implemented, a site assessment should be performed. This may not be possible for all local wetlands board actions but knowing the basic elements involved should prove helpful in understanding the scope of such an evaluation. This task should be performed to some degree by the landowner or agent. Technical assessment of a reach involves six principal elements:

1. Determination of the limits of the **reach** the project lies in. A reach is defined as a segment of shoreline wherein the erosion processes and responses are mutually interactive. For example, appreciable littoral sand would not pass the boundaries of a reach. Reach boundaries may include major points of land, creek mouths or changes in shoreline orientation.
2. Determination of the historical rates and patterns of erosion and accretion for the reach. Identify shore types (i.e. upland banks and marsh) and their impact to shoreline processes and shoreline evolution.

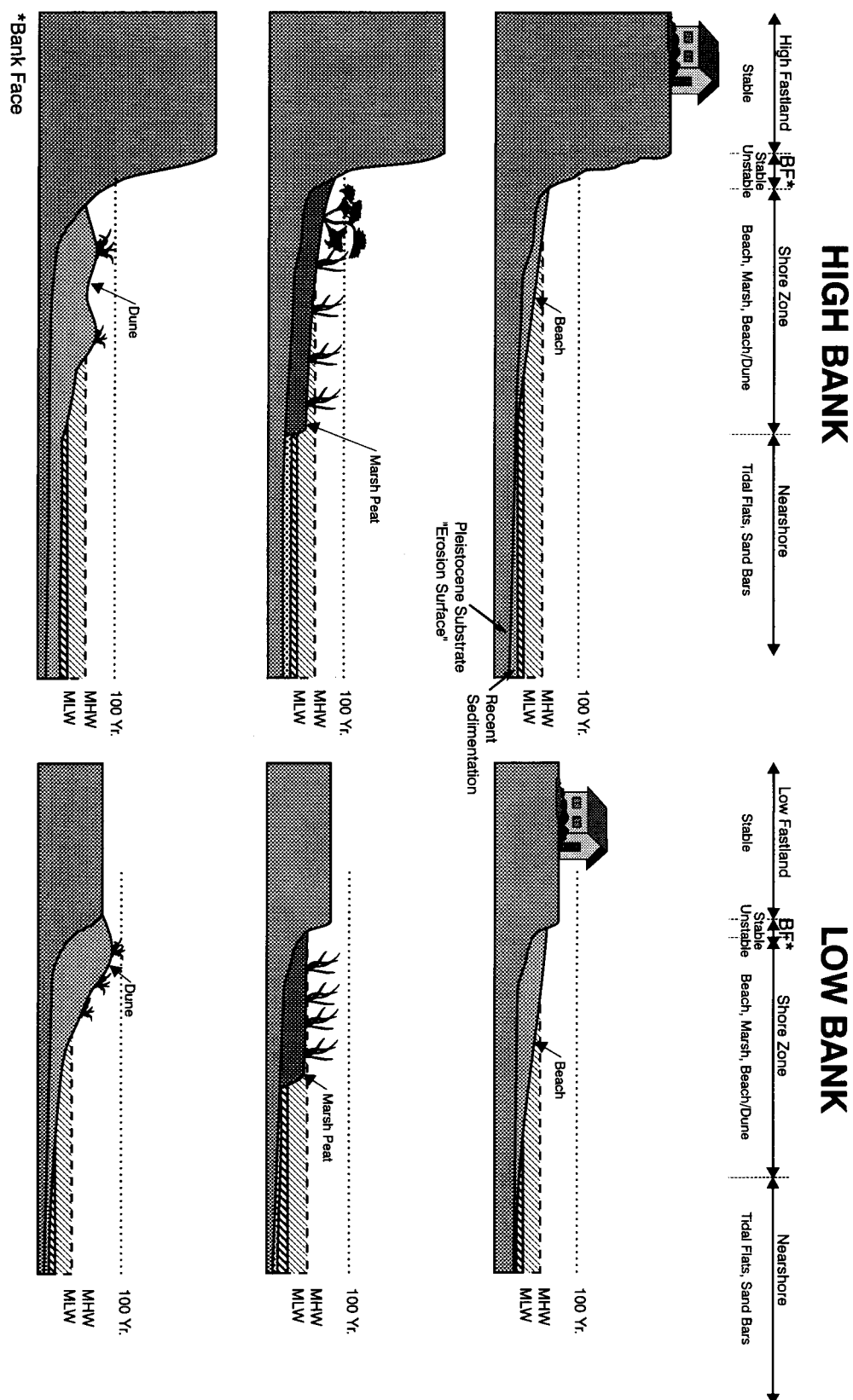


FIGURE 4. Six typical shoreline profiles around Chesapeake Bay. The stability of the bank face is dependent upon the the width and type of shore zone features. (After Hardaway and Byrne, 1996)

3. Determination within the reach of the sites of the induced sand supply and the volume of that sand supply for incremental erosion distances. Often there are interactive subreaches which are regions of sediment source (erosion), sediment transport and/or sediment accumulation (accretion).
4. Determination of effective wave climate and the direction of net littoral drift as well as a reasonable estimation of potential impacts for a proposed project on adjacent shore zones.
5. Estimation of erosion causing factors other than wave induced, such as groundwater or surface runoff.
6. Estimation of potential and active sources of nutrient loading (i.e. farmland or residential land) and the pathways by which this occurs such as by surface runoff, eroding sediments and/or groundwater discharge.

V. Shoreline Strategies

Revetments, bulkheads and groins are the most common shoreline protection strategies employed today. In 1985, out of about 400 miles of eroding upland shorelines along the Bay main stem and major tributaries, about 58 miles of shoreline were defended by bulkheads or revetments and about 18 miles had groins and groin fields alone. By 1990, defended shorelines had increased 13 miles (22%) to cover 71 miles of eroding upland shorelines. The increase in the use of groins has amounted to about 70%, for a total of 26 miles by 1990 (Hardaway et al. 1992).

A. Bulkheads and Seawalls

In an effort to protect shoreline properties, wood bulkheads and concrete “seawalls” were actively installed in the 1950’s, 1960’s and 1970’s. These were primarily “defensive” structures, built as a last line of defense to impinging wave action. Some of these structures still remain and are to some degree intact. However, most that were built along the Bay stem and major tributary estuaries have deteriorated, been rebuilt or have been replaced by rock. Wood bulkheads are still extensively employed today, the craftsmanship and wood preservation methods have improved since the late 1970’s and a 20 year structural life can be expected.

Bulkhead and seawall are two terms often used to denote the same type of shoreline protection structure. There is however, a significant difference in that bulkheads are generally smaller and less expensive than seawalls. Bulkheads are usually made of wood and are designed to retain upland soils and often provide minimal protection from severe wave action (Figure 5, page 10). Seawalls are often made of poured concrete and are designed to withstand the full force of waves (U.S. Army Corps of Engineers, 1984).

