E.O. 13508
Strategy for Protecting and Restoring the Chesapeake Bay Watershed

executiveorder.chesapeakebay.net
www.epa.gov/nps/chesbay502

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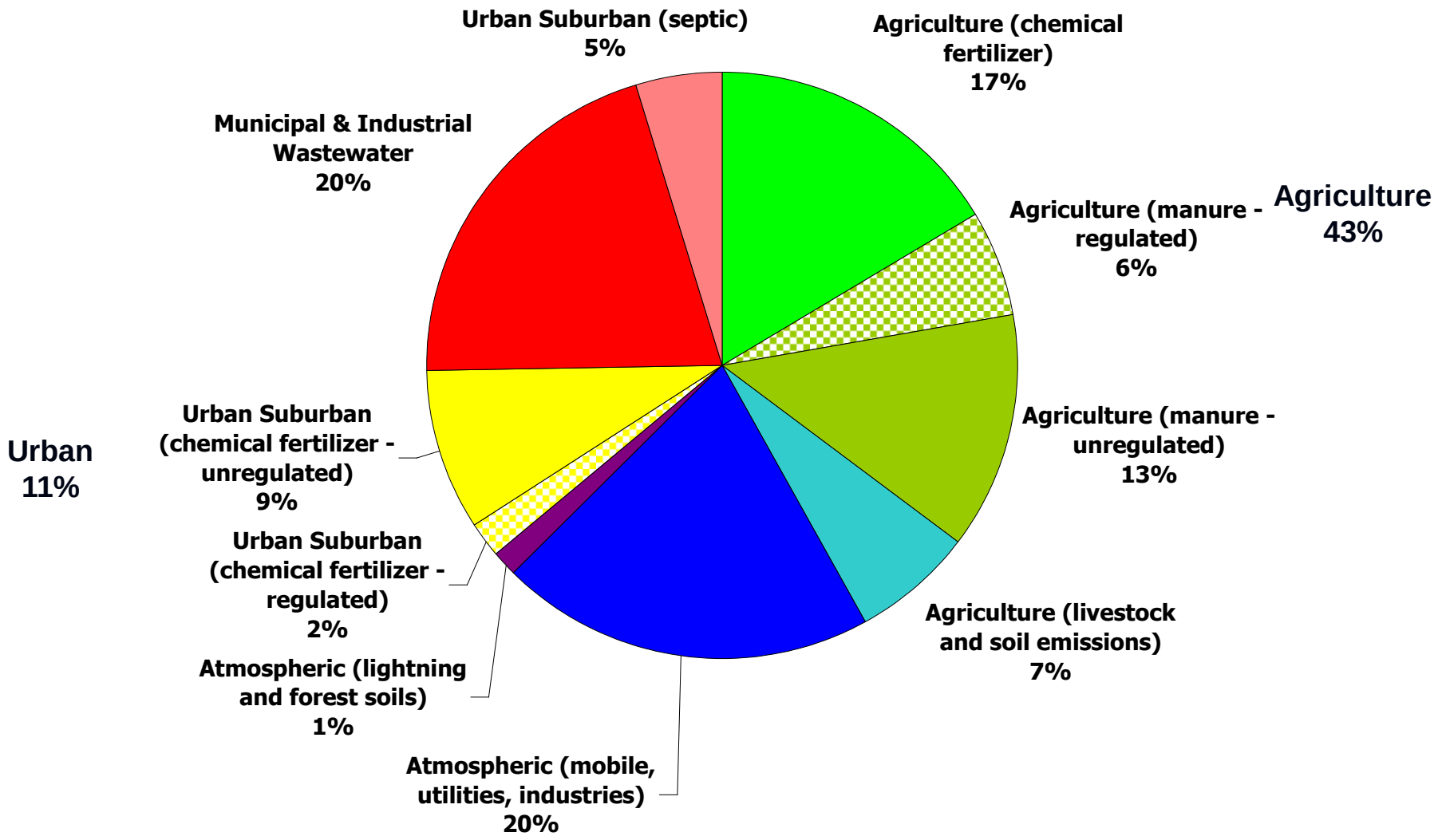
Strategy Goals

- The federal government owns 5.3% of land in the watershed and will lead by example

