

EXHIBIT F PERFORMANCE STANDARDS

Monitoring reports, visual observations, and best professional judgment will be used to evaluate attainment of Performance Standards and to determine whether part of or the entire Bank is successful and whether corrective action or Adaptive Management are warranted. Performance will be determined on a per plot basis. Any deviation in Performance Standards must be approved by the Chairs in consultation with the IRT prior to implementing the deviation in Performance Standards. Any decision whether or not a project meets the Performance Standards is within the sole discretion of the applicable Board official or court and shall not be subject to appeal. The following standards will be used to assess project performance:

- Submittal of required documentation, including monitoring and financial reports, as-built drawings, proof of escrow deposits and withdrawals in accordance with Section 18 and 25.
- In Stream and Wetland Preservation Areas, including Stream and Upland Buffer Preservation areas:
 - a. Document compliance with the INU Management Plan as approved in the MWP.
 - b. Buffer or wetland areas that were cleared to provide access for other restoration or enhancement activities must meet the Performance Standards described in Buffer areas below.
- In all restoration, creation, and enhancement Buffer areas,
 - a. For forested areas, a minimum of 400 woody stems of native tree species per acre (including volunteers) shall be achieved by the end of the first Growing Season following planting and maintained each monitoring year until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter. The number of woody stems of native tree species per acre may vary under certain circumstances. Such deviations must be approved by the Chairs in consultation with the IRT.
 - b. Native non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter. Any seeds used for plant establishment should conform to the Virginia Seed Law (Sections 3.2-40 of the Code of Virginia) and Virginia Seed Regulations (2 VAC 5-390-et seq) and shall be free of *Festuca arundinacea*, *Cynodon dactylon*, and other allelopathic turf grass species, as well as any INU plant species (as defined in this MBI).
 - c. Document compliance with the INU Management Plan as approved in the MWP.
 - d. All Plots shall be free of INU tree species.

- e. The Year 5 and the final monitoring report (typically Year 10) shall contain plot documentation that demonstrates that all vegetation within the buffer area is healthy and thriving and the average tree height of all surviving trees within the sample plots are at least 5 feet in height by Year 5 and for each monitoring year thereafter.
 - f. Until canopy coverage exceeds 30%, the average height of all woody stems of tree species including volunteers in each plot must increase by not less than an average of 10% per year in Year 5, 7, and 10. As an alternative standard, the fifth year monitoring report (Year 5) and tenth year (Year 10) shall contain documentation that all vegetation is healthy and thriving and the average tree height of all established and surviving trees is at least 5 feet in height
 - g. The species composition should reflect the plant list approved in the FMWP unless approved by the Chairs, in consultation with the IRT.
- In vegetated wetland Restoration/Creation areas,
 - a. Wetland hydrology, defined as saturation of the major part of the root zone (in the upper 12 inches of the soil profile) or ponding upon the soil surface for at least twelve and one-half percent (12.5%) of the Growing Season measured in consecutive days must be achieved.
 - b. Herbaceous Plants: More than 50% of all dominant herbaceous plant species shall be facultative (FAC) or wetter (FACW or OBL). Areal coverage shall be a minimum of 50% in emergent wetland areas after one growing season. In planned emergent wetlands, shrub/scrub or sapling/forest vegetation is not included in coverage for herbaceous vegetation.

Wetland vegetation dominance, defined as a vegetation community where more than 50% of all dominant species are facultative ("FAC") or wetter using "routine delineation methods" as described in the 1987 Manual and appropriate Regional Supplement to the Manual (*or insert reference to any approved Regional Supplements as they become available prior to MBI approval*) must be achieved.

- c. Native stem density in forested wetland areas of at least 400 living woody stems of native tree species per acre with an indicator of FAC or wetter shall be maintained through the end of the monitoring period or until canopy coverage of tree species is greater than 30%, whichever comes first. Canopy coverage shall be at least 30% each monitoring year thereafter. Stem counts shall include all established tree stems (both planted and volunteer individuals).

Once canopy cover exceeds 30% in any plot, tree species counts in those areas may be halted provided that canopy coverage is documented to be at least 30% each monitoring year thereafter.