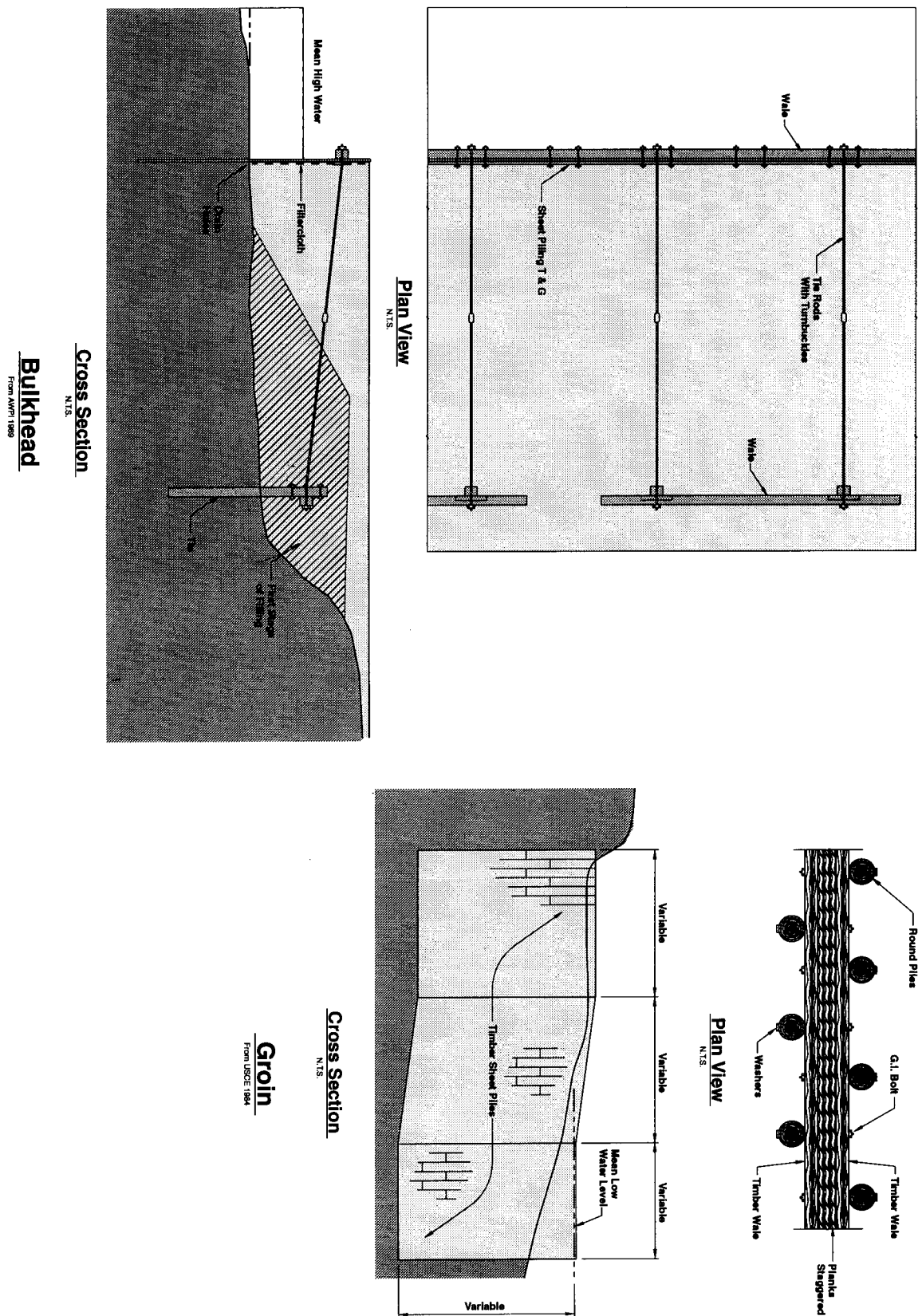


FIGURE 5. Wood bulkhead and groin: typical cross-sections and plan views. (After Reynolds and Hardaway, 1995)

B. Revetments

Rock (rip-rap) revetments became more widely used in the late 1970's, 1980's and 1990's. Today, the structural integrity of a properly designed and constructed rock revetment can be expected to last 50 years or more. The life of the rock will be considerably longer. The sloped and roughed face of the stone revetment decreases wave reflection and nearshore bottom scour. Bottom scour that causes increased depths can threaten the long term integrity of any shoreline protection system if not properly designed and installed.

Figure 6 (page 12) shows a design cross-section for a stone revetment placed along a high bank situation. The height of the structure should anticipate wave runoff and overtopping. Bank grading is usually necessary to obtain a stable slope condition. Armor stone must be of good quality and proper size to withstand design wave heights anticipated for any given shore reach. There are other suitable types of armor units made of pre-cast concrete but they are specialized devices and beyond the scope of this report.

Along eroding marsh peat shorelines, low revetments can be installed. They are called marsh toe revetments (MTR) and special attention must be paid to potentially soft peat foundation conditions where unwanted settling might occur. Filter cloth is highly recommended as a structural underlayment to prevent differential settling.

C. Groins

Also profuse during the 1950's to 1980's was the use of groins to entrap sand and build what usually was only a decorative beach area. These structures have been traditionally constructed of wood (Figure 5, page 10). When used with or without a defensive bulkhead or "seawall," groin and groin fields can cause significant impacts to adjacent unprotected shorelines.

On the positive side, if one was a landowner, a relatively wide sand beach might accrete on the updrift side of the groins. If enough sand were available, the shoreline banks would gain some degree of protection. On the negative side, the sand build-up would prevent sand from reaching downdrift shores, decreasing beach widths and increasing the potential for shoreline erosion in these areas.

Spurs have been used with good success to help reduce the downdrift erosive effects of groins. Spurs are shore parallel features placed on the downdrift side of a groin to help prevent flanking (Figures 7A and 7B, pages 13 and 14). They will redirect incoming waves to allow a sheltered area in the lee and promote the accumulation of sand. Groins are still a popular item today and can be at least enhanced with the addition of beach fill. It is, in fact, the beach that offers the protection to adjacent upland banks not the groins themselves.

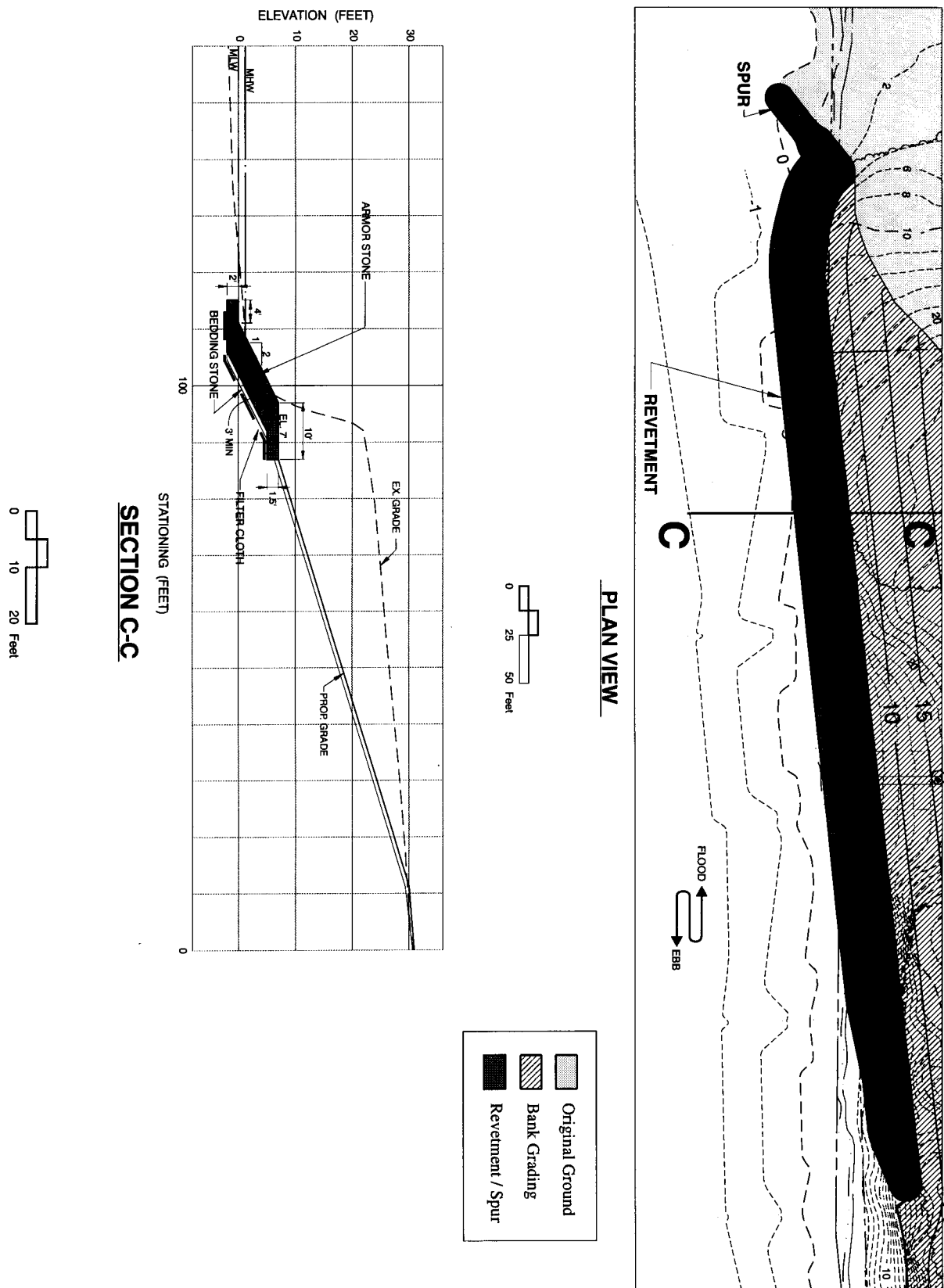


FIGURE 6. Stone revetment: Typical cross-section and plan view. (After Reynolds and Har-daway, 1995)

D. Breakwaters and Sills

The use of offshore breakwaters for shoreline erosion control as well as for maintaining a recreational beach has increased significantly over the past decade. Breakwaters are considered “offensive” in nature because they address the impinging wave climate before it reaches upland properties. Breakwater systems are designed to create stable beach planforms (with beach nourishment) which in turn will allow establishment of various species of marsh grasses at the site (Figure 8, page 15).