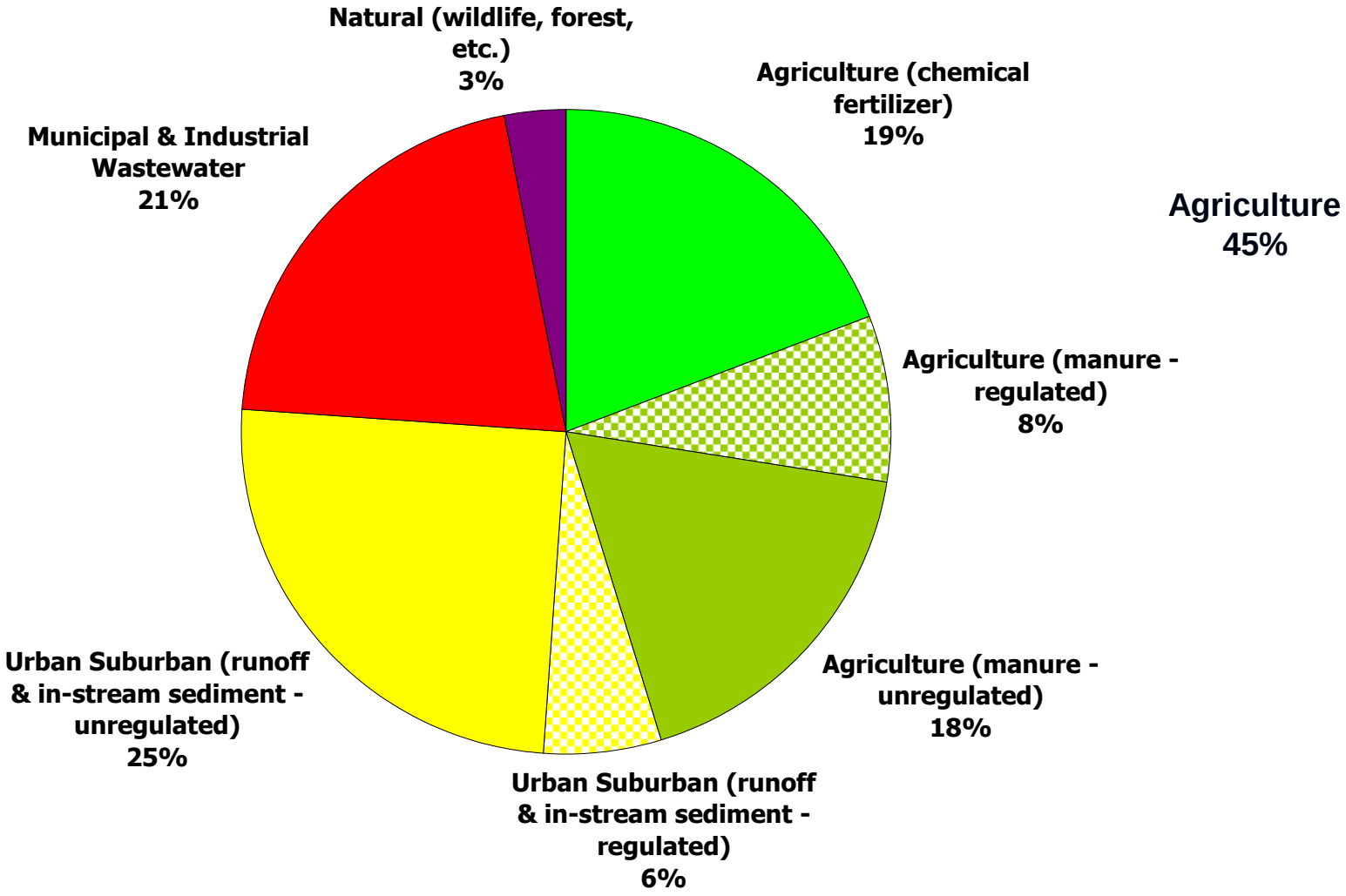
- Restore Clean Water
- Recover Habitat
- Sustain Fish and Wildlife
- Conserve Land and Increase Public Access

Sources of and Federal Regulatory Status for Delivered Loads to the Bay: Nitrogen



