

CHAPTER 11-56 APPENDIX A

NONPOINT SOURCE POLLUTION CONTROL REQUIREMENTS FOR AGRICULTURE

1. General Applicability

(a) Requirements defined in this chapter shall be implemented by persons identified in section 11-56-03, as follows:

- (1) The requirements of this Appendix apply to all publicly-owned agricultural lands or facilities comprising 1,000 or more contiguous acres under common ownership or purpose and with operations identified in the specific applicability paragraphs in section 3.
- (2) Other agricultural lands or activities may be subject to the requirements of this Appendix at the discretion of the director based on risk of harm to human or environmental health, as determined by the director. Other agricultural lands or activities determined by the director to be subject to the requirements of this Appendix will be provided written notice by the director.

(b) For all other agricultural lands not required to implement the best management practices or management measures identified in this Appendix, the director encourages voluntary development of a Water Pollution Prevention Plan to facilitate the implementation of the management measures contained in this Appendix.

2. Incorporation of Management Measures into Water Pollution Prevention Plans

(a) The owner or operator of an agricultural activity or facility subject to regulation shall incorporate water pollution reducing management measures into a Water Pollution Prevention Plan. At a minimum, Water Pollution Prevention Plans shall incorporate all appropriate management measures to prevent and control the specific sources of pollution identified in section 3 of this Appendix.

(b) The owner or operator of an agricultural activity or facility subject to this Appendix shall identify which management measures in section 3 are required based upon the specific applicability of each management measure and its subparts. Each management measure identified as being applicable shall be implemented as detailed in the Water Pollution Prevention Plan developed pursuant to this chapter.

(c) Authorized management practices that satisfy management measure requirements shall be identified in the Water Pollution Prevention Plan.

(d) For discharges identified in section 11-56-03 that result from activities identified in this Appendix, where such discharges or activities are subject to an alternative regulatory mechanism that accomplishes the objectives of one or more of the management measures in section 3 of this Appendix, the Water Pollution Prevention Plan may include a reference to the alternative regulatory mechanism in lieu of the specified management measure.

(e) For an owner or operator of an agricultural activity or facility subject to this Appendix who develops and implements a soil conservation plan approved by the local soil and water conservation district, the soil conservation plan shall be considered an equivalent of a Water Pollution Prevention Plan developed to address sediment control

under subsection 3(a) if the soil conservation plan requires implementation of sediment control management measures identified in subsection 3(a), and effectively controls discharges of sediment to State waters. To the extent that such a soil conservation plan approved by the local soil and water conservation district also effectively addresses activities subject to management measures for other potential pollutants identified in subsections 3(b) - 3(e), the soil conservation plan shall be considered an equivalent Water Pollution Prevention Plan for those management measures. Applicable management measures not addressed in the soil conservation plan must be addressed in a Water Pollution Prevention Plan, which shall be submitted to the department following the procedures in section 11-56-06.

3. Management Measures Required for Specific Sources of Pollution

(a) Erosion and Sediment Control Management Measure

- (1) Specific Applicability. This management measure applies to agricultural activities that may cause erosion, including, but not limited to:
 - (A) Crop production, including specialty crops and nursery crops;
 - (B) Agricultural irrigation;
 - (C) Grazing and pasturing;
 - (D) Developing and/or maintaining orchards;
 - (E) Permanent hayland maintenance; and
 - (F) Agroforestry.

Roads, drainage systems, and other infrastructure operated and maintained in support of the above agricultural activities and potentially affecting nearby streams, wetlands, or coastal areas are subject to the requirements of this management measure.

- (2) Purpose. The purpose of this management measure is to preserve soil and reduce the mass of sediment reaching a water body, protecting both agricultural land and water quality.
- (3) General Requirements
 - (A) Design and implement any combination of management practices in paragraph (4) to minimize the mobilization of sediment to surface waters, or
 - (B) Design and install a combination of management and structural practices to settle the settleable solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.
 - (C) All sources of sediment and other water pollutants associated with activities identified in paragraph 3(a)(1) (Specific Applicability) shall be accounted for and mitigated through identification and implementation of appropriate authorized management practices to prevent and abate water pollution to the maximum extent practicable.
- (4) Authorized Management Practices

- (A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.
- (B) Authorized management practices include but are not limited to:
 - (i) Conservation practice standards pertaining to erosion and sediment control as described in the eFOTG; and
 - (ii) Erosion and sediment control practices identified in *National Management Measures to Control Nonpoint Source Pollution from Agriculture* (EPA, EPA-841-B-03-004, July 2003).

(b) Animal Feeding Operations Wastewater and Runoff Management Measure

(1) Specific Applicability

- (A) This management measure applies to all new animal feeding operations subject to this regulation regardless of size and to all existing animal feeding operations that contain the following number of head or more:

Animal Type	Head
Beef Feedlots	50
Stables (horses)	100
Dairies	20
Layers	5,000
Broilers	5,000
Turkeys	5,000

Animal Type	Head
Swine	100

Existing facilities containing fewer than the number of head listed above are not subject to the requirements of this management measure unless otherwise notified by the director.

- (B) Facilities that are required by Federal regulation 40 CFR 122.23 to apply for and receive discharge permits are excluded. That section applies to "concentrated animal feeding operations," which are defined in 40 CFR 122.23(b). In addition, 40 CFR 122.23(c) provides that the Director of a National Pollutant Discharge Elimination System (NPDES) discharge permit program may designate any animal feeding operation as a concentrated animal feeding operation upon determining that it is a significant contributor of water pollution. This has the effect of subjecting the operation to the NPDES permit program requirements. If an animal feeding operation has an NPDES permit, then the facility covered by the NPDES permit is exempt from this management measure.