Although, subaqueous bottom is covered initially by the breakwater system, intertidal and marsh habitat are ultimately created. The breakwater units themselves take an active part in the wave attenuation process along with the encapsulated pocket beaches. As with groins and other shoreline structures, the use of breakwaters must be designed with the potential impacts to the adjacent shoreline in mind.

Figure 9 (page 16) shows design elements for a typical breakwater system. Primary parameters are breakwater length (LB), distance offshore (XB), the gap between breakwater units (GB) and the maxi-

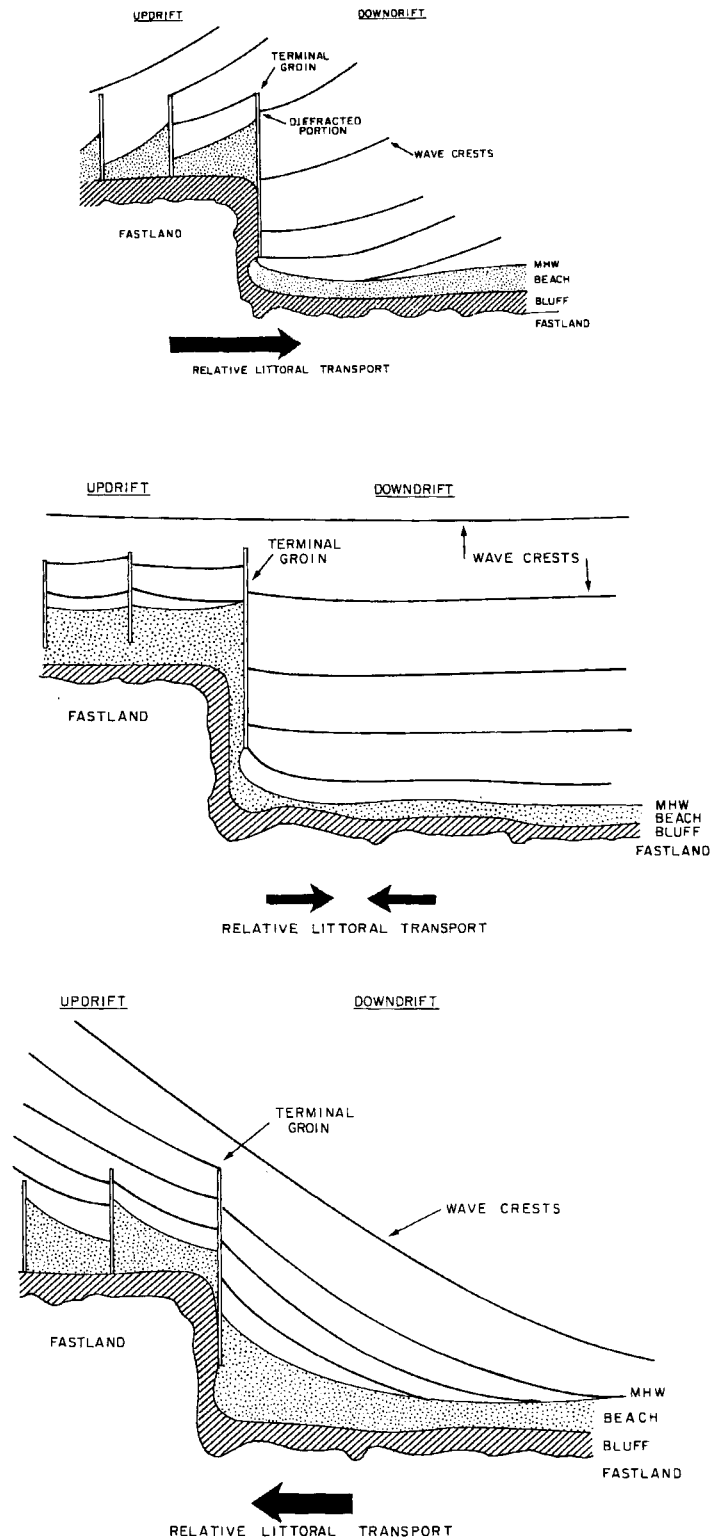


FIGURE 7A. Groin field depicting downdrift offset and different wave approaches. (After Anderson et al. 1983)

mum embayment indentation distance (M_b). These parameters revolve around the minimum beach width (B_m) required for the design level of shoreline protection. Hardaway et al. (1991), found the optimum ratio for a stable bay shore planform is a $M_b:GB$ of 1:1.65.

Sills are a cross between rock revetments and offshore breakwaters. Rock sills generally have a “free standing” trapezoidal cross-section similar to breakwaters but are smaller in dimensions, built relatively close to shore and are usually continuous (Figure 10, page 17). In general, beach fill is needed to bring the backshore up so as to establish a marsh fringe in the lee of the sill. Sills can be used in higher wave energy regimes to establish intertidal marsh grasses. Once again, potential impacts to adjacent shorelines must be considered.

E. Beach Nourishment

Beach nourishment used as the sole method for shoreline erosion control is generally limited to reaches designated for dredge material disposal or public beaches. This is usually adjacent to navigation channels that require maintenance dredging or public beaches. Beach nourishment for shoreline erosion control

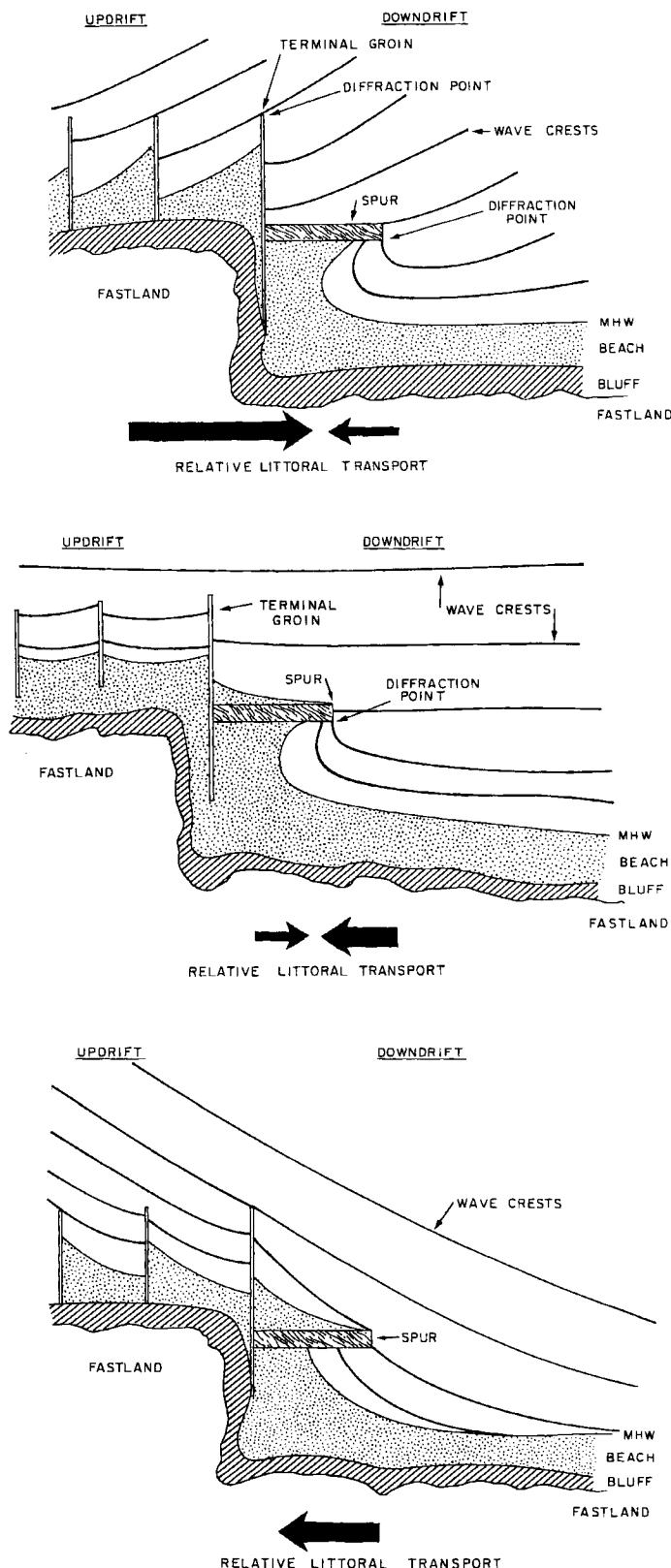


FIGURE 7B. Groin field with spur addition on downdrift side of “terminal” groin. (After Anderson et al. 1983)

