

**“SUBMERGED AQUATIC VEGETATION (SAV) TRANSPLANTATION  
GUIDELINES”**

**REGULATION 4 VAC 20-337-10 ET. SEQ.**

**PREAMBLE**

This regulation is intended to offer technical assistance and guidance to applicants interested in transplanting submerged aquatic vegetation (SAV) in Virginia waters for restoration, mitigation or other purposes. This regulation will also provide the Marine Resources Commission with an additional management tool for evaluating SAV transplantation requests to ensure that these projects have the highest likelihood of success while minimizing impacts to this important resource and reducing potential use conflicts associated with the transplantation activities.

This regulation is promulgated pursuant to the authority contained in §28.2-103 and 28.2-1203 of the Code of Virginia. The effective date of this Regulation is November 1, 2000.

**4 VAC 20-337-10. Definitions.**

For the purposes of these guidelines, the following words and terms shall have the following meaning unless the context clearly indicates otherwise:

“Commission” - the Virginia Marine Resources Commission

“Donor bed” - a naturally-occurring area of SAV growing on State-owned subaqueous bottom.

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“Enhancement” - the increase in areal coverage or improvement in habitat quality of existing SAV beds.

“Mitigation” - activities, such as enhancement and restoration, which are undertaken to reduce or eliminate the adverse effects on SAV by permitted projects.

“Restoration” - the return of SAV to unvegetated bottom which historically supported SAV.

“Submerged Aquatic Vegetation” (“SAV”) - any of a diverse assemblage of underwater plants found in the shoal areas of Chesapeake Bay, Virginia coastal bays and river tributaries, primarily eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*), and including, but not limited to: Eurasian watermilfoil (*Myriophyllum spicatum*), redhead grass (*Potamogeton perfoliatus*), wild celery (*Vallisneria americana*), common elodea (*Elodea canadensis*), water stargrass (*Heteranthera dubia*), coontail (*Ceratophyllum demersum*), water-weed (*Egeria densa*), muskgrass (*Najas minor*), pondweeds (*Potamogeton sp.*), and naiads (*Najas sp.*).

“Test plot” - a small area where transplanted SAV can be monitored to demonstrate the likelihood of success of larger-scale planting efforts.

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“Transplantation” - the removal of SAV from a donor bed or nursery-grown location in order to relocate the plants to other areas which historically supported, or have the potential to support, SAV populations for enhancement or restoration purposes.

4 VAC 20-337-20. Background.

Submerged aquatic vegetation (SAV) is an important natural resource which provides a variety of ecological functions, including stabilizing sediments, physically baffling wave energy, reducing water column turbidity, recycling water column nutrients, and providing high levels of primary and secondary production. SAV is considered to be of extremely high habitat value to commercially and recreationally important species of fish and shellfish, and is considered to be the primary settling habitat for young blue crabs in Chesapeake Bay. SAV is estimated to have historically covered approximately 600,000 acres of the entire Bay. However, severe declines were noted in the 1960's and 1970's, likely due to increasing nutrient and sediment inputs from development within the watershed. Natural revegetation has occurred in some areas, yet many areas remain either completely unvegetated, sparsely vegetated, or contain lower diversity of species than what occurred historically. As of 1998, SAV covers only about 63,000 acres of the Bay.

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The Commission’s *Subaqueous Guidelines*, in effect since 1976, stress the need to avoid impacts to SAV when permitting projects over State-owned bottom. In addition, since 1987, various governmental agencies around the Bay have adopted policies and laws to help protect and restore SAV from further loss. In an effort to mitigate the unavoidable impacts of permitted projects on SAV, and assist interested parties in designing SAV restoration projects, the Virginia Institute of Marine Science (VIMS) has developed general and specific criteria for transplantation activities designed to enhance or restore the Bay’s SAV resources. The *SAV Transplantation Guidelines* contained herein are designed to ensure that any such proposed activities have the highest likelihood of success while minimizing the potential for adversely impacting this sensitive and valuable marine resource.