- (2) Purpose. The goal of this management measure is to prevent the discharge of wastewater and contaminated runoff to State waters from animal feeding operations.

(3) General Requirements

- (A) Contain both the wastewater and contaminated runoff from animal feeding operations that is caused by storms up to and including an acute 25-year, 24-

hour frequency storm event. Storage structures must be of adequate capacity to allow for proper wastewater utilization and constructed so that they are impervious and prevent seepage to groundwater.

(B) Provide for storage, treatment, and/or application methods such that the monthly volume of wastewater and contaminated runoff produced and stored is, at a minimum, 10% less than the monthly rate of wastewater and contaminated runoff use or disposal. The storage volume necessary to meet this requirement shall be determined using a technical evaluation that addresses the following elements:

(i) Information to be used in the design of the open manure storage structure including, but not limited to, the following: minimum storage periods for rainy seasons, additional minimum capacity for chronic/prevaling rainfalls, applicable technical standards that prohibit or otherwise limit land application during unsuitable soil conditions (e.g., saturated ground), planned emptying and dewatering schedules, additional storage capacity for manure intended to be transferred to another recipient at a later time, and any other factors that would affect the sizing of the open manure storage structure.

(ii) Climate data for the past 10 years at the area local to the regulated animal feeding operation,

including average monthly precipitation and evaporation rates.

- (iii) The number and types of animals, anticipated animal sizes or weights, any added water and bedding, any other process wastewater, and the size and condition of outside areas exposed to rainfall and contributing runoff to the manure storage structure.
 - (C) Manage stored wastewater, contaminated runoff, and accumulated solids from the facility through an appropriate waste utilization system that is operated and maintained to prevent discharges of wastewater, contaminated runoff, and accumulated solids to State waters.
- (4) Authorized Management Practices
- (A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.
 - (B) Authorized management practices include but are not limited to:
 - (i) Conservation practice standards pertaining to AFOs as described in the eFOTG; and
 - (ii) Animal Feeding Operation management practices identified in *National Management Measures to Control Nonpoint Source Pollution*

from Agriculture (EPA, EPA-841-B-03-004, July 2003).

(c) Nutrient Management Measure

(1) Specific Applicability

(A) This management measure applies to activities associated with the application of nutrients to agricultural lands, including manure, wastewater, contaminated runoff, and commercial fertilizers.

(B) Lands that receive manure, wastewater, or contaminated runoff and are subject to the requirements of an NPDES permit for concentrated animal feeding operations are excluded from this management measure.

(2) Purpose. The goal of this management measure is to reduce water pollution caused by nutrients (primarily nitrogen and phosphorous) by minimizing nutrient losses and waste from agricultural lands and activities.

(3) General Requirements

(A) Prevent the discharge of excess nutrients and contaminated storm water to State waters through:

(i) Containment of wastewater and waste products;

(ii) Isolation of wastewater, waste products, or materials from contact with storm water; and

- (iii) Recycling of nutrients through environmentally beneficial methods.
- (B) Nutrient management plans. A site-specific nutrient management plan shall be developed, implemented, and updated as often as necessary to reflect current operational conditions to:
 - (i) Apply nutrients at rates necessary to achieve realistic crop yields;
 - (ii) Improve the timing of nutrient application; and
 - (iii) Use agronomic crop production technology to increase nutrient use efficiency.
- (C) Nutrient management plans must contain the following core components:
 - (i) Farm and field maps showing acreage, crops, soils, and waterbodies.
 - (ii) Realistic yield expectations for the crop to be grown, based on achievable yields for the crop. Individual producer constraints and yield records for nearby operations may be considered in determining achievable yields.
 - (iii) A summary of the nutrient resources available to the producer, which at a minimum must include: soil test results for pH, phosphorous, nitrogen, and potassium; an appropriate mix of soil (pH, nitrogen, phosphorous,

potassium) and/or plant tissue testing or historic yield response data for a particular crop; nutrient analysis, including the nutrient value and the rate of availability, of fertilizer, manure, sludge, mortality compost, effluent (if applicable), or other source of nutrients; and other significant nutrient sources, such as irrigation water.

- (iv) An evaluation of field limitations based on environmental hazards or concerns, such as lava tubes, shallow soils over fractured bedrock, soils with high leaching or runoff potential, lands near surface water, highly erodible soils, and shallow aquifers.
- (v) Land application setbacks appropriate to prevent the discharge of nutrients based on identified field limitations and other site specific conditions, including practices such as field diversions or other structures that intercept and direct runoff to State waters.
- (vi) Best available information must be used to establish the appropriate mix of nutrient sources and requirements for the crop. The limiting nutrient concept may be used to establish the mix of nutrient sources and requirements for the crop based on a realistic yield expectation.