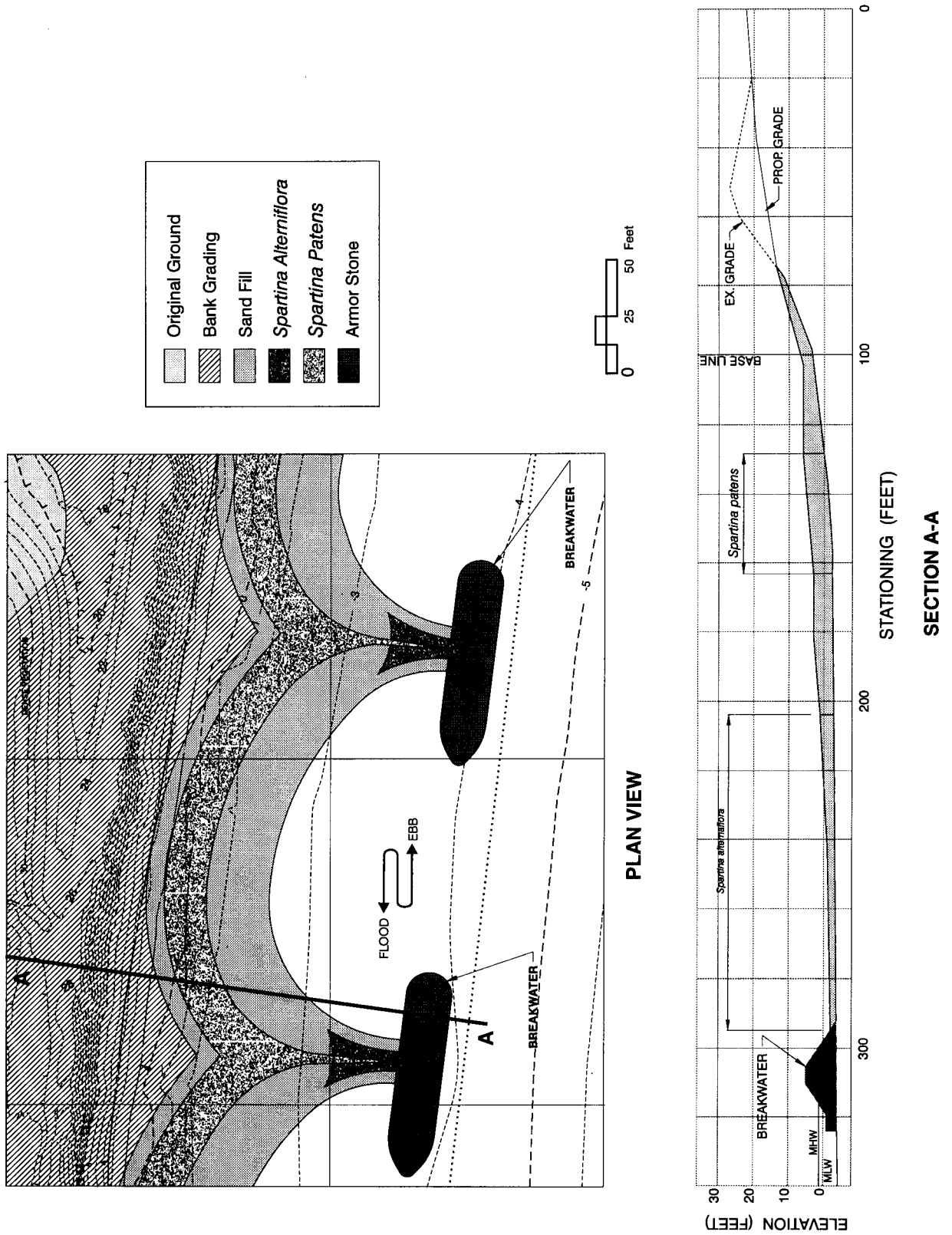


FIGURE 8. Breakwater: Typical cross-section and plan view. (After (Reynolds and Hardaway, 1995))

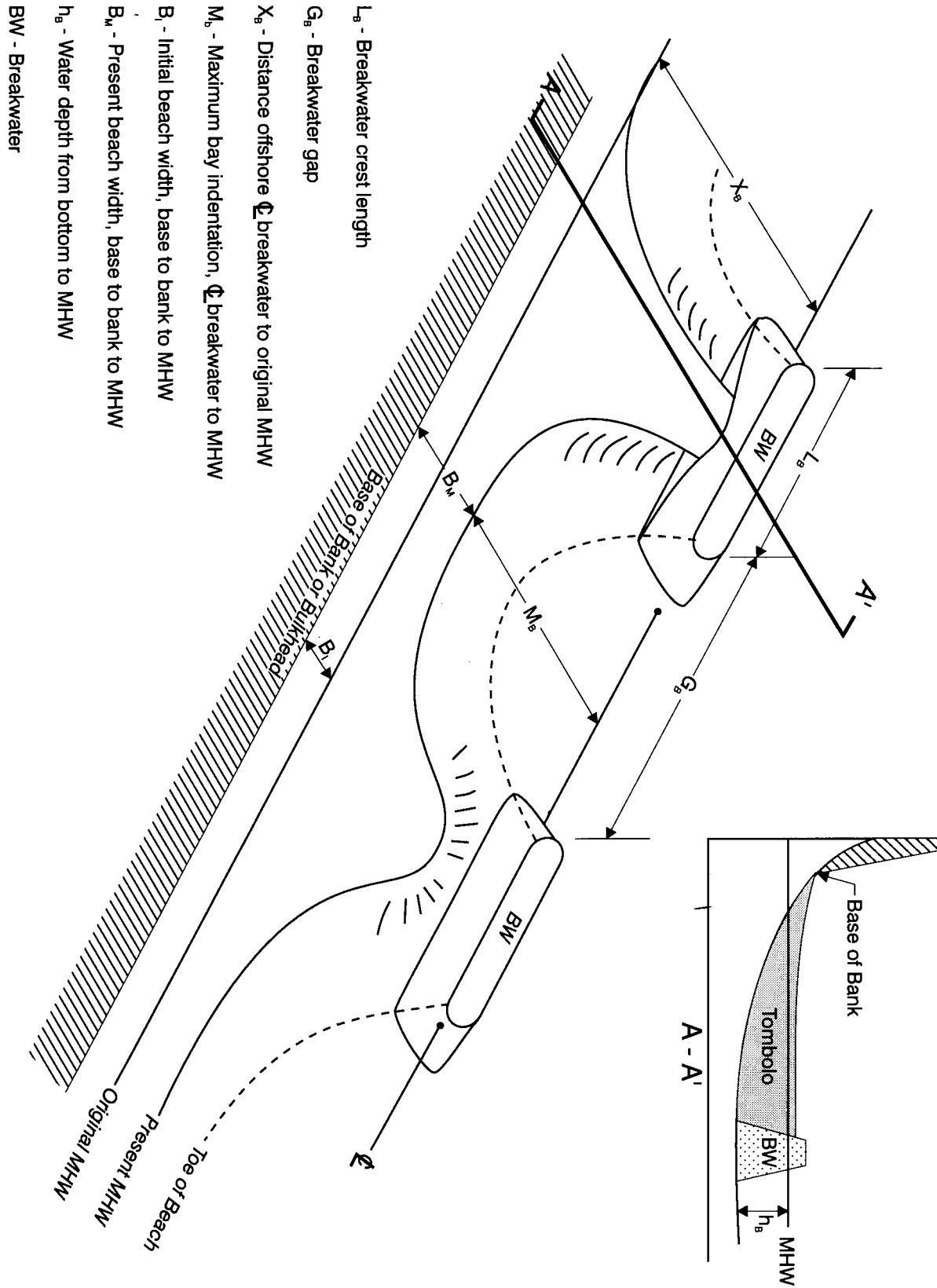


FIGURE 9. Breakwater design parameters. (After Suh, 1987)

