



AEM Tool for the Evaluation of Existing Vegetated Treatment Areas

Vegetated Treatment Areas (VTA) are utilized on many farms for the treatment of process waste water and run-off from many sources including silage leachate, milking centers, compost pads, calf hutch areas, etc. Many of these areas were designed under previous NRCS Standards including Filter Strip and Wastewater Treatment Strip and not under the current NRCS NY-635 Standard. Some on-farm vegetated treatment areas may also have been installed without being designed by a qualified professional. The

New York State Board for Engineering and Land Surveying (SBEL) of the NYS Education Department regulates Professional Engineering in NY. They define the practice of the profession of engineering as performing professional engineering service where the safeguarding of life and health is concerned. Therefore vegetated treatment areas are required to be designed by an engineer licensed to practice in New York State (P.E.) or by a Natural Resources Conservation Service (NRCS) employee with appropriate job approval authority.

This guide is intended for planners or SWCD personnel, in association with a PE, to evaluate vegetated treatment areas that have no record of being designed or no as-built documentation or designs to an older standard to determine whether or not they substantially meet the current standard. **This guide does not apply to new VTA installations. See the latest NRCS 635 Standard for installing new VTAs.**

CAFO SPECIFIC APPLICATIONS

Based on the requirements of the New York Environmental Conservation Law CAFO General Permit (GP-0-09-001), all new vegetated treatment areas for treatment of wastewater from farmstead facilities like bunker silos, barnyards, compost pads, calf hutches, milking centers, etc. must be designed and installed according to the April 2009 version of the NRCS VTA Standard (NRCS-NY 635) and certified as such by a Professional Engineer (PE) currently licensed to practice in New York State or NRCS employee with the appropriate job approval authority.

GP-O-09-001 requires that all existing VTAs (often previously known as Wastewater Treatment Strips, Filter Areas, etc.) must be evaluated by a PE currently licensed to practice in New York State by March 31, 2011. The PE must evaluate the existing VTA to determine whether it is functioning as designed, substantially meeting the intent of the April 2009 version of the NRCS-NY 635 Standard, and adequately protecting surface and groundwater quality.

If the PE determines that the existing VTA meets these criteria, then the farm shall:

- a. document this consideration in the CNMP and in that year's Annual Compliance Report (including any differences);
- b. document any non-structural changes required in the new NRCS standard,
- c. implement those non-structural changes by March 31, 2011, and
- d. continue to monitor the existing BMP for conditions that require a modification.

If the PE for the facility deems the existing VTA to NOT meet the conditions described above, the facility shall implement all non-structural and structural changes necessary to meet the new NRCS standard as identified in the evaluation by March 31, 2012 for Large CAFOs or in accordance with the provisions of Part III.C. of the DEC ECL CAFO General Permit (GP-0-09-001) for Medium CAFOs.

Evaluation

- While a PE currently licensed in NYS must sign-off on the evaluation, a planner or SWCD personnel working with a PE may be able to perform much of the work of the evaluation, at the discretion of the farmer, PE, and planner involved. Regardless of the arrangement, the following criteria from the April 2009 NRCS-NY VTA Standard (635) should be considered in the evaluation of whether the existing practice is functioning as designed, substantially meeting the intent of the new VTA Standard, and adequately protecting surface and groundwater quality. Evaluation should include an assessment of site risk to include:
 - Distance to waters of the State and / or continuously flowing channels.
 - Wells, both on-site and neighboring, where applicable.

The criteria are arranged by core factors to assess for all VTAs and by additional factors to assess for specific VTA applications on farms: barnyard runoff, milking center waste, silage leachate, compost pad runoff, and calf hutch runoff.

NOTE: For CAFO regulated farms, a Potential Concern level of 4 may indicate that the site does not meet the requirements of the NRCS VTA standard and is therefore out of compliance with the regulation. Movement, elimination or modification of the structure may be required to continue compliance with the CAFO regulations and meet the ‘no discharge’ criteria.

Existing Vegetated Treatment Area Evaluation Criteria - ALL VTAs

Factors Needing Assessment	Potential Concern			
	Lower 1	2	3	Higher 4
Soil Hydrologic Group (HG) and Nitrate Leaching Index (NLI) Rating for VTA	HG = A, B, C, or D and NLI < 8	HG = A, B, C, or D and NLI 8-10	HG = B, C, or D and NLI >10	HG = A and NLI > 10
Soil Test Phosphorus for lower 1/3rd of VTA (composite sample to 12" depth; Morgan test or equivalent)	≤ 20 lbs/acre	21 – 50 lbs acre	51 – 79lbs/acre	≥ 80 lbs/acre
Soil Depth to Groundwater in VTA (field observation and/or soil survey)	≥ 2'			< 2'
Soil Depth to Bedrock under distribution trenches and VTA	≥ 2'			< 2'
Artificial subsurface drainage (tile) within VTA	None			Tile within VTA
Flow distance from end of VTA to water of the State	≥ 25' or bermed to contain			< 25'
Distribution of flow into the VTA (level lip spreader, pipes, weep holes, etc.)	Sheet flow entire length	Sheet flow with small concentrated flow paths and down gradient spreader	Starts as sheet flow but has many concentrated flows	All concentrated flow
Vegetation Management	Vegetation mowed and removed as appropriate		Vegetation mowed, but not removed	Vegetation not mowed and removed
Presence of Kill Zone in VTA	No kill zones apparent	A few minor kill zones within a few feet of the effluent spreader	Several minor kill zones throughout length of VTA	Many smaller or several larger kill zones present
Off Site Surface and Groundwater	All off-site surface and groundwater diverted or not a problem			Large amounts of off-site water impacting VTA