- (vii) Identification of timing and application methods for nutrients to provide nutrients at rates necessary to achieve realistic crop yields, to reduce nutrient losses to the environment, and to avoid nutrient applications as much as possible during periods of leaching or runoff.
 - (viii) Provisions for the proper calibration and operation of nutrient application equipment.
 - (ix) Schedule for soil testing and/or plant tissue testing to estimate phosphorous, nitrogen, and potassium concentrations.
- (4) Authorized Management Practices
- (A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.
 - (B) Authorized management practices include but are not limited to:
 - (i) Conservation practice standards pertaining to nutrient management as described in the eFOTG;
 - (ii) Nutrient management practices identified in *National Management Measures to Control Nonpoint Source Pollution from Agriculture* (EPA, EPA-841-B-03-004, July 2003); and

- (iii) Nutrient management methods and practices identified in *Plant Nutrient Management in Hawaii's Soils: Approaches for Tropical and Subtropical Agriculture* (James A. Silva and Raymond S. Uchida (Eds.), University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources, 2000).
- (d) Grazing Management Measure
 - (1) Specific Applicability. The management measure applies to activities on range, irrigated and non-irrigated pasture, and other grazing lands used by domestic livestock. Other grazing lands include woodlands, native pastures, and croplands producing forages.
 - (2) Purpose. The purpose of this management measure is to prevent improper livestock grazing and equipment use that may damage streambanks and shores, riparian vegetation, channels, and the water column. Application of this management measure will reduce the physical disturbance to sensitive areas and reduce the discharge of sediment, animal waste, nutrients, and chemicals to surface waters.
 - (3) General Requirements
 - (A) Implement one or more of the following, as necessary to protect sensitive areas (such as streambanks, wetlands, estuaries, ponds, lake shores, near coastal waters/shorelines, and riparian zones):

- (i) Exclude livestock, including exclusion from diversion ditches, grassed waterways, swales, and similar structures that concentrate and direct runoff from agricultural lands to sensitive areas;
 - (ii) Provide stream crossings or hardened watering access for drinking;
 - (iii) Provide alternative drinking water locations;
 - (iv) Locate salt and additional shade, if needed, away from sensitive areas; and/or
 - (v) Use improved grazing management (e.g., herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock.
- (B) Achieve either of the following on all range, pasture, and other grazing lands not addressed under subparagraph (A):
- (i) Range and pasture conservation and management practices that apply the progressive planning approach of USDA-NRCS following the standards and specifications contained in the eFOTG that achieve an acceptable level of treatment to reduce erosion; or
 - (ii) Maintenance of the range, pasture, and other grazing lands in accordance with activity plans

established by the Land Division of DLNR, federal agencies managing grazing land, or other designated land management agencies.

(4) Authorized Management Practices

(A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.

(B) Authorized management practices include but are not limited to:

(i) Conservation practice standards pertaining to grazing as described in the eFOTG; and

(ii) Grazing management practices identified in National Management Measures to Control Nonpoint Source Pollution from Agriculture (EPA, EPA-841-B-03-004, July 2003).

(e) Irrigation Water Management Measure

(1) Specific Applicability. This management measure applies to activities on irrigated agricultural land, including agricultural crop and pasture land (except for isolated fields of less than 10 acres in size that are not contiguous to other irrigated lands), orchard land, specialty cropland, and nursery cropland.

(2) Purpose

(A) The goal of this management measure is to reduce nonpoint source pollution of

surface waters caused by irrigation. Application of this management measure will reduce the waste of irrigation water, improve the water use efficiency, and reduce the total pollutant discharge from an irrigation system.

- (B) It is not the intent of this management measure to require the replacement of major components of an irrigation system. Instead, the expectation is that components to manage the timing and amount of water applied will be provided where needed, and that special precautions will be taken to reduce the potential for pollutant transport and discharge.

(3) General Requirements

- (A) To minimize runoff and excessive leaching, operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum:
 - (i) The measurement of soil-water depletion volume and the volume of irrigation water applied; and
 - (ii) Uniform application of water.
- (B) When chemigation is used, include backflow preventers for wells, prevent chemigated waters from discharging from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, Tailwater discharges are prohibited.

- (C) Where limitations or special conditions apply, they must be clearly identified in the facility's Water Pollution Prevention Plan.
- (4) Authorized Management Practices
 - (A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.
 - (B) Authorized management practices include but are not limited to:
 - (i) Conservation practice standards pertaining to irrigation as described in the eFOTG; and
 - (ii) Irrigation water management practices identified in *National Management Measures to Control Nonpoint Source Pollution from Agriculture* (EPA, EPA-841-B-03-004, July 2003).
 - (f) Pesticide Management Measure
 - (1) Specific Applicability
 - (A) This management measure applies to activities associated with the application of pesticides to publicly-owned agricultural lands, including lands subject to the requirements of an NPDES permit for concentrated animal feeding operations, to the extent that such permit requirements do not address pesticide application.

- (B) Pesticide applications subject to the requirements of an NPDES permit for application of pesticides, including chapter 11-55, Appendix M, are excluded.
- (2) Purpose. The goal of this management measure is to reduce contamination of surface water and groundwater from pesticides and to foster effective and safe use of pesticides without causing degradation to the environment.
- (3) General Requirements
- (A) Use alternative methods for pest control, to the extent practicable.
 - (B) Apply pesticides only when an economic benefit to the producer will be achieved (i.e., applications based on economic thresholds);
 - (C) Apply pesticides efficiently and at times when runoff losses are unlikely;
 - (D) When pesticide application is necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products in making a selection;
 - (E) Use appropriate pesticides for the given situation and environment; and
 - (F) Minimize the movement of pesticides from the target area.
- (4) Authorized Management Practices

- (A) Authorized management practices shall be implemented to meet management measure requirements and shall be identified in the Water Pollution Prevention Plan.
- (B) Authorized management practices include but are not limited to:
 - (i) Conservation practice standards pertaining to pest management as described in the eFOTG; and
 - (ii) Pesticide management practices identified in National Management Measures to Control Nonpoint Source Pollution from Agriculture (EPA, EPA-841-B-03-004, July 2003).