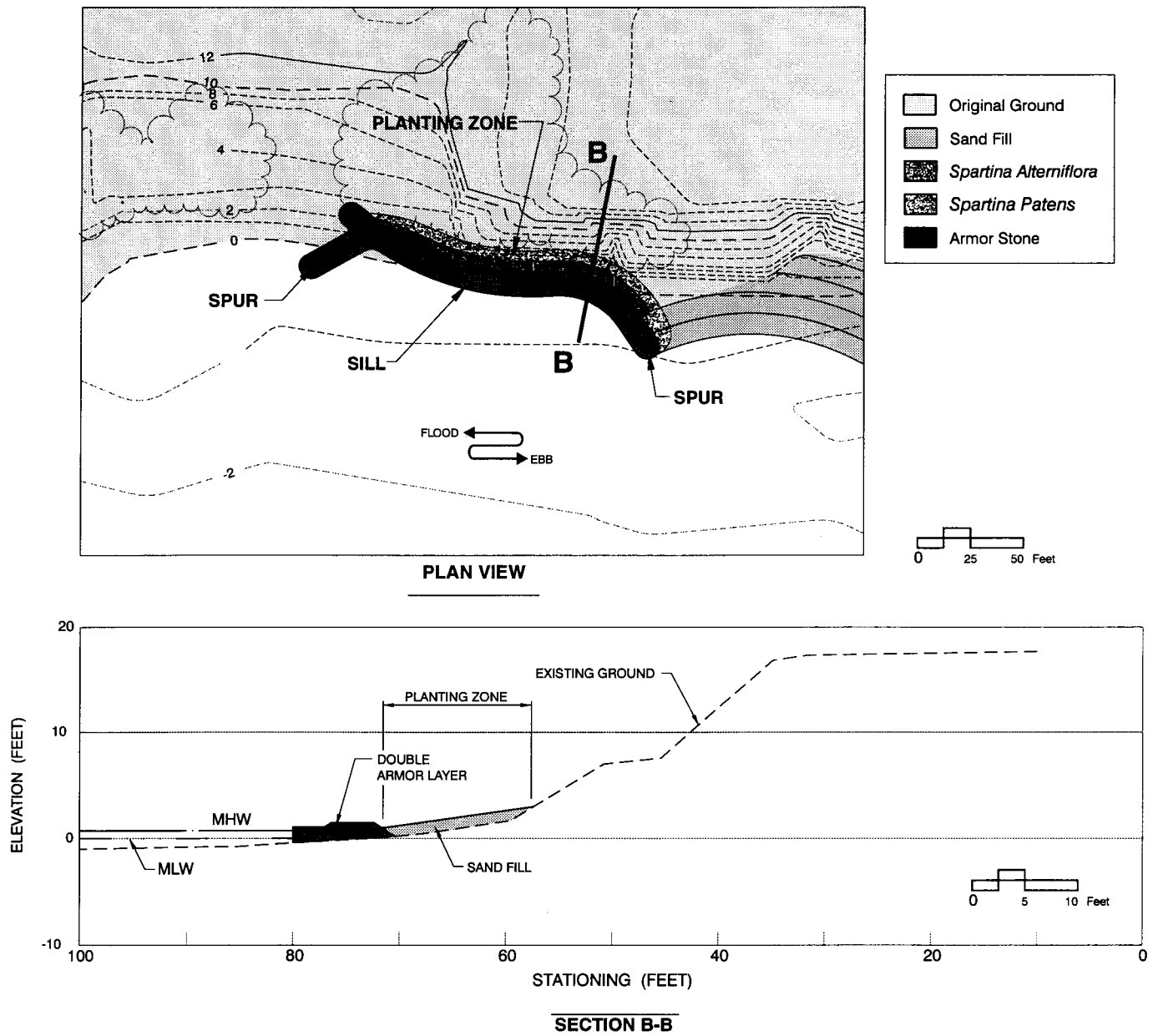


FIGURE 10. Sill: Typical cross-section and plan view. (After Reynolds and Hardaway, 1995)

on properties remote from those circumstances is usually performed in conjunction with structural applications such as groin fields or breakwater systems.

F. Marsh Fringe

The use of planted marshes to create a protective fringe is usually restricted to very low energy shores of tidal creeks with fetch exposures of less than 1/2 mile. In some cases the marsh can be reestablished on the existing substrate, in others a wider marsh substrate can be made using sand fill (Figure 11). Marshes planted behind breakwaters and sills allow fringe establishment to be extended to higher wave energy shorelines. This method is recommended as long as it is part of a long term shoreline management scenario.

G. Headland Control

Addressing shoreline erosion and developing shoreline management scenarios is most effectively accomplished on a reach basis. Headland control is a concept that can allow long stretches of shoreline to be addressed in a more cost/effective fashion. This is accomplished by accentuating existing features or creating permanent headlands that allow adjacent, relatively wide, embayments to become stable planforms (Figure 12). This can greatly reduce the cost of managing the shoreline reach by reducing the linear feet of structure necessary. Although a somewhat new concept around the Chesapeake Bay region, it is a well established methodology elsewhere around the globe. The main problem is coordination of funds and resources for shoreline reaches with multiple waterfront ownership.

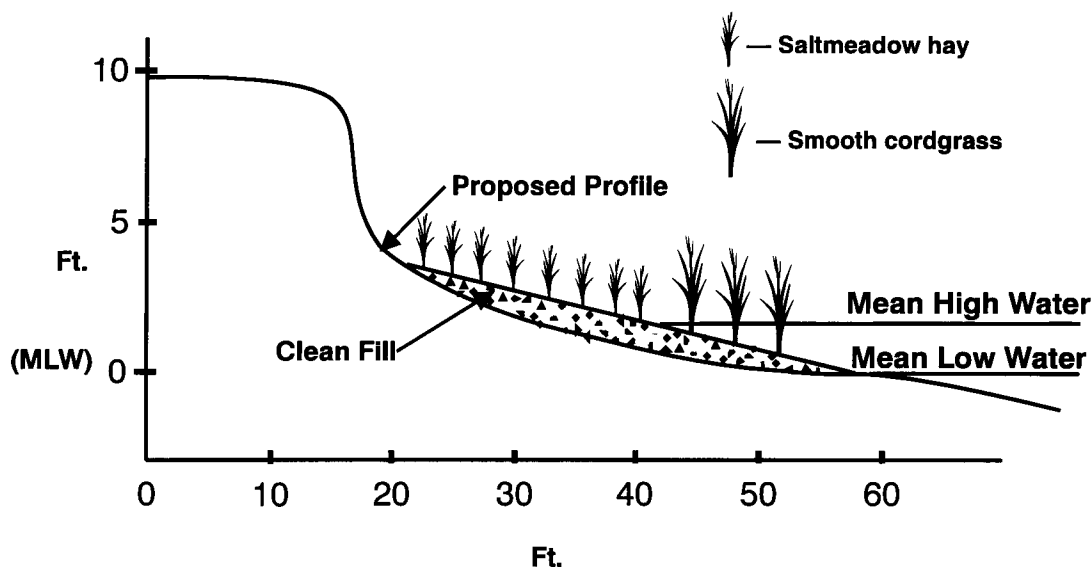


FIGURE 11. Marsh fringe establishment using sand fill for creating a growing substrate. (After Barnard and Hardaway, 1994).