- d. Native stem density in scrub/shrub wetland areas of at least 400 living woody stems of native shrub species per acre with an indicator of FAC or

wetter shall be maintained through the end of the monitoring period Stem counts shall include all established shrub stems (both planted and volunteer individuals).

- e. Document compliance with INU Management Plan as approved in the MWP.
- f. No plot shall contain an INU tree species or any other tree species deemed nuisance or undesirable by the IRT.
- g. Native non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter. Any seeds used for plant establishment should conform to the *Virginia Seed Law (Sections 3.2-40 of the Code of Virginia) and Virginia Seed Regulations (2 VAC 5-390-et seq)* and shall be free of *Festuca arundinacea*, *Cynodon dactylon* , and other allelopathic turf grass species, as well as any INU plant species and species deemed nuisance and undesirable by the IRT .
- h. Native plant coverage in emergent wetland areas of at least 60% must be achieved by the end of the first growing season, 80% must be achieved by the end of the second growing season, and 80% must be achieved by the end of the third growing season and maintained through the end of the monitoring period.
- i. Until canopy coverage exceeds 30%, the average height of all woody stems of tree species including volunteers in each plot must increase by not less than an average of 10% per year in Year 5, 7, and 10. As an alternative standard, the fifth year monitoring report (Year 5) and tenth year (Year 10) shall contain documentation that all vegetation is healthy and thriving and the average tree height of all established and surviving trees is at least 5 feet in height.
- j. The species composition shall reflect the plant list approved in the FMWP unless approved by the Chairs, in consultation with the IRT.
- k. Soil Performance Standards shall be evaluated for wetland Creation areas located on non-hydric soils or wherever soils have been cut or filled. In that event, the following Performance Standards shall be followed:
 - (1) For coarse textured (sandy) surface soils, positive indicators of hydric soil formation must be demonstrated within 6 inches of the soil surface. Groundwater monitoring may be used as a positive indicator for all monitoring years after reaching the final grade, in which case, wells must demonstrate free water within 6 inches of the surface for 15 consecutive days during the growing season.
 - (2) For fine textured soils (silts, clays, loams), positive indicators of hydric soil formation must be demonstrated within 12 inches of the soil surface.-Groundwater monitoring may be used as a positive indicator

for all monitoring years after reaching the final grade, in which case, wells must demonstrate free water within 12 inches of the surface for 15 consecutive days during the growing season.

- (3) Positive indicators of hydric soil formation may include redoximorphic features including, but not limited to redox concentrations, redox depletions, reduced matrices, positive tests with cadiperydyl, or other field indicators contained in the Field Indicators of Hydric Soils of the U.S.
- (4) A complete soil morphologic description shall be documented pre and post construction and at the 3rd, 7th, and 10th year following construction to document changes in overall soil morphology, particularly the development of redoximorphic features over time (such as a reduction in matrix chroma or development of redox depletions), to demonstrate that soils at the site are progressing towards hydric soil conditions. At a minimum, soil profiles shall be described at a distance of 10 to 30 feet from each well.

- Stream Performance Standards

The overall objective for the stream compensation is to ensure that the dimension, pattern, and profile of the stream enhancement and restoration areas: 1) remain within the natural range of variability present in the reference data obtained for the design; 2) remain stable; 3) exhibit appropriate habitat diversity; 4) have healthy viable riparian buffers and 5) improve biological communities.

The IRT will use best professional judgment, visual observations and monitoring reports to evaluate attainment of stream Performance Standards and in determining whether part or the entire Bank is successful or whether corrective action or Adaptive Management are warranted.

- a. Stream Preservation Areas

For the linear footage of stream in which stream preservation is proposed regardless of riparian area activities, the following Performance Standards will apply:

- (1) Dimension

The analysis of representative riffle cross-sections shall indicate that they have not aggraded, degraded, widened, or narrowed to the point where they have become unstable or will cause instability. The following measurements will be used to aid in making this determination each monitoring year:

- (a) The Width / Depth Ratio Stability Rating (measured Width / Depth Ratio divided by the approved as-built Width / Depth Ratio) shall not be greater than 1.3. If the channel is incising, then the Width / Depth Ratio Stability Rating shall not be less than 0.7.
- (b) The Bank Height Ratio shall not increase or decrease by an amount greater than 0.2 of the approved as-built Bank Height

Ratio.

b. Stream Enhancement Areas

For the linear footage of stream with stream enhancement activities, the following Performance Standards will apply in addition to those outlined in the Stream Preservation Performance Standards above

(1) Stream Reach Stability

The analysis of the streambank from the top of the bank to the ordinary high water mark presence of natural protection to prevent streambank erosion that could jeopardize the stability of the streambank or the stream reach.