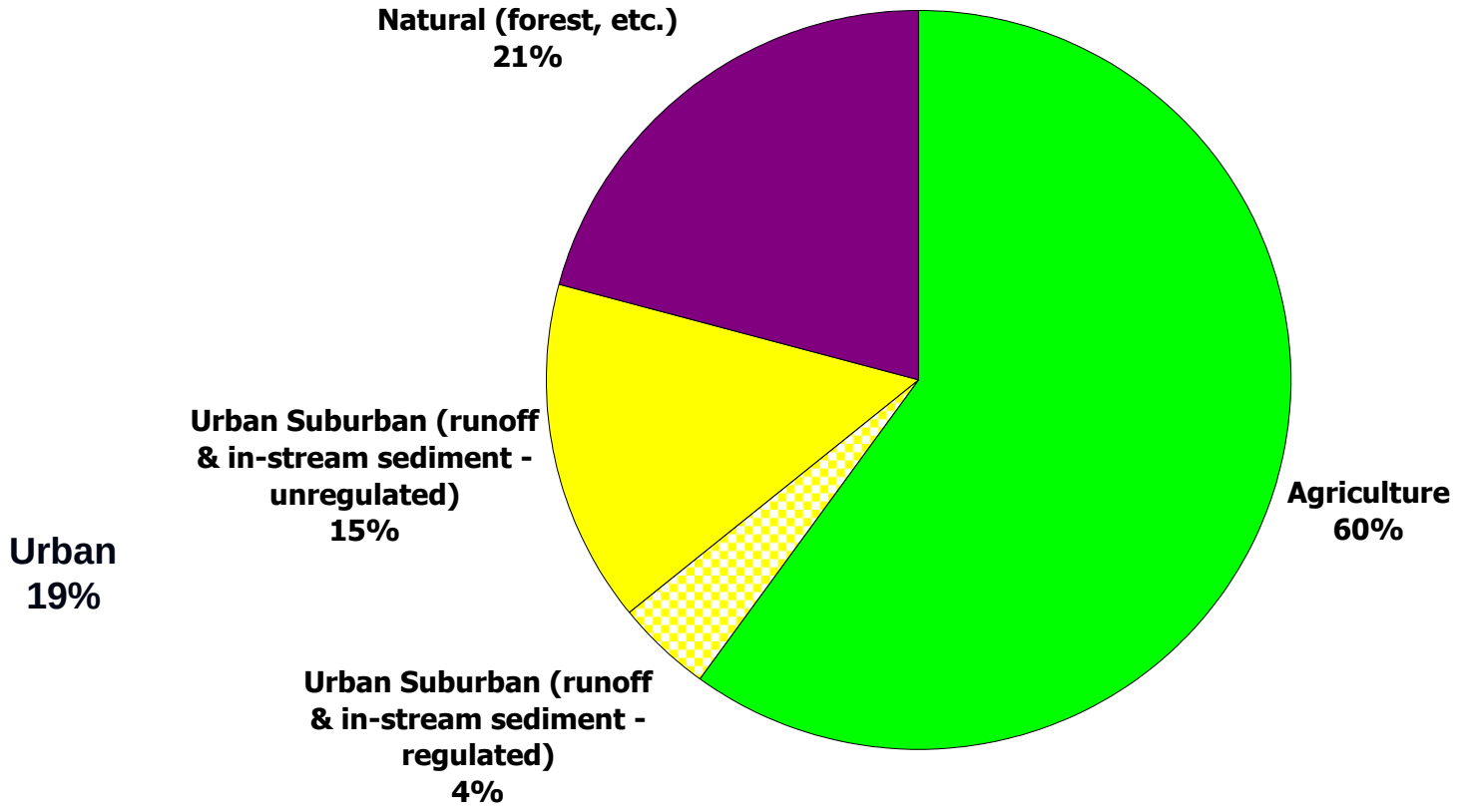
Source: Phase 4.3 Chesapeake Bay Watershed Model

Sources of and Federal Regulatory Status for Delivered Loads to the Bay: Phosphorus



Source: Phase 4.3 Chesapeake Bay Watershed Model

Sources of and Federal Regulatory Status for Delivered Loads to the Bay: Sediment



Source: Phase 4.3 Chesapeake Bay Watershed Model

E.O. Section 502

Guidance for Federal Land Management in the Chesapeake Bay Watershed

"The Administrator of the EPA shall…publish guidance for Federal land management in the Chesapeake Bay watershed describing proven, cost-effective tools and practices that reduce water pollution, including practices that are available for use by Federal agencies."

- Provides information and data on land management practices for federal agencies with land, facilities, or installation management responsibilities affecting ten or more acres within the watershed of the Chesapeake Bay

- Describes proven, cost-effective tools and practices that reduce water pollution, including practices that are available for use by federal agencies

Scope

- The great majority of land in the Chesapeake Bay watershed is nonfederal land that private landowners, states, and local governments manage.
- From the perspective of land management and water quality restoration/protection, the same set of tools and practices are appropriate for both federal and nonfederal land managers to restore and protect the Chesapeake Bay.
- Touches on the relationship to previous documents.