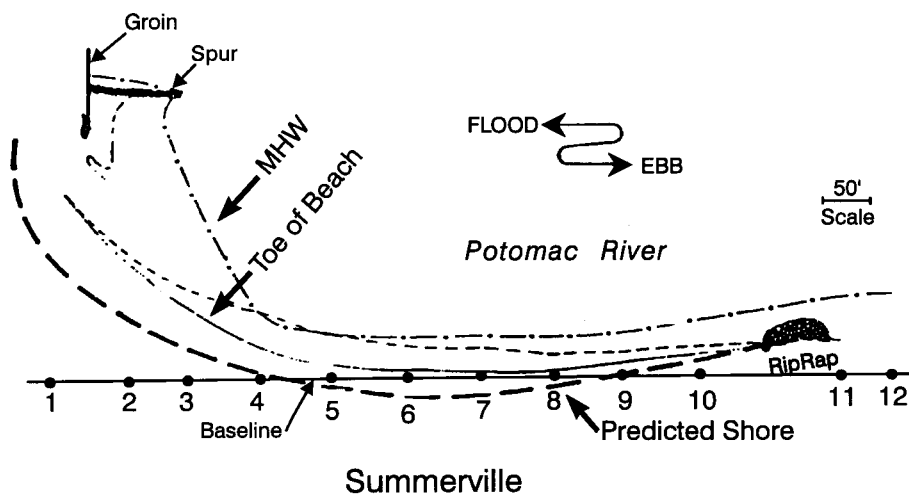
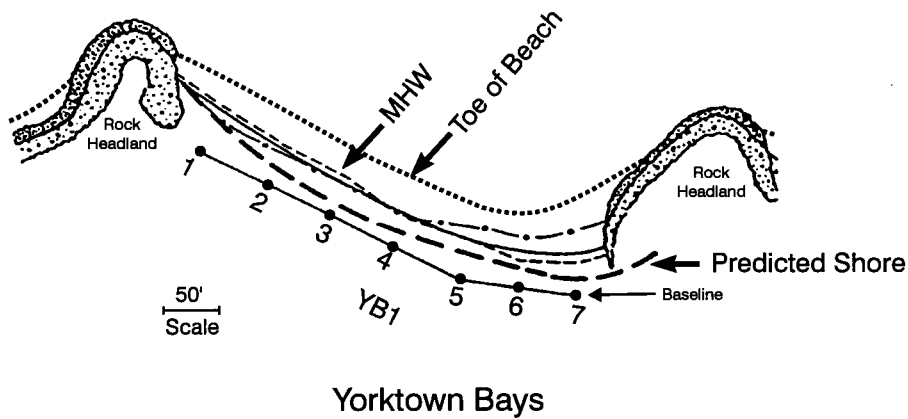
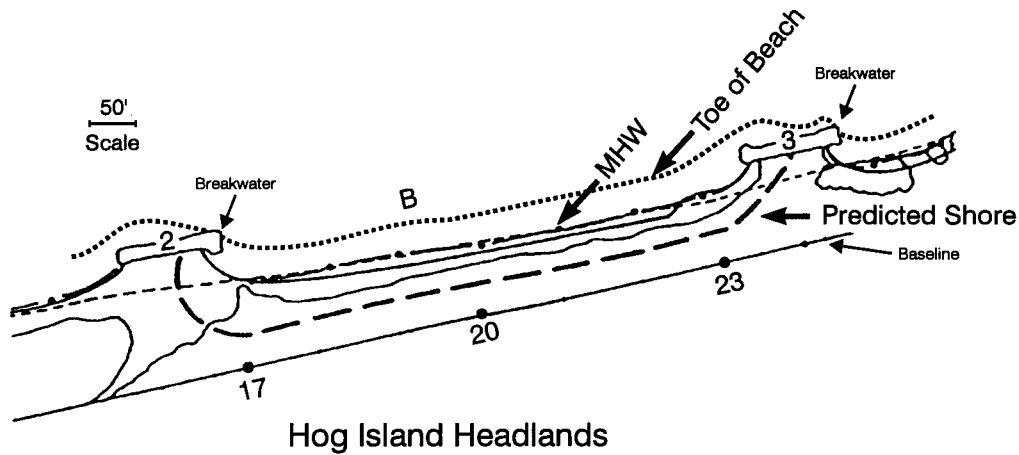


FIGURE 12. Headland control at Hog Island Headland (James River, Surry County), Yorktown Bays (York River, Yorktown), and Summerille/Staples Property (Potomac River, Northumberland County).

H. Other Elements

There are many situations where existing structures must be accounted for in designing and installing a new shoreline protection system. Adjacent structures must be incorporated in a common sense fashion especially if it differs significantly from the proposed strategy.

The use of broken concrete, a very common restoration by-product, in place of rock for shoreline protection systems can be done as long as the material is free of re-bar and conforms in dimensions to a comparable rock structure. The key is proper interlocking of concrete pieces. Long and flat slabs are cumbersome and should be broken up to produce more equidimensional sections. Broken concrete might best be used as an underlayment upon which rock armor can be placed in revetments, breakwaters and sills.

The use of poured or placed concrete seawalls is beyond the scope of this report. Concrete seawall construction is very site specific and should be designed by a qualified shoreline professional.

There are other erosion control methods in limited use around the shorelines of Chesapeake Bay which utilize other construction materials such as concrete forms, gabions and plastic bags. These methods are used by landowners who desire an initially cheaper treatment method. However, design elements must still be adhered to and long term maintenance should be expected. What we have portrayed are the more common, reasonably sound methods used for shoreline protection with a discernible track record. The preference for stone over wood is a simple fact of the long term durability of stone if properly designed and installed. However, many applications are more practically treated with traditional bulkhead, especially in fetch limited situations.

VI. Application of Shoreline Strategies

A. Introduction

When shore zone features that dictate upland bank stability (i.e. beach, fringe marsh, etc.) become too narrow to protect the upland region, erosion is the result. Shoreline erosion control is simply providing a man-made shore zone feature to protect the upland. The level of protection will in large part be determined by the size and placement of the shore protection system for a given storm scenario.

There are three basic approaches when designing a shoreline protection system:

1. **Defend** an eroding bank with a defensive structure such as bulkhead, seawall or revetment.
2. **Maintain** and/or enhance an existing shore zone feature such as a marsh fringe or beach that is presently offering a limited amount of protection. This can be accomplished by a marsh toe revetment, sill or breakwater system.

3. **Create** a shore zone system of beaches and marsh fringe. This is best done with a breakwater system or sill. Beach nourishment is usually necessary to provide the proper template for a beach and marsh substrate.

The dimensions of any shore protection system are dependent on wave climate, costs, what is being protected and what level of protection is desired (i.e. for a design storm surge and wave height).

B. Low Wave Energy

In the low wave energy environments (e.g. small tidal creeks), shore types are usually slowly eroding upland sediment banks or marshes. Shorelines with a sufficiently wide marsh fringe generally have little or no problem with upland bank erosion because established marsh fringes will absorb most of the low wave energy before it can reach the upland banks.

Shorelines that have exposed and eroding upland banks most likely had a marsh fringe in the past. However, the marsh has slowly eroded away leaving the base of the upland vulnerable to wave attack. Often times on low energy shorelines, the base of bank (BOB) is eroding and the upper bank face is relatively stable as evidenced by vegetation. In these cases the bank does not require grading and only the base need be protected.

In many instances overhanging tree limbs shade out the marsh fringe leaving the base of the upland banks vulnerable to even the slightest wave action. It is also in the low energy regime that boat wakes may present a problem and be a dominant factor in shoreline erosion.

Recommended erosion control measures in the low energy wave regime include marsh planting and bank grading, marsh toe revetments, small stone breakwaters or sills (to maintain beach fill) and small stone revetments or bulkheads. Something as simple as pruning overhanging tree limbs to allow better sunlight may be the answer where a sparsely vegetated fringe already exists.

The use and enhancement of vegetation both on the upland and the shoreline are highly recommended, because vegetation filters sediment and nutrient-laden storm runoff and offers an erosion resistant turf (Barnard and Hardaway, 1994). Established marsh fringes also denitrify nutrient laden water from groundwater seeps and springs. With fetch exposures of less than 1/2 nm, marsh fringe establishment is a very viable option. If there is an existing narrow marsh, then it can be enhanced with additional plantings or a low sill.

A marsh toe revetment (MTR) is used to protect an eroding marsh fringe that is presently protecting the upland. A rock toe wedge placed against the peat scarp over filter cloth may be sufficient in lower wave energy areas. As fetch exposures increase toward 1 nm, the use of a splash apron (3 to 5 ft wide) as a landward extension across the top of the marsh scarp

is recommended. The splash apron will help prevent scouring of the marsh peat behind the MTR which can cause landward migration of the rock and reduce the height of the structure, adversely impacting its effectiveness. Rocks should be at least Class I rip-rap (50 to 150 lbs.) (Virginia Department of Highways and Transportation, 1982) (VDOT).

