Lake Anna Shoreline

Commercial and Common Areas

Updated June 19, 2015

This packet is used for:

- Construction and establishment of residential common areas on Lake Anna
- Construction and establishment of commercial areas on Lake Anna

The Shoreline Packet for Commercial and Common Areas has the following items:

- Lake Anna Shoreline Checklist for Commercial and Common Areas
- Requirements for site plan Approval
- Copy of *Lake Anna Shoreline Use and Design Standards*, as amended 06/15/2015
- Virginia Erosion and Sediment Control Standards
- Maintenance Agreement for permanent shoreline protection measures, if needed

The applicant must submit the following items for approval:

- Signed and completed *Development Permit: Zoning and Building*
- Signed and completed Shoreline Checklist for Commercial and Common Areas
- Construction and Use Agreement from Dominion Power that shows approval
- With land disturbance of 10,000 square feet, a receipt from the Clerk's Office that the Maintenance Agreement and site plan were recorded with the deed:
  - Dominion Virginia Power's signature is required for these measures, ONLY when the measure is located on their shoreline easement
- Site plan that follows the County's requirements listed in Sec. 86.411 – 86.414 of County Zoning Ordinance, and shows additional items listed in this Packet
- With structures, a construction plan for the Building Division to review

After submission:

- Planning staff will review the site plan, checklist and forms for zoning approval
- Upon request, the site plan will be submitted to the Development Review Committee and Planning Commission for their review.
- For structures
  - The building code staff will review the construction plan and forms for building approval
  - The applicant will be issued a building permit to begin work
- With land disturbance of 10,000 square feet
  - The Thomas Jefferson Soil and Water Conservation District (TJSWCD) will review shoreland protection measures. An approval letter from TJSWCD is required for measures other than a 100-foot buffer or a berm and swale.
  - Inspection and Code Enforcement staff will confirm code compliance once work begins
- The last step is final inspection of any building construction and if there is land disturbance of 10,000 square feet, there will be inspection of the permanent erosion and sediment/storm water measures

The time frame for completing the shoreline review for Commercial and Common Areas may be at least two weeks.

Requirements for Site Plan Approval

For Commercial and Common Areas

The plan must meet all the requirements listed below.

___ The applicant must submit a plan that has the following information and is legibly drawn on a ****single sheet****:

___ There must be 2 copies of the plan, no larger than 11 inches by 17 inches, which shows compliance with the shoreline standards

The plan must have the following information to be approved

Format

___ Drawn to ***scale*** with all structures and features depicted proportionately

Land

___ Tax map number
___ Lot lines
___ Zoning
___ Setback lines
___ Acreage
___ Dominion Power shoreline

Land Disturbance (if greater than 10,000 square feet)

___ Original contours (no greater than 5-foot intervals)
___ Proposed contours (no greater than 5-foot intervals)
___ Limits of disturbance and square feet of disturbance
___ Show and label the permanent shoreland protection measures used for the site
___ Show and list details of permanent shoreland protection measures – dimensions, outlets, plantings, etc.
___ Show drainage areas and the direction of flow (runoff)
___ For 100-ft. or 25-ft. natural forested buffer, photographs showing existing vegetation
___ For alternative measures, a letter from Thomas Jefferson Soil and Water Conservation District

Structures

___ Existing structures
___ Proposed structures
___ Horizontal and vertical dimensions of all structures
___ Height of proposed structures above normal lake level
___ Dimensions of adjacent lake structures
___ Distances between proposed lake structures and structures on adjacent properties
___ Indicate if adjacent structures are front or side loading
___ Within coves, distance(s) across water to nearest structure(s)
___ Where lot fronts open water, give general distances across the water
___ A note indicating the extent of land disturbance in square feet, even if less than 10,000

Other comments

- If the site plan lacks the above information, a letter of revision will be mailed to the applicant and staff will require an updated plan that meets the above standards
- Free hand drawings are ***HIGHLY DISCOURAGED***
- The use of straightedges and rulers is **strongly encouraged**
- The use of computer drawing programs is optimal but not required

Lake Anna Shoreline Checklist:
For Commercial and Common Areas

I. General Information

Type of Project: _____

Property Address: _____

Current Zoning: _____ Tax Map Number: _____

Name and Address of Owner: _____

_____

Name and Address of Contractor (if different): _____

_____

Date Submitted: _____ Subdivision (if applicable): _____

This checklist must be completed, signed and submitted with the application. The information contained in this checklist reflects the contents of the Shoreline Ordinance as of June 15, 2015. The applicant is responsible for insuring that no revisions to the Ordinance have occurred since preparation of this document.

II. Approvals obtained

Step 1: ___ Virginia Dominion Power
Step 2: ___ Health Department (if applicable)
Step 3: ___ Zoning Administrator
Step 4: ___ County Building Official

III. Commercial and Common Area

(✔ = Present & adequate, N/A = Not applicable)

Reflectors:

___ All structures shall have (2) two-inch minimum diameter reflectors affixed along the sides of the structure at (10) ten foot intervals:

___ Reflectors shall be within (1) one foot of both sides of lakeside corners

___ Reflectors shall be placed within (2) two feet of the normal pool level (250 feet above mean sea level for the lake and 251 feet above mean sea level for the Dominion Waste Heat Treatment Facility (WHTF)

Lighting:

If lake structures have light fixtures, then the following are recommended:

___ Lights should have initial output less than 2000 lumens, or should be fitted with opaque shields to prevent direct visibility of the lamp to persons more than (50) fifty feet away.