Existing Vegetated Treatment Area Evaluation Criteria - Barnyard Runoff

Factor Needing Assessment	Potential Concern			
	Lower 1	2	3	Higher 4
VTA Sized for:	≤ 500 lbs N loaded/acre/year (see 635 Standard)			> 500 lbs N loaded/acre/year (see 635 Standard)
Solid Removal or Separation	Functioning properly, maintained after every rainfall event	Appears to be functioning properly, well maintained but some solids in VTA distribution system	Large amounts of solids in VTA distribution system	No solid separation or removal OR function impaired
Flow length from top of VTA to end of active treatment area	Provides ≥ 15 minutes of flow through time or bermed to contain			Provides < 15 minutes of flow through time
VTA Width	VTA generally on contour and peak flow depth ≤ 0.5”			Not on contour and peak flow depth > 0.5”
Liquid Control (e.g., urine, other continuous sources of liquid waste)	Liquids collected and managed or ‘dosed’ to VTA			Liquids continually flowing to VTA

Existing Vegetated Treatment Area Evaluation Criteria - Milking Center Waste

Factor Needing Assessment	Potential Concern			
	Lower 1	2	3	Higher 4
Wastewater Production Estimate	VTA based on milking herd \leq 75 cows or water meter measurements			No water meter measurements and milking herd $>$ 75 cows
VTA Sized For:	\geq 10 sq.ft. per gallon of wastewater per day			$<$ 10 sq.ft. per gallon of wastewater per day
Flow distance from top of VTA to surface water	\geq 300' or bermed to contain			$<$ 300'
Flow length of VTA	\geq 100'			$<$ 100'
Solid Removal and Source Control	No milk or manure enters the system	Small amounts of milk waste and manure enter the system	Some milk waste and manure enter system	No control of milk waste or manure
Settling tank	3 day storage and tee inlets and outlets		3 day storage and no tee inlets or outlets	$<$ 3 day storage or no settling tank
Dosing or Alternating System	Dose single VTA every 3 days or alternate with second VTA at most every 7 days			No dosing or alternating system
Settling Tank Pump-out	Settling tank pumped based on frequent inspection for accumulated solids	Settling tank pumped on a regular basis or when full	Settling tank pumped every few years	Settling tank never pumped or caked with solids

Existing Vegetated Treatment Area Evaluation Criteria - Silage Leachate High Flow

Factor Needing Assessment for Silage Leachate VTAs	Potential Concern			
	Lower 1	2	3	Higher 4
Flow length from top of VTA to end of active treatment area	≥ 300' or bermed to contain			< 300'
Low/High Flow Separator	Functioning properly, well maintained, kept free of debris and no kill zone in VTA	Appears to be functioning properly, well maintained, but small kill zone in VTA	Functioning, with moderate kill zone and some solids in VTA	Not functioning properly, poorly maintained, large kill zones and accumulated solids in VTA
VTA sized for Runoff from Bunker Silos	≥ 1/3 of contributing area			< 1/3 of contributing area

Existing Vegetated Treatment Area Evaluation Criteria - Compost Pads

Factor Needing Assessment	Potential Concern			
	Lower 1	2	3	Higher 4
Flow length of VTA	≥ 100'			< 100'
Flow distance from top of VTA to surface water	≥ 300' or bermed to contain			< 300'
VTA sized for Runoff from Compost Pad	≥ 1/3 of contributing area			< 1/3 of contributing area

Existing Vegetated Treatment Area Evaluation Criteria - Calf Hutch Runoff

Factor Needing Assessment for Calf Hutch Runoff VTAs	Potential Concern			
	Lower 1	2	3	Higher 4
Flow length of VTA	≥ 100'			< 100'
Flow distance from top of VTA to surface water	≥ 300' or bermed to contain			< 300'
VTA sized for Runoff from Calf Hutch Area	≥ 1/3 of contributing area			< 1/3 of contributing area
Low Flow Collection	No low flow generated or low flow collected before VTA			Continual low flow to VTA

CERTIFICATION LETTER.

The P.E. performing the evaluation shall provide a letter certifying the vegetated treatment area based on the information included in this package. The following statement, including recommendations, and signature must be included with the certification letter:

It is my professional opinion based on observations made on <insert date> the structure substantially meets (or does not meet) NRCS Standard 635 with the following exceptions" ... (if any)

- 1) Monitoring Requirements..... (if any)
- 2) Additional Operation and Management Requirements.....(if any)
- 3) Reconstruction Requirements.....(if any)

OPERATION AND MAINTENANCE

Facilities, structures, and practices must be operated and maintained to ensure proper function and longevity. Periodic follow-up with the landowner by the CNMP planner is essential to ensure that all operation and maintenance (O&M) requirements are understood and followed. Changes in the O&M may require consultation with a P.E.