CHAPTER 11-56 APPENDIX B

NONPOINT SOURCE POLLUTION CONTROL REQUIREMENTS FOR FORESTRY

1. General Applicability

(a) Requirements defined in this chapter shall be implemented by persons identified in section 11-56-3, as follows:

- (1) The requirements of this Appendix apply to all publicly-owned forest lands comprising more than 5 contiguous acres where silvicultural or commercial forestry operations are planned or conducted or, regardless of acreage, any road construction or reconstruction conducted as part of silvicultural or forestry activities, any road maintenance conducted as part of silvicultural or forestry activities, any revegetation of areas disturbed by harvesting operations or road construction as part of silvicultural or forestry activities, any streamside management zone within lands where silvicultural operations are planned or conducted, or any area where chemicals (fertilizers and pesticides) are used as part of silvicultural or commercial forestry operations.
- (2) Other forest lands where silvicultural or commercial forestry operations are planned or conducted may be subject to the requirements of this Appendix at the discretion of the director based on risk of harm to human or environmental health, as determined by the director. Forest lands determined by the director to be subject to the requirements of this Appendix will be provided written notice by the director.

(b) For forest lands that do not fall under the applicability of this Appendix, the director encourages voluntary development of a Water Pollution Prevention Plan to facilitate the implementation of the management measures contained in this Appendix.

2. Incorporation of Management Measures into Water Pollution Prevention Plans

(a) The owner or operator of a silvicultural or commercial forestry operation subject to regulation shall incorporate water pollution reducing management measures into a Water Pollution Prevention Plan. At a minimum, Water Pollution Prevention Plans shall incorporate all appropriate management measures to prevent and control the specific sources of pollution identified in Section 4 of this Appendix.

(b) The owner or operator of a silvicultural or commercial forestry operation subject to this Appendix shall identify which management measures in Section 4 are required based upon the specific applicability of each management measure and its subparts. Each management measure identified as being applicable shall be implemented as detailed in the Water Pollution Prevention Plan developed pursuant to this chapter.

(c) Authorized management practices that satisfy management measure requirements shall be identified in the Water Pollution Prevention Plan.

(d) For discharges identified in section 11-56-3 that result from activities identified in this Appendix, where such discharges or activities are subject to an alternative regulatory mechanism that accomplishes the objectives of one or more of the management measures in section 4 of this Appendix, the Water Pollution Prevention Plan may include a

reference to the alternative regulatory mechanism in lieu of the specified management measure.

(e) The following documents may be submitted in lieu of a Water Pollution Prevention Plan provided that they address all applicable management measures in section 4:

- (1) Any BLNR- or DLNR-approved plan or permit which adopts, incorporates, or requires implementation of relevant BMPs from DOFAW's "Best Management Practices for Maintaining Water Quality in Hawaii" (February 1996); or
- (2) A forest management plan developed by a certified United States Department of Agriculture Natural Resources and Conservation Service (NRCS) Technical Service Provider and approved by the NRCS.

3. Water Pollution Prevention Plan Exemptions. Water Pollution Prevention Plans for publicly-owned forest lands managed by DOFAW are not required for as long as DOFAW's policy to implement relevant BMPs from DOFAW's *Best Management Practices for Maintaining Water Quality in Hawaii* (February 1996) on publicly-owned, DOFAW-managed lands is in effect.

4. Management Measures Required for Specific Sources of Pollution

- (a) Preharvest Planning Management Measure
 - (1) Specific Applicability
 - (A) This management measure applies to commercial harvesting on areas greater

than five (5) acres and any associated road system construction or reconstruction conducted as part of normal silvicultural activities.

(B) This management measure does not apply to harvesting conducted for precommercial thinnings or noncommercial firewood cutting.

(2) Purpose. The objective of this management measure is to ensure that silvicultural activities, including timber harvesting, site preparation, and associated road construction, are conducted without significant nonpoint source pollutant delivery to streams and coastal areas.

(3) General Requirements

(A) Perform advance planning for forest harvesting that includes the following elements, where appropriate:

(i) Identify the area to be harvested including location of waterbodies and sensitive areas such as wetlands, threatened or endangered aquatic species habitats, or high erosion hazard areas (landslide-prone areas) within the harvest unit.

(ii) Time the activity for the season or moisture conditions when the least impact occurs.

(iii) Consider potential water quality impacts and erosion and sedimentation control in the selection of silvicultural and regeneration systems, especially

for harvesting and site preparation.

- (iv) Reduce the risk of occurrence of landslides and severe erosion by identifying high erosion-hazard areas and avoiding harvesting in such areas to the extent practicable.
 - (v) Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.
- (B) Perform advance planning for forest road systems that includes the following elements, where appropriate:
- (i) Locate and design road systems to minimize, to the extent practicable, potential sediment generation and delivery to surface waters. Key components are: locate roads, landings, and skid trails to avoid, to the extent practicable, steep grades and steep hillslope areas, and to decrease the number of stream crossings; avoid, to the extent practicable, locating new roads and landings in Streamside Management Zones; and determine road usage and select the appropriate road standard.
 - (ii) Locate and design temporary and permanent stream crossings to prevent failure and control impacts from the road system. Key components are: size and site crossing structures to prevent

failure and, for fish-bearing streams, design crossings to facilitate fish passage.