___ Lights should meet dark-sky standards

___ Solar lighting is encouraged

Structures and Ramps

The maximum square footage (SF) permitted - *Check all that apply*-

___ 0 – 99 Linear feet of waterfront = 90 SF per linear foot of shoreline

___ 100 – 500 Linear feet of waterfront = 75 SF per linear foot of shoreline

___ Over 500 Linear Feet of waterfront = 55 SF per linear foot of shoreline

___ For side loading structures, the minimum travel-way between groups of dock slips shall be two (2) times the length of the adjacent slip; if two slips are different sizes, the larger length shall be used

___ The maximum height of structures within the Dominion easement in all zoning districts shall be twenty (20) feet for flat roofs and twenty-eight (28) feet for pitched roofs as measured from finished grade or normal lake level (250 feet above mean sea level for the lake, 251 feet above mean sea level for the WHTF).

___ Waterfront construction may have a second story but it shall not be enclosed, except for screened areas

___ Commercial slips are allowed one (1) enclosed storage structure per slip that is a maximum of fifty (50) square feet

___ Common area ramps shall be constructed of reinforced concrete with a minimum thickness of six (6) inches, and shall be a minimum distance of seventy-five (75) feet from designated swimming areas

___ Common area boat ramps shall be placed or positioned to minimize wave interference from boats passing nearby through high concentration navigation choke points as determined by the County during site plan review

Safe Navigation

___ The travel-way must be a minimum of 50 feet whenever serving common area launch facilities or commercial properties

___ For Commercial district and common area uses, structures shall not protrude more than one third of the distance across a cove, to a maximum of 200 feet

___ For resort development and planned district uses, the length of lake structures shall be included as part of the proffered conditions during rezoning

___ The length of the structure should generally only be enough to reach a navigable depth of (5) five feet at the normal pool level

Setbacks and Buffers:

All structures in common areas shall maintain the following -*Check all that apply*-

___ 100-foot side setback from residential and agricultural zoning districts (not part of subdivision)

___ 50-foot side setback from resort development, commercial, and industrial zoning districts

___ 25-foot vegetative buffer between the common area and adjoining property owners (not part of subdivision) shall be required

___ Buffers shall consist of evergreen and may include deciduous plant species

Miscellaneous:

___ A pump out station shall be required for commercial waterside operations if they introduce traffic to the lake

___ Any business engaged in fuel sales shall use United States Coast Guard approved spill recovery systems

___ Common areas are required to have a dry hydrant in a location to be determined on the site plan

___ Restroom facilities are required in areas with structures for persons or watercraft for common areas with 25 or more lots

___ A sign shall be posted at common area and commercial pier entrances explaining alcohol and boating regulations in Virginia

___ All site plans for new development must show shoreline building zones and extension lines to 150 feet into the water or one third of the cove, whichever is greater

IV. Land Disturbance of 10,000 Square Feet

If there is land disturbance of 10,000 square feet or greater, the following applies.

Erosion and Sediment Control

___ Any shoreline that is disturbed shall be permanently stabilized

___ Land disturbances over 10,000 square feet along the Lake Anna waterfront shall require shoreland protection control methods approved by the Thomas Jefferson Soil & Water Conservation District

___ Applicant must sign and have notarized Agreement to Maintain Permanent Shoreland Protection Measure

Check one option and all that apply

Option 1:

___ 100-foot wide natural, forested buffer along the shoreline

___ Indigenous plant life

___ Ground cover, shrub and tree canopy layers with plantings

Option 2:

___ On shoreline slopes of 3 to 15 percent, one of the following control methods, depending on individual site and/or owner preference.

___ A vegetated berm and swale. The berm must be 18" minimum in height with compacted soil and a minimum base width of 4.5 feet. The swale must be at least 1 foot deep and 2 feet in width. The berm and swale shall be contoured with the property. Swales shall be designed to carry run-off at a minimal slope to a rock outlet(s) or level spreader located at a defined low point(s)

___ A mulch bed.

___ A dry well/French drain.

___ An infiltration trench.

Note: Mulch bed, dry well/French drain or infiltration trench require approval letter from Thomas Jefferson Soil and Water Conservation District.

Option 3:

___ On shoreline slopes greater than 15 percent, one of the control methods used for 3 to 15 percent slopes along with a 25 foot undisturbed, vegetated area along the shoreline, measured horizontally from water's edge. Plantings in the vegetated area shall follow the guidelines for a 100-foot buffer.

Option 4:

___ Any other methods may be used pending review and approval by the Thomas Jefferson Soil & Water Conservation District:

Exceptions:

___ On site with average slope < 3%, no permanent measures are required

Location of Permanent Measures

___ Entirely on private property

___ Entirely or partially on Dominion Virginia Power shoreline easement

The standards established by Dominion shall govern dredging, excavation, and filling along with other applicable federal, state and local codes, unless otherwise noted

IV. Read and Sign

In representing the above referenced property owner(s), submitting this shoreline development plan for approval, I hereby state that, to the best of my knowledge, the attached plan contains all information required by this checklist.

_____ _____

Signature of person completing checklist **Date**

_____ _____

Printed Name **Daytime Phone number**

Agreement to Maintain Permanent Shoreline Protection Measure

This agreement is made and entered into by and among the County of Louisa, Virginia and the subject property owner(s) _____. This document is intended to set forth a framework for maintaining the permanent shoreline protection measure on the subject property, Tax Map _____, *illustrated on the attached site plan*. The purpose of maintaining this permanent shoreline protection measure is to conform to the *Louisa County Lake Anna Shoreline Use and Design Standards*, Divisions 5 Article 7,§86-455.2(a)(1) of the Louisa County Code.

Louisa County- shall not approve any clearing or disturbance to the permanent shoreline protection measure on the subject property, Tax Map _____, pursuant to the *Lake Anna Shoreline Use and Design Standards*, Division 5 Article 7, §86-455.2(a)(1) of the Louisa County Code.

Louisa County Representative:_____
County Representative

City/County of _____
Commonwealth/State of _____

Sworn to and subscribed before me this _____ day of _____, 20___, by
_____
_____
Witness my hand and official seal.