A sill may be most effective in a situation where the existing marsh is inadequate or no marsh or little beach exists and the BOB is eroding. A sill is generally placed at or near MLW over filter cloth with some sand fill in the lee to provide a substrate for marsh establishment. The height of the sill should be at least equal to mean high water (MHW) for adequate backshore support. Again VDOT Class I rip-rap is usually sufficient.

A revetment can be used against an eroding upland bank. In the low energy regime the height of the structure will be determined by the design water level and whether the bank needs grading. Since wave heights of less than 1 ft should be expected, the armor stone can be relatively small (i.e. Class I). Also, the relatively low wave energy means that the structure elevation need only be for the design storm surge. For instance, if one is designing against a 50 yr storm surge with a high bank, the storm surge in the lower Bay area is about 6.0 ft MLW. The height of the revetment need only be about 6.0 ft MLW with a small splash apron of 3 to 4 ft. Filter cloth is recommended as an underlayment and dense vegetation should be established at the rock/upland interface.

Wood bulkheads are very popular along the tidal creeks of the Commonwealth because they allow lawns to extend essentially to the waters' edge. The "Rule of Thumb" for bulkheads is to have at least the same length of structure in the bottom as above. For 8 ft sheeting the structure should have at least 4 ft penetration below MLW. For this scenario the top of the structure would be +4 ft MLW and would be overtopped about once a year in the lower Bay region.

Groins can also be used along low energy shores. They have been successfully used in conjunction with beach fill and marsh emplantations around the bay. They can be stone or wood and are generally low profile in design. Groins may not be appropriate in areas of little or no sand supply and if utilized, accompanying beach fill is recommended.

One key element to be considered is the foundation conditions which are determined by the substrate. Soft clays and peats need to be properly accounted for with added filter layers or excavation to prevent settlement of the structure. This is particularly important with rock gravity structures like revetments, breakwaters and sills. Also, in some areas a hard marl substrate may prevent sheetpile penetration for wood bulkheads and a gravity rock structure may be more suitable.

C. Medium Energy

Medium energy wave environments are generally located along main tributaries of the Chesapeake Bay. Shoreline types typically include moderately to highly eroding upland

banks and marsh shorelines. The existing shore zone features must be wider in this environment to accommodate increased wave energy in order to have a stable upland bank.

Recommended abatement measures in the medium wave energy regime include bank grading when using bulkheads, stone revetments and headland breakwaters exploring beach fill and marsh planting. Along eroding marsh shorelines the use of marsh toe revetments and sills are recommended.

Marsh fringes cannot be adequately established along shorelines with fetch exposures of greater than about 1/2 nm. However, marsh grass growth can be established in conjunction with breakwaters and sills and should be used to create an erosion resistant turf in the lee (landward) of these systems.

Marsh toe revetments should have a splash apron when used along medium energy shorelines. It is also important to make sure the structure ends either by a return into the marsh or by designing the last 25 ft or so of structure as a free standing sill. Without these features, flanking of a MTR is likely to result in failure at the ends of the structure. Armor rock size should be minimum VDOT Class II rip-rap which ranges between 150 and 500 lbs and the use of filter cloth is recommended.

A rock sill over filter cloth can be used to enhance an existing eroding marsh by placing it far enough offshore to widen the marsh to a protective width. In the case of medium energy shorelines a marsh fringe of at between 40 to 70 ft may be needed to attenuate wave action during seasonal storm events. During more extreme events with water levels exceeding 3 ft MHW (about every 10 yrs in the lower Bay) some wave action may penetrate this system. Therefore, the sill height should be at least 1 foot above MHW.

A breakwater system can be used cost effectively along medium energy shoreline. The "weak link" in the system is the mid-bay backshore region of the beach fill shore planform. The beach width in that area should be at least 35 ft wide from MHW. Armor rock for breakwaters in the medium energy regime should be VDOT Class III rip-rap (500 to 1500 lbs). Larger rock are necessary on breakwater structures because being situated offshore, they receive a relatively higher impinging wave than shorebound structures like bulkheads and revetments. Once again the use of filter cloth as an underlayment is recommended.

One important consideration in the use of breakwaters for erosion control is the potential impacts to adjacent shorelines. Short breakwater units placed closer to shore can help abate downdrift effects when used as an interface between the main breakwater system and the adjacent unprotected shore (Hardaway et al. 1993). Also, the core elevation of the breakwater should be designed for the desired sand attachment (tombolo) elevation.

Breakwaters are not for every landowner and siting should be an important consideration. Breakwater length, gap and distance offshore will be dictated by the shore setting. Usually these systems are best utilized when there is 200 or more feet of shoreline to be treated. In-

dividual breakwater units should have crest lengths of 50 to 70 ft and crest heights ranging from 2 to 4 ft above MHW.

Revetments installed along medium energy shorelines should have at least VDOT Class II in their two armor layers. Shoreline projects that occur on the higher range of fetch exposures, especially on the lower portions of the main tributary estuaries, should consider VDOT Class III armor or larger. Revetment height and scour depth are important considerations as well. Depending on bottom conditions scour depths of up to 3 ft should be considered possible for the toe of the structure. The top of a revetment should be at least as high as the design storm surge with a splash apron of at least 4 ft. The entire structure should be underlain with filter cloth for the bedding layer to sit on.

The use of bulkheads versus stone revetments on medium energy shorelines should be carefully considered in terms of cost and performance. The “Rule of Thumb” of at least 1/2 down and 1/2 up still holds true. However, the potential for scour and increased bottom depth with time is the greatest with a vertical structure. Therefore, depth below existing MLW should be the line of penetration not the existing beach or backshore.

Along medium energy shorelines low profile groins are generally ineffective for long term shoreline protection. Longer, higher groins are considered unacceptable because of potential sand damming and downdrift impacts. If emplaced, groins and groin fields should include beach fill and at least a spur on the downdrift structure.

D. High Energy

High energy wave environments are generally located on the main stem of the Chesapeake Bay. Shoreline types include highly eroding upland banks, sand beaches and marsh shorelines. The increased fetch in these areas results in larger waves impacting the shoreline under storm conditions. This increase in the size of waves results in a concomitant increase in the cost for a properly designed structure. Protective measures such as bank grading, marsh establishment, and beach fill may be used in these areas, but only in combination with headland breakwaters, sills and groins. Stone revetments, seawalls and bulkheads require more runup and overtopping considerations than similar structures along medium energy shores.

Marsh toe revetments can be used but with the increased rock size requirements, a sill structure should be considered. Armor rock should be VDOT Class III for sills along high energy shorelines. Increased armor size increases the thickness of the structure to accommodate two layers of armor stone. Again, filter cloth is recommended.

Breakwater systems along high energy shorelines are best utilized when there is at least 300 feet of shoreline to be considered. Beach fill is usually necessary to provide the proper design beach planform. The mid-bay beach width should be at least 50 ft from MHW to BOB with an elevation of 3 to 4 ft MHW at the backshore BOB interface. Armor stone

should be minimum VDOT Class III but a better range is 2000 to 4000 lbs to provide long term stability. On extreme exposures, such as along Willoughby Spit, armor should be even larger. Individual breakwater units should have crest lengths of 70 ft to 200 ft and crest elevations of 3 to 5 ft MHW depending on project goals.

Once again, interfacing a breakwater system into adjacent shorelines is critical for long term continuum of reach control of shoreline erosion. That is why long stretches of shoreline are best treated and ended at a convenient reach break such as an existing shoreline structure, inlet jetty or a natural headland. Planting the backshore and tombolo area of a breakwater system is necessary to create an erosion resistant turf. A low dune can also be established to provide sand storage for an extreme storm event.

Revetments built along high energy shores need to be properly sized to withstand expected storm surge and accompanying wave conditions. Armor stone should be at least VDOT Class III but larger ranges are recommended. Depending on site conditions, scour depths of up to 4 ft should be accounted for either by toe excavation or a wide toe apron of at least 6 ft. Splash aprons should also be at least 6 ft. wide. The larger size of armor rock should be placed at the toe of the structure for support.