- (iii) Ensure that the design of road prism and the road surface drainage are appropriate to the terrain and that road surface design is consistent with the road drainage structures.
- (iv) Use suitable materials to surface roads planned for all-weather use to support intended vehicle use.
- (v) Design road systems to avoid high erosion or landslide hazard areas. Identify these areas and consult a qualified specialist for design of any roads that must be constructed through these areas.

(4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Best management practices for pre-harvest planning and forest roads identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
- (B) Best management practices for preharvest planning identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

(b) Streamside Management Zones (SMZs) Management Measure

(1) Specific Applicability

- (A) This management measure applies to surface waters bordering or within the area of the silvicultural or commercial forestry operation.
 - (B) Manmade structures that may function as streams and other natural waterbodies, such as livestock ponds, swales, and water distribution systems, are not considered perennial waterbodies or streams.
- (2) Purpose. This management measure is intended to preserve SMZ integrity to protect water quality.
- (3) General Requirements
- (A) Establish and maintain a SMZ along surface waters that is sufficiently wide and includes a sufficient number of canopy species to buffer against detrimental changes in the temperature regime of the waterbody, to provide bank stability, and to withstand wind damage.
 - (B) Protect against soil disturbance in the SMZ and against delivery to the stream of sediments and nutrients generated by silvicultural or forestry activities, including harvesting.
 - (C) Manage the SMZ canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Streamside management zone BMPs identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
 - (B) Best management practices for streamside management areas identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (c) Road Construction/Reconstruction Management Measure
- (1) Specific Applicability. This management measure applies to road construction and reconstruction operations for silvicultural purposes, including:
 - (A) The clearing phase: clearing to remove trees and woody vegetation from the road right-of-way;
 - (B) The pioneering phase: excavating and filling the slope to establish the road centerline and approximate grade;
 - (C) The construction phase: final grade and road prism construction and bridge, culvert, and road drainage installation; and
 - (D) The surfacing phase: placement and compaction of roadbed, road fill compaction, and surface placement and compaction (if applicable).
 - (2) Purpose. The goal of this management measure is to minimize delivery of sediment to surface waters during road construction and road reconstruction on forest lands.

(3) General Requirements

- (A) Follow preharvest planning requirements as described in subsection 0(a) of this Appendix when constructing or reconstructing the roadway.
- (B) Follow design requirements for road surfacing and shaping as described in subsection 0(a) of this Appendix.
- (C) Install road drainage structures according to designs planned under subsection 0(a) of this Appendix and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.
- (D) Guard against the production of sediment when installing stream crossings.
- (E) Protect surface waters from slash and debris material from roadway clearing.
- (F) Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts and fills.
- (G) Avoid constructing new roads in SMZs, to the extent practicable.

(4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Best management practices for forest roads identified in *Best Management*

Practices for Maintaining Water Quality in Hawaii (DOFAW, February 1996); and

- (B) Best management practices for road construction/reconstruction identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (d) Road Maintenance Management Measure
 - (1) Specific Applicability. This management measure applies to active and inactive roads constructed or used for silvicultural activities.
 - (2) Purpose. The objective of this management measure is to manage existing roads to maintain stability and utility and to minimize sedimentation and pollution from runoff-transported materials.
 - (3) General Requirements
 - (A) Avoid using roads, where possible, for timber hauling or heavy traffic during wet periods on roads not designed and constructed for these conditions.
 - (B) Evaluate the future need for a road and close roads that will not be needed. Leave closed roads and drainage channels in a stable condition to withstand storms.
 - (C) Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.

- (D) Following completion of harvesting, close and stabilize temporary spur roads and seasonal roads to control and direct water away from the roadway. Remove all temporary stream crossings.
 - (E) Inspect roads to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or seeding of road surfaces, and, in extreme cases, slope stabilization or removal of road fills, where necessary to maintain structural integrity.
 - (F) Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters, to the extent practicable.
 - (G) Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that stream overflow will divert onto roads and that fill erosion will occur if the drainage structures become obstructed.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for forest roads identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
 - (B) Best management practices for road management identified in *National*

Management Measures to Control Nonpoint Source Pollution from Forestry (EPA, EPA-841-B-05-001, April 2005).

- (e) Timber Harvesting Management Measure
 - (1) Specific Applicability
 - (A) This management measure applies to all harvesting, yarding, and hauling conducted as part of normal silvicultural activities on harvest units larger than five (5) acres.
 - (B) This management measure does not apply to harvesting conducted for precommercial thinnings or noncommercial firewood cutting.
 - (2) Purpose. The purpose of this management measure is to minimize sedimentation resulting from the siting and operation of timber harvesting, and to manage petroleum products properly.
 - (3) General Requirements
 - (A) The timber harvesting management measure consists of implementing the following:
 - (i) Timber harvesting operations with skid trails or cable yarding shall follow layouts determined under subsection 0(a) of this Appendix.
 - (ii) Install landing drainage structures to avoid sedimentation, to the extent practicable. Disperse landing drainage over side slopes.

- (iii) Construct landings away from steep slopes and reduce the likelihood of fill slope failures. Protect landing surfaces used during wet periods. Locate landings outside of SMZs. Minimize the size of landing areas.
 - (iv) Protect stream channels and significant ephemeral drainages from logging debris and slash material.
 - (v) Use appropriate areas for petroleum storage, draining, and dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials in accordance with State law.
- (B) For cable yarding:
- (i) Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.
 - (ii) Locate corridors for SMZs in accordance with subsection 0(b) of this Appendix.
 - (iii) Cable yarding shall not be done across perennial or intermittent streams, except at improved stream crossings.
- (C) For groundskidding:
- (i) Within SMZs, operate groundskidding equipment only at stream crossings, to the extent practicable. In SMZs, fell and

endline trees to avoid sedimentation.