_____ _____
My Commission Expires Notary Public

Property Owner, Tax Map _____- shall not clear or disturb the permanent shoreline protection measure on the subject property, unless the County of Louisa deems these activities appropriate or necessary. The subject property owner is solely responsible for maintaining the permanent shoreline protection measure. The property owner shall replace or repair the permanent shoreline protection measure, in cases of natural erosion, flooding, or permanent changes in the normal lake level. This agreement shall be recorded in the Office of the Clerk of the Louisa County Circuit Court. The County of Louisa must approve any amendments or replacements to the permanent shoreline protection measure.

Homeowner: _____
Current Owner

City/County of _____
Commonwealth/State of _____

Sworn to and subscribed before me this _____ day of _____, 20___, by
_____
_____
Witness my hand and official seal.

_____ _____
My Commission Expires Notary Public

If the permanent shoreline protection measure is located within the Dominion shoreline, adjacent to the subject property, Tax Map _____, then Virginia Electric and Power Company (Dominion Virginia Power) enters into this agreement. Under no circumstances shall this agreement be interpreted or applied to hinder or interfere with the interests of Dominion Virginia Power or with the safe and reliable ownership, operation and maintenance of its North Anna Power Station. Dominion Virginia Power shall not be held accountable for maintaining the permanent shoreline protection measure.

Dominion Virginia Power shall use reasonable efforts to limit the clearing of or significant disturbance to the permanent shoreline protection measure, adjacent to Tax Map _____, unless Dominion Virginia Power, in its sole discretion, determines that such limitations upon clearance or significant disturbance hinder or interfere with its interests or with the safe and reliable ownership, operation and maintenance of the North Anna Power Station.

Dominion Representative:_____
Reservoir Coordinator

City/County of _____
Commonwealth/State of _____

Sworn to and subscribed before me this _____ day of _____, 20___, by
_____
_____
Witness my hand and official seal.

_____ _____
My Commission Expires Notary Public

COUNTY OF LOUISA

OWNERS CONSENT TO ENTER PROPERTY

I HEREBY GRANT THE COUNTY OF LOUISA THE RIGHT TO ENTER UPON THE SUBJECT PROPERTY PERIODICALLY TO ENSURE COMPLIANCE.

THE CURRENT PROPERTY OWNER MUST SIGN THIS APPLICATION.

Owner Name (Print): _____

Property Location:
Tax Map Reference: _____ Lot _____ Subdivision _____

Street Address: _____

Signature of Landowner: _____ Date: _____

Mailing Address:_____

RESPONSIBLE LAND DISTURBER

Responsible Land Disturber (Print Name)_____

Signature _____Date:_____

Certificate Number: _____ ExpirationDate:_____

COMMENTS:

_____

_____

_____

_____

_____

_____

_____

DIVISION 5. - LAKE ANNA SHORELINE USE AND DESIGN STANDARDS

Sec. 86-455. - Statement of intent; policy guidance.

The intent of this division is to encourage the public's health, safety, and welfare with equitable and enforceable conditions for development along the Lake Anna shoreline, including the w-Waste Heat Treatment facility (WHTF). These use and design standards are intended to protect the shoreland, enhance public safety, and advance the public's general welfare and quality of life. The Lake Anna shoreline use and design standards are adopted under the general provisions of the zoning ordinance.

Unless specifically stated otherwise, the provisions set forth in this division do not apply to structures built, or otherwise approved by the County or Dominion, prior to the adoption of these standards. Non-conforming structures shall be exempt from these standards unless the structure is expanded or if the structure is replaced more than two years after being removed. A structure for the purposes of this division includes, but is not limited to, fixed or floating docks, piers, boardwalks, slips, accessory buildings, or other types of development on, or attached to, Dominion's property.

The standards set forth in this division are mandatory unless a waiver is granted. Applications that meet all of the ordinance standards will be reviewed administratively by staff. Applications should include site plans that meet the criteria included in the "Lake Anna Shoreline Site Plan Requirements Checklist", to include an approval statement by Dominion for proposed development on Dominion's shoreland or shoreline. Where criteria are not clearly illustrated on a site plan, a survey shall be required to demonstrate compliance with the ordinance, or in order to process special exception requests. If a waiver is requested, then the application will be reviewed by staff (per section 86-22 of this ordinance). If a waiver is denied, applicants may resubmit a revised waiver at any time or appeal staff's decision to the board of supervisors.

(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058; Res. of 6-7-10(10.134); Res. of 8-6-12(2012-138))
(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058))

Sec. 86-455.1. - Use and design standards.

(a) *Shoreland Protection / Erosion and Sediment Control.* This section is intended to mitigate the impacts to the shoreland of residential and commercial development (including common areas) along the Lake Anna shoreland due to construction activities.

These standards address two main types of erosion, upland erosion and shoreline erosion. These measures are intended to mitigate the impacts of land disturbance above and beyond the scope of the Louisa County Erosion and Sediment Control Ordinance (Code of Louisa County, VA, chapter 38, article II). The measures also recommend approved methods of shoreline stabilization.

For the purposes of this ordinance, land disturbance is defined consistent with the definition provided in the Erosion and Sediment Control Ordinance: any land change which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the commonwealth, including, but not limited to, clearing, grading, excavating, transporting and filling of land.

(1) *Upland erosion.* Land disturbances over 10,000 square feet (SF) along the Lake Anna waterfront shall require a Lake Anna shoreline agreement in lieu of an erosion and sediment control plan or an erosion and sediment control plan that implements one of the recommended methods, or equivalent measures, as approved by the Thomas Jefferson Soil and Water Conservation District (TJSWCD). The agreement in lieu requires the implementation of one of several recommended methods of shoreland protection measures depending on the individual site or owner preference (where it would be more environmentally beneficial).