Return sections for revetments should be built well into adjacent banks and could even be free-standing (trapezoidal in cross-section like a breakwater) as shoreline erosion will proceed on adjacent unprotected shorelines. Severe flanking will cause a structural failure of a revetment wall but not a free-standing design. Once again treating longer reaches of shoreline is a more cost effective means of erosion control.

Bulkheads built along open high energy shorelines should be fairly massive in dimensions. Potential scour problems can be treated with the addition of short groins. Some sand may be trapped by the groins which will help reduce storm induced scour. Adequate return walls must be included so backfill is not lost leading to total structural failure.

Groin fields have been effectively used along high energy shorelines because there is often more sand available to the littoral system due to high historic rates of erosion. Drownrift impacts can be minimized with the use of spurs. It should be emphasized that during storm conditions, it is the encapsulated beach that is the wave attenuating element and not the groin itself. Long term beach maintenance, in the form of nourishment, should be anticipated as adjacent shorelines are structurally treated and sand sources reduced within a given reach.

E. Other Comments

Headland control can be applied to all wave energy regimes but is more appropriate along medium and high energy shorelines where cost can become a factor. Eroding agricultural and unmanaged wooded shorelines are excellent applications for headland control. Establishing or enhancing headlands at strategic locations and allowing adjacent shoreline to

erode to an ultimate stable planform is a viable, cost effective erosion management option. The addition of beach sands to a shore reach will enhance the headland control method and help create a stable shore configuration.

Beach nourishment as a sole method for erosion is not discussed in detail here because it usually falls to localities to maintain a public beach. However, where there is a need near a navigation channel, suitable dredge material is a very viable means of creating a protective beach and dune system. If dredging is done somewhat frequently, then the dredge material may be all that is needed. Dredged material placement in conjunction with breakwaters or groins can make a good situation better by increasing residence time of the sand along a reach of shore.

VII. Summary

These management strategies are intended to address the goals of both private and public shoreline property owners in Chesapeake Bay and to significantly reduce shoreline erosion in a cost-effective and environmentally acceptable manner. It must also be kept in mind that these are general guides and that a site specific analysis is necessary in each case. Wetlands Boards are urged to evaluate the long term and cumulative impacts of shore protection on a reach basis and if possible, monitor to some degree, the effectiveness of previous installations within a reach.

VIII. Other Sources of Information

There are several publications that deal with shoreline erosion control in Chesapeake Bay. The following is a list of available literature and the agency to contact:

Shoreline Development BMP's: Best Management Practices for Shoreline Development Activities which Encroach In, On, or Over Virginia's Tidal Wetlands, Coastal Primary Sand Dunes and Beaches and Submerged Lands. Produced by the Virginia Marine Resources Commission, 2600 Washington Ave., Newport News, Virginia.

Shore Erosion Control: A Guide for Waterfront Property Owners in the Chesapeake Bay Area. Contact: The District Engineer, U.S. Army Corps of Engineers, P.O. Box 1715, Baltimore, Maryland 21203.

Gloucester County: Shoreline Erosion Control Guidelines. Produced by the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, Richmond VA.

Shoreline Erosion in Virginia, C.S. Hardaway and G.L. Anderson, Sea Grant Program, Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, VA.

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ADDITIONAL READING

Contents

Suggested Readings List

Virginia Wetlands Historical Summary

Informal Suggestions for Conducting a Public Hearing

Additional Readings and Resources

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Virginia Wetlands Historical Summary

Background

- 1963 Massachusetts passes first wetlands protection law.
- 1966 Virginia legislature establishes special Marine Resources Study Commission.
- 1967 Study Commission recommends special study on marsh and wetlands.
- 1968 Legislature directs VIMS to conduct the wetlands study.
- 1969 VIMS publishes report (*Coastal Wetlands of Virginia, Interim Report*, Wass and Wright, Dec. 1969).
- 1970-72 Public hearings, drafting of Wetlands Act and research (Marcellus, Boon, Lynch) to determine wetlands definitions and upper limits of wetlands.
- 1972 Publication of *Tidal Datum Planes and Tidal Boundaries and Their Use as Legal Boundaries*, Boon and Lynch, 1972.
Wetlands Act enacted, to become effective 1 July 1972.
Publication of *Coastal Wetlands of Virginia, Interim Report No. 2*, Marcellus, July 1972.
First local wetlands boards established and VIMS commences training workshops for boards.
VIMS also commences wetlands inventory.
- 1973 VIMS publishes management manual for wetlands boards (*Local Management of Wetlands-Environmental Considerations*, Marcellus, Dawes, Silberhorn, June, 1973).
First county inventory published (*Lancaster County Tidal Marsh Inventory*, Silberhorn, December, 1973).
- 1974 VIMS publishes recommended wetlands guidelines (*Coastal Wetlands of Virginia, Interim Report No. 3, Guidelines for Activities Affecting Virginia Wetlands*, Silberhorn, Dawes, Barnard, June 1974).
Two more county inventories published (Mathews, York; both Silberhorn).
Wetlands Guidelines promulgated by VMRC.
Wetlands of Back Bay and the North Landing River and its Tributaries added by amendment to Wetlands Act.
- 1982 Nonvegetated wetlands added to Wetlands Act by amendment.
Boards expanded from 5 to 7 members (optional).
Grandfather Sunset Clause added.

(over)

- 1983 *Wetlands Guidelines* revised to include nonvegetated areas.
New community types added to classification system.
- 1987 Wetlands Act amended to allow reporting, site inspections, notice to comply and stop work orders.
- 1989 Wetlands Mitigation-Compensation Policy adopted by VMRC.
State non-tidal wetlands legislation dies in committee.
- 1990 Wetlands Act amended to allow court ordered civil penalties not to exceed \$25,000 for each day of violation.
In lieu of any civil penalty, civil charges of up to \$10,000 for each violation may be ordered by the Marine Resources Commission or Wetlands Board.
Restoration hearings were also authorized.
- 1991 Tidal Marsh Inventory for City of Chesapeake completed and published (last of original series). Wetlands inventories to be maintained and updated using computer-based Geographical Information System (GIS).
VIMS Wetlands Program produces "Virginia Wetlands Management Handbook" and Wetlands Educational Curriculum.
- 1992 Wetlands and Dunes Acts "streamlined," along with other legislation, by the Division of Legislative Services.
- 1995 "Virginia Wetlands Management Handbook" is revised and updated.

Informal Suggestions for Conducting a Public Hearing

Contents

1. Arrangements prior to meeting
2. General meeting format
3. Helpful hints

Just Prior to Meeting, Staff Should:

- 1. Telephone reminder to Board Members**
- 2. Confirm availability of meeting chamber**
- 3. Check lights and speakers**
- 4. Set out name plates, pads, and pencils**
- 5. Bring appropriate area maps**
- 6. Bring state and local laws**
- 7. Bring photographs of site**
- 8. Post agendas for public**

Holding Public Meeting

1. Meeting called to order
2. Attendance recorded, quorum confirmed
3. Chair explains purpose of meeting, reads opening statement*
4. Chair states where agendas are posted
5. Chair calls for comments, questions, corrections on minutes
6. Chair inquires about old business

*Many boards choose to read the policy statement at the beginning of the Wetlands Act.

Hearing Items

1. Chair may shift hearing order, administer oaths, limit presentations and discussions
2. Chair or staff state case number and presents brief description of proposed project
3. Chair or staff read VIMS report into record
4. Applicant or representative speaks
5. Others speak
6. Chair closes hearing to public

Board Discussion

1. Chair asks for comments from Board Members
2. Record should display a consideration of:
 - A. Social concerns
 - B. Economic concerns
 - C. Physical concerns
 - D. Environmental concerns
3. Chair asks for staff evaluation/recommendation
4. Chair asks if any additional comments from VIMS
5. Chair entertains motion

*A benefits vs. detriments format is recommended

Motions may include:

1. Approval as submitted
2. Approval in modified form
3. Approval with bonding or letter of credit required
4. Denial
5. Denial without prejudice
6. Direct applicant to provide more information
7. Defer decision for up to 30 days

After Board Decision

1. Chair informs applicant and audience of appeal process
2. Time limit on permit

Helpful Hints

1. Require speaker from public to approach Board, state name/address, speak, return to audience
2. Limit speakers to issues germane to Wetlands Board
3. Allow everyone an opportunity to speak
4. Direct all public comment or questions to Board
5. Discourage interaction between audience and speaker
6. State decision rationale in benefit vs. detriment format