- (ii) Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails with adequate drainage structures to disperse runoff.
- (iii) On steep slopes, use cable systems rather than groundskidding where groundskidding may cause excessive sedimentation.
- (iv) Groundskidding shall not be done across perennial or intermittent streams, except at improved stream crossings.

(4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Best management practices for timber harvesting and forest roads (temporary access roads and landings) identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
- (B) Best management practices for timber harvesting identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

(f) Site Preparation and Forest Regeneration Management Measure

- (1) Specific Applicability. This management measure applies to all site preparation and regeneration activities conducted as part of

normal silvicultural activities on harvested units larger than five (5) acres.

- (2) Purpose. This management measure is intended to confine on-site potential nonpoint source pollution and erosion resulting from site preparation and the regeneration of forest stands.
- (3) General Requirements
 - (A) Select a method of site preparation and regeneration suitable for the site conditions.
 - (B) Conduct mechanical tree planting and ground-disturbing site preparation activities on the contour of erodible terrain.
 - (C) Do not conduct mechanical site preparation and mechanical tree planting in SMZs.
 - (D) Protect surface waters from logging debris and slash material.
 - (E) Suspend operations during wet periods if equipment used begins to cause excessive soil disturbance that will increase erosion.
 - (F) Locate windrows at a safe distance from drainages and SMZs to control movement of the material during high runoff conditions.
 - (G) Conduct bedding operations in high water-table areas during dry periods of the year. Conduct bedding in erodible areas on the contour.

- (H) Protect small ephemeral drainages when conducting mechanical tree planting.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
 - (A) Best management practices for reforestation and timber harvesting (mechanical site preparation) identified in "Best Management Practices for Maintaining Water Quality in Hawaii" (DOFAW, February 1996); and
 - (B) Best management practices for site preparation and forest regeneration identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (g) Fire Management Measure
 - (1) Specific Applicability. This management measure applies to all prescribed burning conducted as part of normal silvicultural activities on all harvested units larger than five (5) acres for wildfire suppression and rehabilitation on forest lands.
 - (2) Purpose. The purpose of this management measure is to minimize potential nonpoint source pollution and erosion resulting from prescribed fire for site preparation and from the methods used for wildfire control or suppression on forest lands.
 - (3) General Requirements. Prescribe fire or suppress wildfire in a manner which reduces potential nonpoint source pollution of surface waters:

- (A) Prescribed fire shall not cause excessive sedimentation due to the combined effect of removal of canopy species and the loss of soil-binding ability of subcanopy and herbaceous vegetation roots.
 - (B) Prescriptions for fire shall protect against excessive erosion or sedimentation, to the extent practicable.
 - (C) All bladed firelines, for prescribed fire and wildfire, shall be plowed on contour or stabilized with water bars and/or other appropriate techniques if needed to control excessive sedimentation or erosion of the fireline.
 - (D) Wildfire suppression and rehabilitation shall consider possible nonpoint source pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for wildfire damage control and reclamation/prescribed burn, fireline construction and maintenance, and prescribed burn identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
 - (B) Best management practices for fire management identified in *National Management Measures to Control Nonpoint*

Source Pollution from Forestry (EPA, EPA-841-B-05-001, April 2005).

(h) Revegetation of Disturbed Areas Management Measure

- (1) Specific Applicability. This management measure applies to all disturbed areas resulting from harvesting, road building, and site preparation conducted as part of normal silvicultural activities. Disturbed areas are those localized areas within harvest units or road systems where mineral soil is exposed or agitated (e.g., road cuts, fill slopes, landing surfaces, cable corridors, or skid trail ruts).
- (2) Purpose. The purpose of this management measure is to prevent sediment and other pollutants from harvested, burned, or other disturbed areas from entering State waters. Revegetating disturbed areas stabilizes the soil in these areas, reduces erosion, and helps to prevent sediment and pollutants associated with sediment from entering nearby surface waters.
- (3) General Requirements
 - (A) Using seeding or planting, revegetate areas disturbed by harvesting operations or road construction promptly after completion of the earth-disturbing activity. Local growing conditions should dictate the timing for establishment of vegetative cover.
 - (B) Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.

- (C) Prioritize initial revegetation efforts in disturbed areas in SMZs or the steepest areas of disturbance near drainages.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for reforestation, wildfire damage control and reclamation/prescribed burn, and timber harvesting (skidding) in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
 - (B) Best management practices for revegetation of disturbed areas identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (i) Forest Chemical Management Measure
- (1) Specific Applicability
- (A) This management measure applies to all fertilizer and pesticide applications (including biological agents) conducted as part of normal silvicultural or commercial forestry activities.
 - (B) This management measure applies to the transportation, storage, mixing, loading, application, cleanup, and disposal of chemicals used in silvicultural and commercial forestry operations.

- (2) Purpose. The purpose of this management measure is to prevent pesticides and fertilizers used in forest management from entering State waters.