Any shoreland that is disturbed shall be permanently stabilized. Permanently stabilized vegetation is ground cover that is uniform, mature enough to survive, and will inhibit erosion. Sand beaches shall be permitted if they are properly retained.

Shoreland protection measures may include a 100-foot wide natural, forested buffer along the shoreline. A natural, forested buffer for the purposes of this section is an indigenous, undisturbed, riparian forest with ground cover, shrub, and tree canopy layers.

Alternative protection measures may also be used. The following slopes shall be calculated within the Dominion property boundary as an average slope between a property's boundary lines. The specifications outlined below are a summary of those outlined in the Lake Anna shoreline agreement in lieu.

3—15 percent = a vegetated diversion (18 inches minimum in height) with compacted soil and a minimum base width of 4.5 feet. This diversion shall consist of a berm and a swale and be contoured with the property. The swale shall be designed to carry flows at a minimal slope to a rock outlet located at a defined low point. Vegetation on the diversion should include native grasses or shrubs, with other non-invasive ornamental plantings as desired;

>15 percent = the above specified diversion with a 25-foot wide undisturbed, vegetated area along the shoreline, measured horizontally from the water's edge (not to include pathway to lake structures).

Alternate control methods not listed above may be used pending review and approval by the Thomas Jefferson Soil and Water Conservation District.

Applications of fertilizers and herbicides are prohibited within the berm, swale, and buffer areas, and within 25 feet of the shoreline. Insecticides are strongly discouraged.

All of the above recommended control methods shall be maintained and repaired as necessary to remain permanently stabilized and in compliance with state and local erosion and sediment control regulations.

(2) *Shoreline stabilization.* Shoreline erosion is exacerbated by wave action from boats on Lake Anna. Another cause of shoreline erosion, from the sheet flow of water across the land, is adequately addressed in the above section. Shoreline erosion not directly caused by land disturbance is not required to be stabilized, but is encouraged. Shoreline that is disturbed shall be permanently stabilized by one of the below recommended methods.

The use of non-structural, vegetated stabilization methods is strongly encouraged per the Lake Anna shoreline agreement in lieu. Structural methods are limited to rip-rap and bulkhead materials with geotextile fabrics unless otherwise approved by the Thomas Jefferson Soil and Water Conservation District.

Technical guidance for complying with the Lake Anna Shoreline Use and Design Standards is available through the Thomas Jefferson Soil and Water Conservation District.

A violation of this section shall be subject to the penalties set forth in the Code of Louisa County, VA, section 38-37, including, but not limited to, a $1,000.00 fine per violation (each day of violation).

(b) *Safe navigation.*

(1) Water access entrances and travel-ways into coves shall be at least 30 feet in width at navigable depth until the cove reaches a width of 90 feet or less. The one-third rule shall be the determining factor in any cove less than 90 feet in width. This standard applies to all choke points leading to, and within, the cove. A choke point is a narrowing of the cove that boats navigate through. Staff may grant a waiver (per section 86-22 of this ordinance) to this standard in extenuating circumstances due to water depth, topography, irregular shoreline, narrowness of cove, existing structures, and other existing conditions.

(2) The navigable channel shall be clearly identified during site plan review.

(3) Structures shall not protrude into the water from the shoreline further than the following maximum lengths unless otherwise approved by a waiver or special exception.

a. *Agricultural/residential district uses.* Structures shall not protrude more than one-third of the distance across the water from the shoreline, to a maximum of 150 feet. Structures proposed to exceed this limit require approval of a waiver or special exception. The travel-way must be a minimum of 30 feet consistent with the standards of subsection 86-455.2(b)(1) above.

b. *Commercial district and common area uses.* Structures shall not protrude more than one third of the distance across the water from the shoreline, to a maximum of 150 feet. Structures proposed to exceed this limit require approval of a waiver or special exception. The travel-way must be a minimum of 50 feet whenever serving common area launch facilities or commercial properties.

c. *Resort development and planned unit development uses.* The length of lake structures shall be included as part of the master plan submitted during the rezoning process. The standards set forth in this section should be used in the development of the master plan requirements regulating lake structures.

For the purposes of this section, the term shoreline shall refer to the boundary line, at normal pool, between land and the water.

(4) In order to identify the protruding outline of all lake structures, existing and new, two-inch minimum diameter reflectors shall be affixed along the sides of the structure at intervals of ten feet. Reflectors shall be within one foot of both sides of each lakeside corner. Reflectors shall be placed no more than two feet above normal pool level (250 feet above mean sea level for the lake, 251 feet above mean sea level for the WHTF).

All lake structures shall be in full compliance with this safety standard by November 1, 2007.

(5) If lake structures utilize light fixtures the following standards are recommended:

a. Lights should have initial output less than 2,000 lumens (equivalent to 120 watt incandescent bulbs), or should be fitted with opaque shields to prevent direct visibility of the lamp to persons more than 50 feet beyond the structure.

b. Light specifications should meet International Dark-Sky Association (IDA) standards for either landscape or wall-mount style fixtures, or equivalent. Landscape fixtures should be under 2,000 lumens and partially shielded. Wall-mount fixtures should be fully shielded.

c. Solar lighting is encouraged.

(6) The minimum travel-way between groups of dock slips shall be two times the length of the adjacent slip; if two slips are different sizes, the larger length shall be used. A fairway is an unobstructed access channel for entry to or exit from a moorage area.

(7) Common areas.

a. Common area ramps shall be constructed of reinforced concrete with a minimum thickness of six inches, and shall be a minimum distance of 75 feet from designated swimming areas.

b. Common areas are required to have a dry hydrant in a location to be determined on the site plan.

c. Common area boat ramps shall be placed or positioned to minimize wave interference from boats passing nearby through high concentration navigation choke points as determined by the county during site plan review (i.e., cove entrances, narrow channels, sharp bends, bridges, etc.).