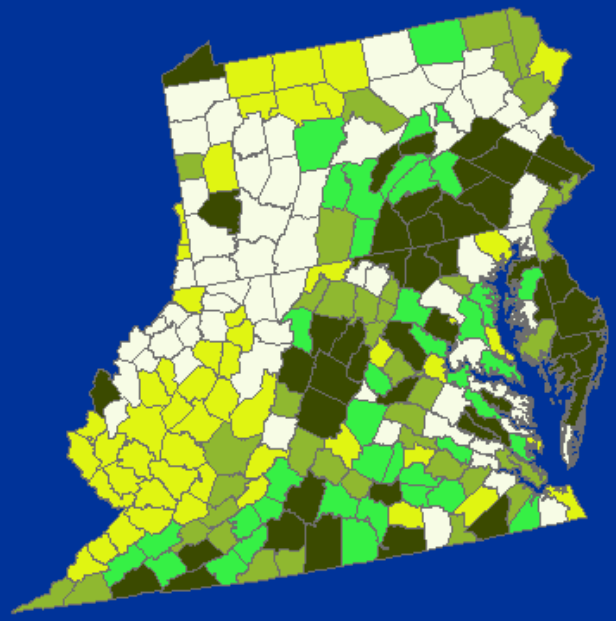
Implementation Measures

- Recommendations for implementation under Strategy Goal
- Designed to promote the use of the best and cost-effective practices available
- Indicated by the current, state-of-the-art scientific and technical literature
- Actions that will help ensure that the broad goals of the E.O. can be achieved

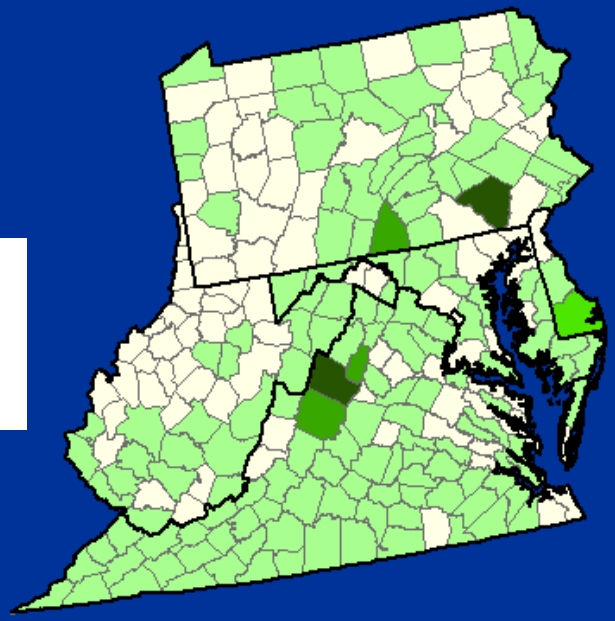
Controlling Agricultural Runoff

- Source Control and Avoidance
  - Cropland Agriculture
  - Animal Agriculture
- Cropland In-field Control
- Cropland Edge-of-Field Trapping and Treatment

Nutrient Imbalances



N balance for cropland in Mid-Atlantic counties in 2007
Source: MAWP 2007
Note: The darkest color indicates counties with the highest N balances.



P balance for cropland in Mid-Atlantic counties in 2007
Source: MAWP 2007
Note: The darkest color indicates counties with the highest P balances.

Nutrient Management Planning

- Nutrient management planning should consider all aspects of the rate, timing, method and form of nutrients, consistently using the host of data available through effective use of nutrient use tools.
- Typically focus on N and P and all sources of these nutrients as input to the agricultural system should be considered.
- The major sources of nutrients include the following:
  - Commercial fertilizers
  - Manures, sludges, and other organic materials
  - Crop residues and legumes in rotation
  - Irrigation water
  - Atmospheric deposition of N
  - Soil reserves

Source Control and Avoidance: Cropland

- Base P application on P saturation in soils as follows:
  - Don't apply fertilizer that contains P to cropland, grazing or pasture land where soil P saturation percentage is above 20 %.
  - Where application is allowed, apply up to an N-based rate.
  - Implement a soil P monitoring plan to ensure that soil-P levels are staying steady over time.
  - If soil P saturation percentage is increasing, adjust manure applications to P-based rate and use commercial N fertilizer to make up the difference; if levels exceed 20 percent P saturation, no longer apply P.

- Maximize N fertilizer use efficiency to maximize the net benefit from the lowest-needed amount of manure, biosolids, or commercial N fertilizer entering the cropland system.
  - Whenever N fertilizer is applied where manure has already been applied, reduce N fertilizer rates according to the N credit of the manure that was applied.
  - That N credit will vary depending on the amount, timing, type, and method of manure that was applied.

Source Control and Avoidance: Cropland Continued

- Replace high nutrient loading crops in high-risk areas for water quality effects with sound alternatives.

- (1) Retire highly erodible lands (HELs) from cropland and replace the crop with perennial native vegetation, or (2) develop and implement a soil conservation plan to reduce sheet and rill erosion to the Soil Loss Tolerance Level (T) as well as a nutrient management plan.