- (3) General Requirements. Use chemicals only when necessary for forest management and in accordance with the following activities to reduce the movement of forest chemicals off-site during and after application:
 - (A) Conduct applications by skilled and, where required, licensed applicators according to the registered use, with special consideration given to impacts to nearby surface waters and groundwater.
 - (B) Carefully prescribe the type and amount of pesticides appropriate for the insect, fungus, or herbaceous species.
 - (C) Establish and identify buffer areas for surface waters for applications, including aerial applications.
 - (D) Prior to applications of pesticides and fertilizers, inspect the mixing and loading process and the calibration of equipment and identify the appropriate weather conditions, the spray area, and buffer areas for surface waters.
 - (E) Immediately report accidental spills of pesticides or fertilizers into surface waters to the appropriate State and local agencies. Develop an effective spill contingency plan to contain spills.

- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for silvicultural chemical management identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
 - (B) Best management practices for forest chemical management identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

CHAPTER 11-56 APPENDIX C

NONPOINT SOURCE POLLUTION CONTROL REQUIREMENTS FOR MARINAS AND RECREATIONAL BOATING

1. General Applicability

(a) Requirements defined in this chapter shall be implemented by persons identified in section 11-56-03 who own or operate a publicly-owned marina or recreational boating facility that has any of the following:

- (1) Ten or more slips;
- (2) A pier where ten or more boats may tie up;
- (3) A facility where a boat for hire is docked;
- (4) A boat maintenance or repair yard that is adjacent to the water; or
- (5) A mooring field where ten or more boats are moored.
- (6) Other marinas or recreational boating facilities may be subject to the requirements of this Appendix at the discretion of the director based on risk of harm to human or environmental health, as determined by the director. Marinas and recreational boating facilities determined by the director to be subject to the requirements of this Appendix will be provided written notice by the director.

(b) For marinas and recreational boating facilities that do not fall under the applicability of this Appendix, the director encourages voluntary development of a Water Pollution Prevention Plan to

facilitate the implementation of the management measures contained in this Appendix.

2. Incorporation of Management Measures into Water Pollution Prevention Plans

(a) The owner or operator of a marina or recreational boating facility subject to regulation shall incorporate water pollution reducing management measures into a Water Pollution Prevention Plan. At a minimum, Water Pollution Prevention Plans shall incorporate all appropriate management measures to prevent and control the specific sources of pollution identified in section 3 of this Appendix.

(b) The owner or operator of a marina or recreational boating facility subject to this Appendix shall identify which management measures in section 3 are required based upon the specific applicability of each management measure and its subparts. Each management measure identified as being applicable shall be implemented as detailed in the Water Pollution Prevention Plan developed pursuant to this chapter.

(c) Authorized management practices that satisfy management measure requirements shall be identified in the Water Pollution Prevention Plan.

(d) For discharges identified in section 11-56-03 that result from activities identified in this Appendix, where such discharges or activities are subject to an alternative regulatory mechanism that accomplishes the objectives of one or more of the management measures in section 3 of this Appendix, the Water Pollution Prevention Plan may include a reference to the alternative regulatory mechanism in lieu of the specified management measure.

(e) All publicly-owned facilities or operations managed by the Department of Land and Natural Resources, Division of Boating and Ocean Recreation are not required to incorporate the following management measures in a Water Pollution Prevention Plan, provided that those facilities or operations are subject to and in compliance with section 13-232-43, HAR (4/22/04): shoreline stabilization (section 3(d)(d)), storm water runoff (section 3(e)), fueling station design (section 3(f)), sewage facility (section 3(g)), maintenance of sewage facilities (section 3(h)), solid waste (section 3(i)), and liquid material (section 3(k)).

3. Management Measures Required for Specific Sources of Pollution

- (a) Marina Flushing Management Measure
 - (1) Specific Applicability. This management measure applies to new and expanding marinas.
 - (2) Purpose. The purpose of this management measure is to ensure proper siting and design of marinas and recreational boating facilities such that water quality will be maintained through proper flushing.
 - (3) General Requirements. Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to marina flushing BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA

841-B-01-005, November 2001, or as subsequently amended).

- (b) Water Quality Assessment Management Measure
 - (1) Specific Applicability. This management measure applies to new and expanding marinas.
 - (2) Purpose. This management measure is intended to establish criteria for assessments of water quality that may be used to determine whether a proposed marina design will result in poor water quality.
 - (3) General Requirements. Assess water quality as part of marina siting and design.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to water quality assessment BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (c) Habitat Assessment Management Measure
 - (1) Specific Applicability. This management measure applies to new and expanding marinas where site changes may have an impact on important marine species, coral reefs, wetlands, or other important habitats. The habitats of non-indigenous nuisance species are not considered important habitats.
 - (2) Purpose. This management measure is intended to establish biological siting and design provisions for marinas based on the premise that marinas should not destroy important aquatic habitat, should not

diminish the harvestability of organisms in adjacent habitats, and should accommodate the same biological uses (e.g., reproduction, migration) for which the source waters have been classified.

- (3) General Requirements. Site and design marinas to protect against adverse effects on coral reefs, shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or federal governments.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to habitat assessment BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (d) Shoreline Stabilization Management Measure
- (1) Specific Applicability. This management measure applies to new and expanding marinas where site changes may result in shoreline erosion.
 - (2) Purpose. This management measure is intended to encourage the use of vegetative methods for shoreline stabilization to prevent or reduce the delivery of pollutants to water resources.
 - (3) General Requirements. Stabilize shorelines where shoreline erosion is a serious nonpoint source pollution problem.
 - (4) Authorized Management Practices

- (A) Authorized management practices include but are not limited to shoreline and streambank stabilization BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
 - (B) Authorized management practices that employ vegetative methods to stabilize shorelines should be used. Structural methods to stabilize shorelines may be necessary where vegetative methods cannot work and where they do not interfere with natural beach processes or harm other sensitive ecological areas.
- (e) Storm Water Runoff Management Measure
- (1) Specific Applicability
 - (A) This management measure applies to all marinas, with vessel maintenance areas and any other areas where vessel maintenance, boat bottom scraping, sanding, and/or painting is done.
 - (B) This management measure does not apply to storm water runoff that enters the marina property from upland sources.
 - (2) Purpose. The purpose of this management measure is to control pollutants in runoff from vessel maintenance areas. The proper design and operation of these areas can significantly prevent the entry of pollutants from marina property into surface waters.