(c) *Neighbor policies.*

(1) A sign shall be posted at common area and commercial pier entrances summarizing alcohol and boating regulations in the state.

(2) All site plans for new development must show shoreline building zones and extension lines to 150 feet into the water or one third of the cove, whichever is less.

(3) Structures.

a. District uses.

1. *Agricultural/residential.* The following is the maximum square footage (SF) permitted, excluding the area from land to the structure:*

(i) 0—54 linear feet of waterfront = no slip or piers**

(ii) 55—99 linear feet of waterfront = 10 SF per linear foot of waterfront

(iii) 100—300 linear feet of waterfront = 2,000 SF

(iv) Over 300 linear feet of waterfront = 3,000 SF

* Walkways shall not exceed 5 feet in width

** Parcels in existence prior to April 2, 2007 shall be limited to no more than 550 SF.

2. *Commercial and common areas.* The following is the maximum square footage (SF) permitted over water:

(i) 0—99 linear feet of waterfront = 90 SF per linear foot of shoreline

(ii) 100—500 linear feet of waterfront = 75 SF per linear foot of shoreline

(iii) > 500 linear feet of waterfront = 55 SF per linear foot of shoreline

3. *Resort development and planned.* If lake structures are included as part of the proffered conditions during the rezoning process, the maximum square footage shall be included. The standards set forth in this section should be used in the development of the proffered conditions regulating lake structures.

b. The maximum height of structures on land within the Dominion easement in all zoning districts shall be 20 feet for flat roofs and 28 feet for pitched roofs as measured from the lowest finished grade. Weathervanes and telecommunication antennas do not count against the structure's height.

The maximum height of structures *over the water* within the Dominion easement in all zoning districts shall be 20 feet for flat roofs and 28 feet for pitched roofs as measured from normal lake level (250 feet above mean sea level for the lake, 251 feet above mean sea level for the WHTF). Weathervanes and telecommunication antennas do not count against the structure's height.

c. Waterfront construction may have a second story but it may not be enclosed. Screened areas are not considered to be enclosed. Maximum height limits shall apply.

Structures that will exceed these standards shall require a waiver from staff. (per section 86-22 of this ordinance).

(4) Common areas.

a. Restroom facilities are required in areas with structures for persons or watercraft for common areas with 25 or more lots. Restrooms are not allowed within the Dominion easement without their approval.

b. All structures in a common area shall maintain a 100-foot side setback from residential and agricultural zoning districts (not part of the subdivision), and a 50-foot side setback from resort development, commercial, and industrial zoning districts.

c. A 25-foot vegetative buffer between the common area and adjoining property owners (not part of the subdivision) shall be required. Buffers shall consist of evergreen vegetation, but may also

include deciduous species. County staff may grant a special exception to this requirement on a case-by-case basis.

(5) Commercial areas.

a. A pump out station shall be required for commercial waterside operations if they introduce traffic to the lake.

b. Commercial slips are allowed one enclosed storage structure per slip that is a maximum of 50 square feet.

c. Any business engaged in fuel sales shall use United States Coast Guard (USCG) approved spill recovery systems.

(d) *Dredging, excavation, and filling.* The standards established by Dominion shall govern these activities along with other applicable federal, state, and local codes, unless otherwise noted in this section.

(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058); Res. of 3-7-11(2011-69); Res. of 8-6-12(2012-138))

Thomas Jefferson Soil and Water Conservation District
706 Forest Street, Ste. G, Charlottesville, VA 22903
Tel: (434) 975-0224 Fax: (434) 975-1367
Web Page: *www.tjswcd.org*

REPLY TO: Louisa Office: 39 Industrial Drive, Louisa, VA 23093
Phone: 540-967-5940 Fax: 540-603-2625