**4 VAC 20-337-30. Permitting**

Any removal of naturally-occurring SAV from State bottom, or planting of nursery stock SAV, for any purpose, except as part of a prior-approved research or scientific investigation, shall require prior approval by the Commission. In determining whether or not to grant approval for SAV removal or planting, the Commission shall be guided by §28.2-1205 of the Code of Virginia and the *SAV Transplantation Guidelines*, or any new and improved methodologies as approved by the Commission. Permits will be valid for a period of three (3) years, but may be revoked

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upon a finding by the Commission that the Permittee failed to meet the monitoring and/or reporting requirements, or deviated from the specific activities authorized by permit. Permit fees and royalties shall be assessed in accordance with §28.2-1206 of the Code of Virginia. Extraction of plants for commercial resale purposes is prohibited. Out-of-state and out-of-watershed transfers will be critically evaluated.

Any request to remove SAV from or plant SAV upon State bottom shall be accompanied by a completed Joint Permit Application (JPA), submitted to the Commission, which must include specific information which is critical to properly evaluate the probabilities of transplantation success, while minimizing impacts to established donor bed populations. This information also allows scientists and regulators to track the progress of various projects, and learn from previous projects which methods and sites are promising for further restoration or enhancement efforts.

The specific information required will include the following:

A. Project specifics

Applicants for collections of wild stock SAV for transplanting should include a description of the purpose of the activity. This includes a classification of the activity as a research project.

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educational or environmental organization restoration project, or mitigation project for permitted SAV impacts. The exact location of the donor and transplant site(s) should be indicated on a chart or map, including latitude and longitude. The species and quantities of plants to be collected and/or transplanted should be reported, as well as the methods planned for collection, transport and transplanting. Detailed criteria for each of these issues are included in the next sections.

B. Site selection

To evaluate the suitability of the proposed site, the following factors should be considered:

- 1) Site should be within salinity range for the species to be transplanted.
- 2) Site should historically have supported SAV, as evidence through historical photographs, surveys, or other sources of information.
- 3) Planting depths should be limited to shallow waters. A depth range of 0.75 meters to 1 meter (MLW) is recommended for eelgrass, shallower for other species. No plantings will be authorized in the intertidal zone.
- 4) Sediments should be sandy, with a lower silt/clay content (less than 5% organics).

Resuspension, resulting in reduced light levels, is less likely with sandy sediments.

However, in protected areas, SAV has been found to survive well in muddier substrates.

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- 5) Currents should be less than 30 cm/sec, as transplants are vulnerable to being uprooted for several days until roots and rhizomes begin to grow and anchor the plant. Sites that are protected from large waves are more likely to become established.
- 6) Any enclosure or other protective structure proposed must be described in detail, with accompanying sketches and notes.
- 7) Applicants should be able to demonstrate that a site is likely to succeed. This can be done through reporting of the success of past plantings at the area, the presence of natural grassbeds within 500 meters of the site, or by test plot survival for 1 year. If the proposed site has never been planted and is far from existing beds, collections and transplantings may be limited to small scale test plots until success can be demonstrated. If plants survive beyond 1 year, larger transplanting efforts could be considered by the Commission. It is important to note that the purpose of requiring test plots for transplant projects is to protect natural beds from net losses in case the transplant site is unsuitable for SAV survival. However, if the source material for a project is from a nursery or a source other than natural donor bed collections, the risk to existing beds is removed and restoration may be considered for larger scale projects even if initial test plots survival is poor (i.e. less than 50%).
- 8) Removal of SAV from, or planting or transplanting of SAV to, areas of privately leased oyster planting ground will not be authorized without the express written consent of the

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leaseholder.