- When using commercial fertilizer, give credit for manure nutrients and, provide for the proper storage, calibration, and operation of chemical fertilizer nutrient application equipment.

Source Control and Avoidance: Animal Agriculture

- Safely and strategically apply (with properly calibrated equipment), store, and transport manure.
  - Design and operate liquid manure storage systems including tanks, ponds, and lagoons (e.g., NRCS Practice Code 313 Waste Storage Facility) to safely store the entire quantity and contents of animal manure and wastewater generated, contaminated runoff from the facility, and the direct precipitation from events in the geographic area, including chronic rain.
  - Dry manure (i.e., stackable, greater than or equal to 20 percent dry matter), such as that produced in poultry and certain cattle operations, should be stored in production buildings, storage facilities, or otherwise covered to prevent precipitation from coming into direct contact with the manure and to prevent the occurrence of contaminated runoff.
  - When necessary, temporary field storage of dry manure (e.g., poultry litter) may be possible under protective guidelines (e.g., NRCS Practice Code 633 Waste Utilization).
  - For manure and litter storage, the AFO should maintain sufficient storage capacity for minimum critical storage period consistent with planned utilization rates or utilization practices and schedule.

Source Control and Avoidance: Animal Agriculture continued

- Formulate animal feeds to reduce nutrient concentration in manure, improve the manure N:P ratio in relation to crop needs, and/or eliminate toxic substances such as arsenic in manure used as fertilizer. Align the N:P ratio of the manure to be equal to (or greater than) the N:P ratio of the crop need.

- Exclude livestock from streams and streambanks and provide alternative watering facilities and stream crossings to reduce nutrient inputs, streambank erosion, and sediment inputs and to improve animal health.

- Process/treat through physical, chemical, and biological processes facility wastewater and animal wastes to reduce as much as practicable the volume of manure and loss of nutrients.

In-Field Control

- Manage nutrient applications to cropland to minimize nutrients available for runoff. In doing so:
  - Apply manure and chemical fertilizer during the growing season only
  - Do not apply any manure or fertilizer to saturated, snow-covered, or frozen ground
  - Inject or otherwise incorporate manure or organic fertilizer to minimize the available dissolved P and volatilized N
  - Apply nutrients to HELs only as directed by the nutrient management plan, while at the same time implementing all aspects of the soil conservation plan.

- Use soil amendments such as alum, gypsum, or water treatment residuals (WTR) to increase P adsorption capacity of soils, reduce desorption of water-soluble P, and decrease P concentration in runoff.

In-Field Control continued

- Use conservation tillage or continuous no-till on cropland to reduce soil erosion and sediment loads except on those lands that have no erosion or sediment loss.
- Use the most suitable cover crops to scavenge excess nutrients and prevent erosion at the site on acres that have received any manure or chemical fertilizer application. Cover crops should be used during a non-growing season (including winters) or when there is bare soil in a field.
- Minimize nutrient and soil loss from pasture land by maintaining uniform livestock distribution, keeping livestock away from riparian areas, and managing stocking rates and vegetation to prevent pollutant losses through erosion and runoff.
- Where drainage is added to an agricultural field, design the system to minimize the discharge of N.

Edge-of-Field Trapping and Treatment

- Establish manure and chemical fertilizer application buffers or minimum setbacks from in-field ditches, intermittent streams, tributaries, surface waters, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to surface waters.
- Treat buffer or riparian soils with alum, WTR, gypsum, or other materials to adsorb P before field runoff enters receiving waters.
- Restore wetlands and riparian areas from adverse effects. Maintain nonpoint source abatement function while protecting other existing functions of the wetlands and riparian areas such as vegetative composition and cover, hydrology of surface water and groundwater, geochemistry of the substrate, and species composition.
- For both new and existing surface (ditch) and subsurface (pipe) drainage systems, use controlled drainage, ditch management, and bioreactors as necessary to minimize off-farm transport of nutrients.
- Manage runoff from livestock production areas under grazing and pasture to minimize off-farm transport of nutrients and sediment.

Riparian Area Management Implementation Measures

- Restore at least 30,000 miles of riparian areas & conserve all riparian areas that are already forested

- Restoration of preexisting functions in damaged & destroyed systems
  - Select and prioritize areas for restoration
  - Analyze existing conditions & ID potential problems at the site level
  - Determine the appropriate buffer width
  - Select, plant, and protect new vegetation

- Protection of existing, healthy systems
  - ID Existing Riparian Buffers
  - Determine Health of Existing Buffers
  - Prevent degradation & losses using acquisition, easements, other land management approaches

Questions?

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