M E M O R A N D U M

To: Lake Anna Shoreline Site Plan Designers

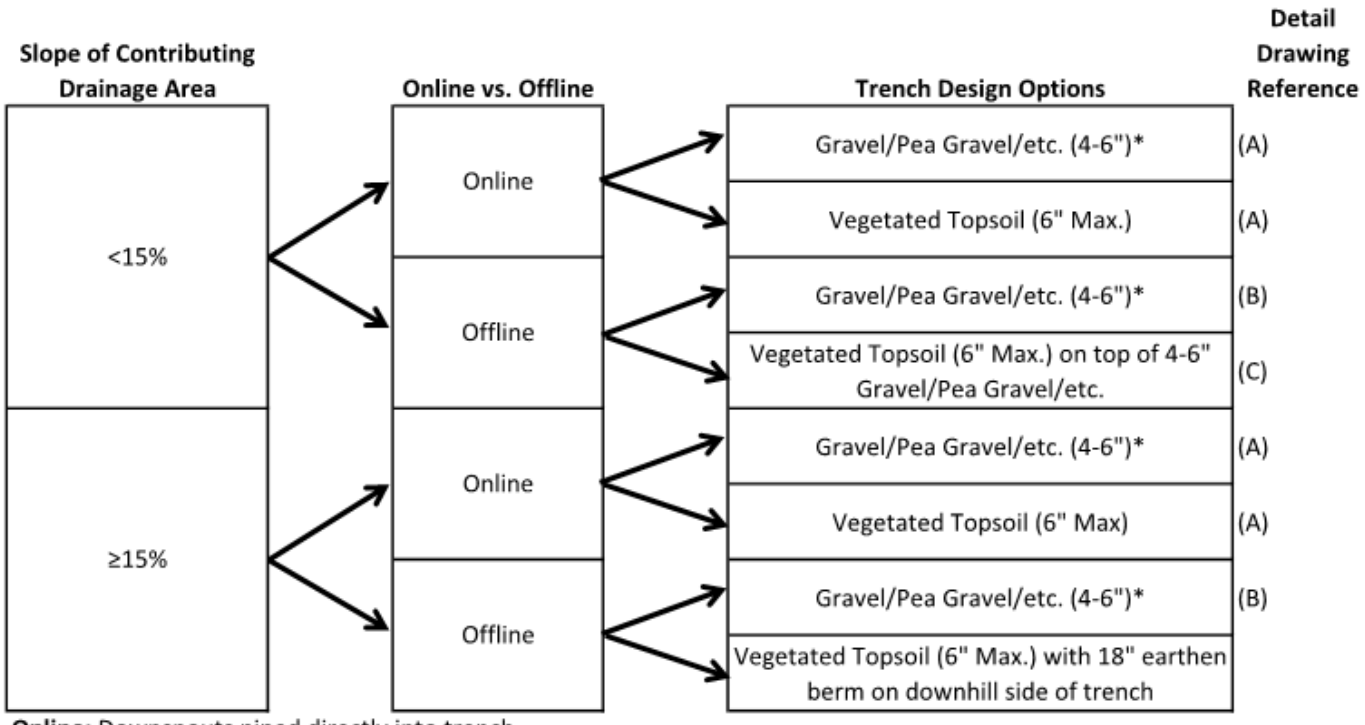
From: TJSWCD Technical Staff

RE: Infiltration Trench Standard Detail Drawings for Lake Anna Shoreline Management Ordinance

Date: February 26, 2015

The purpose of this memorandum is to provide standard detail drawings for infiltration trenches that are implemented to satisfy Louisa County's Lake Anna Shoreline Management Ordinance. This ordinance is in place to help protect water quality at Lake Anna. These standard drawings have been modeled after guidance in Virginia DEQ Stormwater Design Specification No. 8 "Infiltration Practices." Infiltration practices protect water quality based on the premise that the increased amount of stormwater associated with the impervious surfaces created during construction would otherwise carry excess nutrients from lawn fertilizers, pesticides, other chemicals, and sediment into the lake.

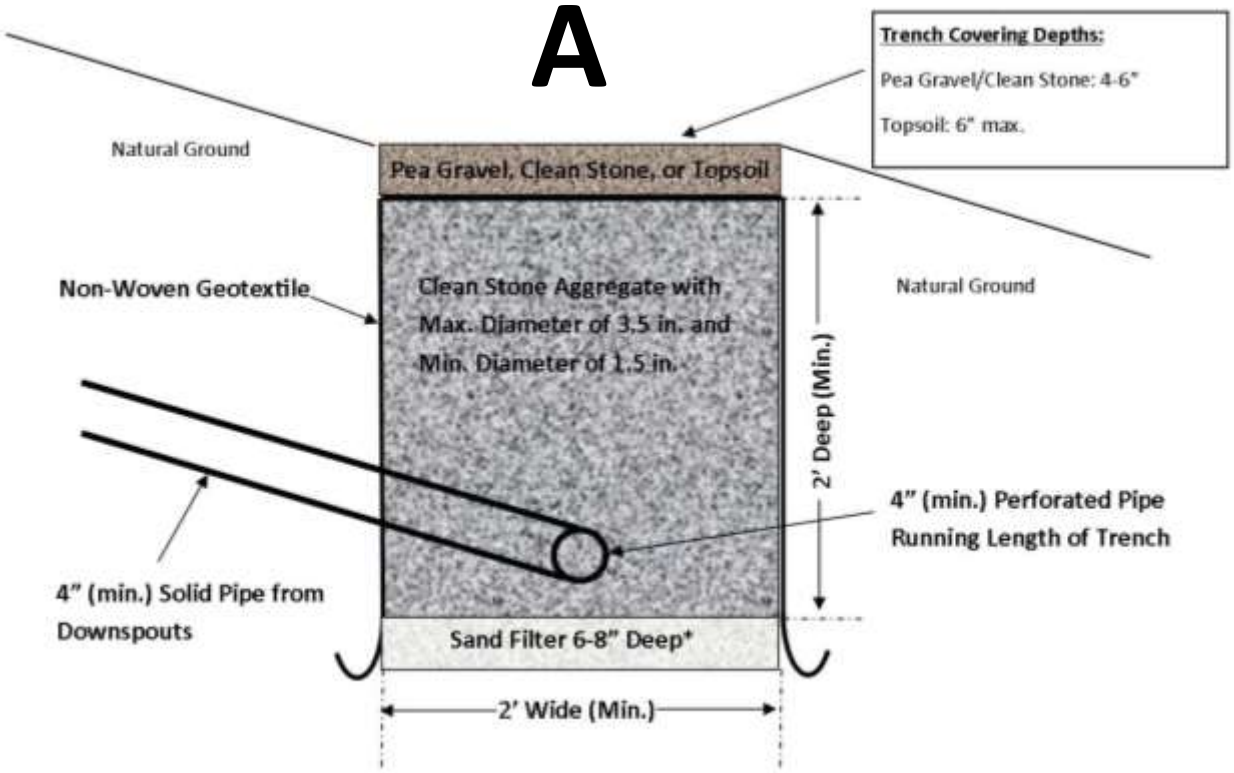
Trenches must be positioned to intercept the stormwater runoff from the major impervious areas of the site (e.g. the house, garage, etc.). Stormwater may be conveyed to the trench via overland flow (e.g. an "off-line" design), or may be piped directly into the trench (e.g. an "on-line" design). The trench design depends on the slope of the contributing drainage area. The following flow chart presents allowable trench details, and the specific detail drawings follow further below:



Online: Downspouts piped directly into trench
Offline: Downspouts not piped directly into trench; stormwater is delivered to trench via overland flow
*Preferred options marked with asterisk above