The following measurements will be used to aid in making this determination each monitoring year:

- (a) Where streambank plantings were undertaken: The numbers of live stakes, planted, or volunteer woody stems of native tree species providing bank stabilization from the top of bank to ordinary high water mark shall be at least 1 living stem per 10 square feet per stream edge along the bank by the end of the first growing season following planting and maintained each monitoring year until canopy coverage is 50% for any identified reach. Canopy coverage shall be at least 50% each monitoring year thereafter.
- (b) Document compliance with the INU treatment plan as approved in the FMWP.
- (c) No plot shall contain an INU tree species or any other species deemed nuisance and undesirable by the IRT.
- (d) The species and composition shall reflect the plant list approved in the FMWP unless approved by the Chairs, in consultation with the IRT
- (e) The individual Index Values of Bank Erodibility Hazard Index (BEHI) rating for any identified reach shall be equal to or less than the previous year's Index Value. In addition, the Total Score shall be equal to or less than the previous year's Total Score, and shall have a Total Score of "Moderate" by monitoring Year 3, and a Total Score of "Low" by monitoring Year 5, and maintained at "Low" throughout the remainder of the monitoring period.
- (f) The U.S Forest Service Stream Reach Inventory and Channel Stability Evaluation (Pfankuch, 1975) rating shall be "Good" each monitoring year, beginning with Year 2.

(2) Pattern

The analysis of the plan-view survey or field measurements shall indicate that the stream is not migrating to the point where it will cause

bank erosion and instability.

The following criteria will be used to aid in making this determination each monitoring year:

- (a) The sinuosity of the stream does not increase or decrease by an amount greater than 0.1 of the approved as-built pattern.
- (b) The thalweg of each channel cross-section does not move by more than 10% of the width of the approved as-built channel width in any given year.
- (c) The Radius of Curvature / Bankfull Width Ratio does not increase or decrease by an amount greater than 0.2 of the as-built condition. For instance, if the as-built ratio is 3.0, the acceptable ratio shall be 2.8 to 3.2 remain within the range of variability present in the reference data

c. Stream Enhancement with Structures

For the linear footage of stream with instream structures, the following Performance Standards will apply in addition to those outlined in the stream preservation and enhancement Performance Standards above:

(1) Structures

The analysis of each instream structure shall indicate that it is performing its intended function, and not adversely affecting the stream. The following measurements will be used to aid in making this determination each monitoring year:

- (a) Absence of under cutting, washing around, or erosion of the bank or streambed associated with any instream structure, excluding any minor channel scour within the thalweg immediately downstream of a structure caused by its intended redirection of flow.
- (b) The invert elevation (controlling elevation) of the header rocks or logs of any vane, j-hook, cross-vane, W-weir, or other structure shall not vary more than 0.2 feet from the approved as-built.

(2) Materials

The analysis of the pebble count data shall not show a significant change in streambed materials to the point that indicates a shift in bedload material due to stream instability. The following measurement will be used to aid in making this determination each monitoring year:

- (a) The D50 size particle remains within its approved as-built size class (silt, sand, gravel, cobble, or boulder).
- (b)

d. Stream Restoration

For the linear footage of stream with stream restoration activities, the following Performance Standards will apply in addition to those outlined in the stream preservation and enhancement Performance Standards above:

(1) Profile

The analysis of the longitudinal profile shall indicate that the bed elevation has neither aggraded nor degraded to the point where it will cause instability.

The following criteria will be used to aid in making this determination each monitoring year:

- (a) The analysis of the Longitudinal Profile does not indicate significant alterations in the locations, depths, and slopes of stream features (riffle, run, pool, and glide).

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