- (3) General Requirements
 - (A) Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of vessel maintenance areas to minimize storm water contact with water pollutants.
 - (B) Reduce the average annual loadings of total suspended solids and other water pollutants in runoff from vessel maintenance areas to the maximum extent practicable.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to storm water runoff BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (f) Fueling Station Design Management Measure
 - (1) Specific Applicability. This management measure applies to all marinas where fueling stations are to be added or moved.
 - (2) Purpose. The purpose of this management measure is to prevent and control petroleum and other chemicals associated with fuel spillage.
 - (3) General Requirements
 - (A) Design fueling stations to allow for ease in cleanup of spills.
 - (B) Maintain adequate spill containment and mitigation measures.

- (C) Eliminate storm water contact with fueling appurtenances.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to fueling station design BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (g) Sewage Facility Management Measure
 - (1) Specific Applicability
 - (A) This management measure applies to new and expanding marinas in areas where adequate marine sewage collection facilities do not exist.
 - (B) This measure does not apply to direct discharges from vessels covered under Section 312 of the Clean Water Act.
 - (2) Purpose. This management measure is intended to prevent and control pollution by ensuring proper siting and design of sewage facilities associated with marinas and recreational boating activities.
 - (3) General Requirements
 - (A) Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage into surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.

- (B) Marinas that do not provide services for vessels that have marine sanitation devices (MSDs) do not need to have pumpouts, although dump stations for portable toilets and restrooms shall be available.

- (4) Authorized Management Practices. Authorized management practices include but are not limited to sewage facility BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).

- (h) Maintenance of Sewage Facilities Management Measure
 - (1) Specific Applicability. This management measure applies to marinas where marine sewage disposal facilities exist.
 - (2) Purpose. The purpose of this measure is to eliminate the release of untreated sewage into marina and surface waters.
 - (3) General Requirements. Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to maintenance of sewage facilities BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).

- (i) Solid Waste Management Measure

- (1) Specific Applicability. This management measure applies to the operation and maintenance of all marinas.
 - (2) Purpose. This management measure is intended to ensure proper disposal of solid waste materials generated at marinas and recreational boating facilities.
 - (3) General Requirements. Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes into surface waters.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to solid waste BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (j) Fish Waste Management Measure
- (1) Specific Applicability. This management measure applies to marinas where fish waste is generated.
 - (2) Purpose. The purpose of this management measure is to control fish waste pollution, which can result in water quality problems and odor problems at marinas with large numbers of fish landings or at marinas that have limited fish landings but poor flushing.
 - (3) General Requirements
 - (A) Promote sound fish waste management through a combination of fish-cleaning

restrictions and proper disposal of fish waste.

- (B) Prohibit discarding fish waste into State waters.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to fish waste BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (k) Liquid Material Management Measure
 - (1) Specific Applicability. This management measure applies to the operation and maintenance of marinas where liquid materials used in the maintenance, repair, or operation of boats are stored.
 - (2) Purpose. This management measure is intended to minimize the discharge of potentially harmful liquid materials into marina and surface waters through proper storage and disposal.
 - (3) General Requirements. Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to liquid material BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA

841-B-01-005, November 2001, or as subsequently amended).

- (1) Petroleum Control Management Measure
 - (1) Specific Applicability. This management measure applies to boats that have inboard fuel tanks and marinas that harbor such boats.
 - (2) Purpose. This management measure is intended to control pollution from fuel and oil associated with marina boat operation and maintenance.
 - (3) General Requirements. Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to petroleum control BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (m) Boat Cleaning Management Measure
 - (1) Specific Applicability. This management measure applies to marinas where boat topsides are cleaned and marinas where hull scrubbing in the water may result in water or sediment quality problems.
 - (2) Purpose. This management measure is intended to minimize the use and release of potentially harmful cleaners and bottom paints to marina and surface waters.

- (3) General Requirements. For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of harmful cleaners, solvents, and paint from in-water hull cleaning.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to boat cleaning BMPs identified in the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (EPA, EPA 841-B-01-005, November 2001, or as subsequently amended).
- (n) Public Education Management Measure
 - (1) Specific Applicability. This management measure applies to all environmental control authorities in areas where marinas are located.
 - (2) Purpose. This management measure is intended to prevent pollution from marinas and boating activities by educating the public and facility operators about the causes and effects of pollution and the methods to prevent pollution.
 - (3) General Requirements. Education, outreach, and/or training programs shall be instituted for boaters and marina owners and operators to prevent improper disposal of polluting material, including, but not limited to, solid waste, fish waste, liquid materials, fuel and oil, sewage, and boat cleaner and paints.
 - (4) Authorized Management Practices. Authorized management practices include but are not limited to public education BMPs identified in the *National Management Measures to*

*Control Nonpoint Source Pollution from
Marinas and Recreational Boating* (EPA, EPA
841-B-01-005, November 2001, or as
subsequently amended).

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