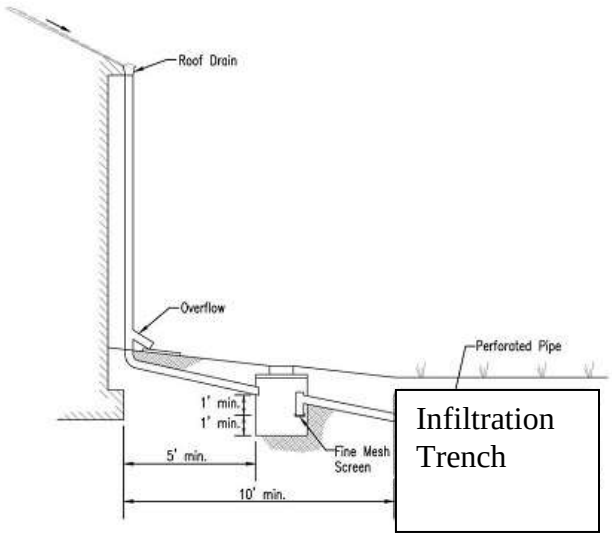
I. On-Line Design: For situations where the stormwater from the major impervious areas will be piped directly into the proposed infiltration trench. A pre-treatment sump basin or other similar measures must be implemented to prevent debris from clogging the system.

(A) Recommended Trench Detail (Not To Scale):



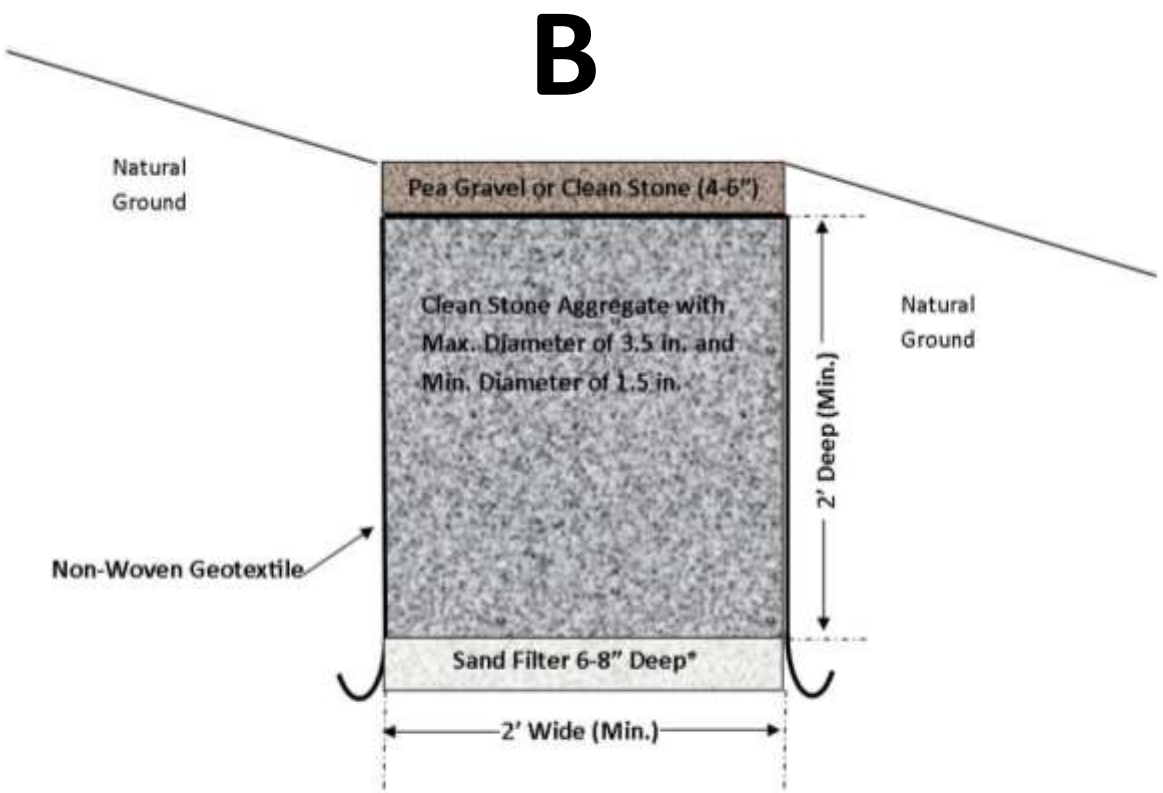
*Sand Filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.

Recommended Overflow & Pre-Treatment Detail (Not To Scale):