C. Transplanting: source, technique and timing

To reduce the impacts on natural beds of SAV, plants for restoration projects should be obtained from aquatic nursery or greenhouse stock if at all possible. Currently, there are several nursery-grown sources of freshwater species in the Chesapeake region. However, if wild stock collections from natural donor beds are required (such as with eelgrass), the following criteria should be met:

- 1) The donor beds should be a density class of “3” or “4” according to latest VIMS aerial survey, and should be from larger beds so that the amount of grass removed from a bed relative to total bed size is minimized. Care should be taken to minimize secondary effects of removal (e.g. trampling, propeller scarring).
- 2) Donor beds should be of similar salinity to the transplant site.
- 3) Plants should be removed by hand. However, excavation by shovel is permissible provided each hole is separated by at least 1 meter. By counting the number of plants/shovel, an estimate can be obtained of the effort required to collect the number of plants needed for the project. Plant collections should try to minimize the amount of material removed from a bed, while still ensuring that enough plants are collected to complete the project.



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- 4) Plantings should occur within 48 hours of collection, but preferably within 24 hours, as plants lose vigor quickly.
- 5) For eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*), collections should be conducted between September 15 and November 30, but preferably between October 1 and October 30.
- 6) For freshwater SAV species, collections should occur between mid-to-late April and late June.
- 7) Until a transplant site has been demonstrated to be successful, plantings should be restricted during the first year to small-scale test plots. Test plots should be approximately 2 meters by 2 meters in size and shall be based on the scope of the individual project, with a minimum number of three (3) test plots per site. The methods, number of plants/plot, and spacing used in the test plots will vary depending on species, but should be the same methods and spacings used for larger transplant efforts.

D. Monitoring

Monitoring of the plot(s) will enable the success of the transplanted test plot(s) and long-term adequacy of the site(s) for additional future restoration efforts to be evaluated. At a minimum, monitoring shall occur as described below and shall include the information listed:

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- 1) An initial site visit should be conducted between one week to one month following transplanting to evaluate the success of the planting process. For eelgrass plantings, additional site visits should occur in April, May, or early June, and again in September or October of the following year to assess survival and growth. For freshwater SAV, additional monitoring should occur in mid-late summer.
- 2) Monitoring information required includes: the number of planting units present, shoot density counts, percent cover and aerial extent, or other appropriate relative measure of abundance, of each plot, and should be recorded during each site visit during the monitoring period. Additional information should include whether new shoots or flowers have been produced, and any other relevant field observations which may help explain any potential failures (grazing by rays, waterfowl, severe storm events, etc).
- 3) If after one full year plants persist (i.e. greater than 50% of the initial plantings have survived and grown), the site can be considered acceptable for a second year application of transplanting on a larger scale. If few plants survive the first year, larger scale transplantings should be discouraged. However, additional test plots may be permitted.
- 4) For successful sites, additional monitoring will be required once during the growing season for a minimum of two (2) years past the time of initial planting.

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5) Monitoring reports must be submitted to the Commission annually, by December 31, so that the monitoring information may be disseminated to and reviewed by VIMS and all other interested parties. Failure to report as required may result in permit revocation by the Commission.

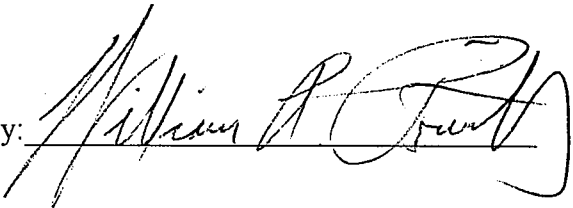
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This is to certify that these guidelines were approved by the Commission at its regularly scheduled meeting on October 24, 2000 and is recorded in the official minutes of that meeting.

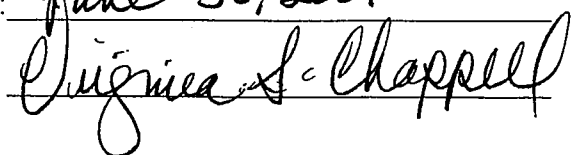
COMMONWEALTH OF VIRGINIA  
MARINE RESOURCES COMMISSION

By: 

Commissioner

William A. Pruitt

Subscribed and sworn before me on this 30<sup>th</sup> day of November, 2000

My Commission expires : June 30, 2001  


Notary Public