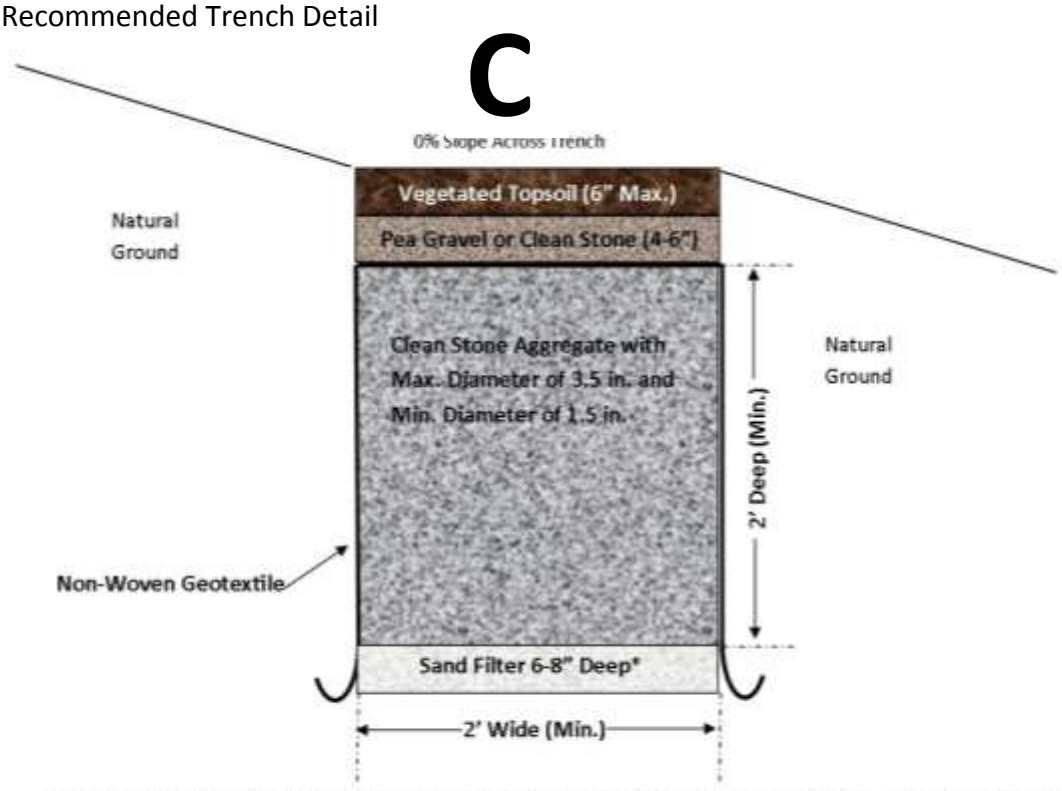
II. Off-Line Design: For situations where the stormwater from the major impervious areas will naturally flow to the location of the proposed infiltration trench. Options (B) and (C) are presented below. See flow chart above for situations where each option may be used.

(B) Recommended Trench Detail



*Sand Filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.

(C) Recommended Trench Detail



*Sand Filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.

Trench Size:
The trench width and depth shown in the details above are minimums. Trenches may be wider or deeper if needed to create more infiltration capacity. The trench length(s) will depend on the site topography and the capacity needed. Typical trench lengths vary from approximately 60 ft. to 240 ft. depending on topography, amount of proposed impervious area, and the infiltration rate of the soils.

Outlets:
The use of outlet pipes from the trench to daylight is discouraged for both on-line and off-line designs, as it concentrates stormwater and also creates unnecessary expense. Most soils around Lake Anna have infiltration rates that are high enough such that structural outlets from the trench itself are not necessary. The minimum infiltration rate for this practice is ½ inch per hour. For on-line designs, if site constraints do not allow for the recommended overflow above (located at the downspout before it goes underground) and an outlet inside the trench itself is needed, the outlet should consist of a 4" perforated pipe running the length of the trench connected to a 4" pipe that runs to daylight. Outlet protection should be provided at the daylight location, consisting of a minimum of 2' wide by 2' long x 1' deep of VDOT #3 stone or larger.

Additional Design Criteria (NOT an inclusive list):

(1) Building Setbacks: Trenches must be at least 10 feet down-gradient and 50 feet up-gradient from structures.

(2) Well Setback: Trenches must be at least 100 feet from water supply wells.

(3) Trench Elevation: Trenches should run along the contour and should be located at an elevation high enough such that the bottom of the trench is a minimum of 2 ft. above the water table (which is assumed to be the mean lake elevation of 250 ft.).

(4) Other design criteria may be found in VA DEQ Stormwater Design Specification No. 8.

Note that the TJSWCD's review of alternative Lake Anna Shoreline Management Plans is to ensure that the practices provide the required minimum level of infiltration, and does not necessarily mean that trenches are sized or positioned according to civil engineering principles. Infiltration practices should be designed by a qualified professional.

Please feel free to contact us at 540-967-5940 or Raleigh.coleman@tjswcd.org with any questions or concerns.

cc (via email): Alyson Sappington, TJSWCD District Manager
Mary E. Johnson, L.S., Planning Associate, Louisa Community Development

Virginia's 19 Minimum Standards For Erosion & Sediment Control

Minimum Standard 1 – Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Minimum Standard 2 – During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Minimum Standard 3 – A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Minimum Standard 4 – Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Minimum Standard 5 – Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

Minimum Standard 6 – Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

A. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

B. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25 year storm of 24 hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Minimum Standard 7 – Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Minimum Standard 8 – Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Minimum Standard 9 – Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Minimum Standard 10 – All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Minimum Standard 11 – Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Minimum Standard 12 – When work in a live watercourse is preformed, cautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used in the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

Minimum Standard 13 – When a live water course must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

Minimum Standard 14 – All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

Minimum Standard 15 – The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Minimum Standard 16 – Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria.

A. No more than 500 linear feet of trench may be opened at one time.

B. Excavated material shall be placed on the uphill side of trenches.

C. Effluent from dewatering devices shall be filtered or passed through an approved sediment trapping device, or both and discharged in a manner that does not adversely affect flowing streams or offsite property.

D. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

E. Restabilization shall be accomplished in accordance with these regulations.

F. Applicable safety regulations shall be complied with.

Minimum Standard 17 – Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be moved from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment has been removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Minimum Standard 18 – All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Minimum Standard 19 – Properties and waterways downstream from development sites shall be protected from sediment disposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:

A. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

B. Adequacy of all channels and pipes shall be verified in the following manner:

1. The applicant shall demonstrate that the total drainage area to the point of analyses within the channel is one hundred times greater than the contributing drainage area of the project in question; or

2. (a) Natural channels shall be analyzed by the use of a 2-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks

(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a 2-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a 2-year storm will not cause erosion to the channel bed or banks; or

(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the pre-development peak runoff rate from a 2-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan-approving authority to prevent downstream erosion.

(d) The applicant shall provide evidence of permission to make the improvements.

(e) All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.

(f) If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

(g) Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

(h) All on-site channels must be verified to be adequate.

(i) Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system or to a detention facility.

(j) In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

(k) All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.