Aquatic Resource Protection and Management Action Plan for the Commonwealth of Pennsylvania

2011-2020

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Version 1.0

Prepared by:
Bureau Watershed Management
Pennsylvania Department of Environmental Protection

Contacts:

Sidney Freyermuth, Chief
Water Obstruction and
Encroachment Section
sfreyermut@state.pa.us
(717) 772-5977

Kenneth Murin, Chief
Division Waterways, Wetlands
and Stormwater Management
kmurin@state.pa.us
(717) 772-5975

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Introduction

The Pennsylvania Department of Environmental Protection (PA DEP) last developed a wetland protection action plan in 1997 for wetland protection program development efforts. The Commonwealth developed and implemented many of the program elements according to that action plan; however, there is a critical need to develop a new overarching **Pennsylvania Aquatic Resource Protection and Management Action Plan** ("the Plan") to focus the Commonwealth's wetland and waterways program development efforts over the next 10 years. The Plan will provide a framework and provide direction over the next decade for the Department of Environmental Protection (DEP) and its partners to strengthen and improve the programs that provide regulatory oversight, management, restoration and monitoring of wetland and other aquatic resources. The Plan is intended to be a "living" document which may be periodically revised to advance the goals as necessary. Various agencies and institutions that share common interests in aquatic resources provided input into the plan and will continue to contribute towards the improvement and implementation of the plan in the future.

PA DEP will be collaborating with numerous agencies and academic institutions for implementing and improving upon this plan. Specifically, PA DEP will be working with the Pennsylvania State University (PSU) concerning wetland monitoring assessment program development efforts. The collaboration between DEP and PSU will help ensure that research initiated at PSU will help meet the objectives and action items identified within this plan. PA DEP will work with other agencies and academic institutions to extend this collaborative approach to maximize the benefits of other research efforts from around the Commonwealth.

Core Element: Monitoring and Assessment

Goal: The goal is to develop a long-term implementation plan for a wetland monitoring and assessment program that protects the physical, chemical, and biological integrity of the Commonwealth's wetland resources.

1.0 Objective: Develop a monitoring and assessment strategy and approach consistent with USEPA's guidance (2006).

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.1	**Identify program decisions and long-term environmental outcomes that will benefit from a M&A program.**											
	1.1.1	Document program's long-term environmental goals (in progress).	X									
	1.1.2	Identify programs that will use monitoring data: PADEP's Wetlands Program and other state programs as well as regional and national programs will use the data as they become available, to inform the regulatory and compensatory mitigation policies and activities, voluntary restoration and protection policies and activities, and for development of wetland water quality standards. (beginning immediately, and added as available for the duration of this plan)	X	X	X	X	X	X	X	X	X	X

	1.1.3	Collaborate with water quality programs in Pennsylvania. Wetland water quality standards will be developed in the future (see section 4.0). At that time, we will develop parallel terminology for designated beneficial uses, narrative and numeric criteria, and antidegradation policies. In the interim, data from M&A efforts will be posted on the PADEP website for use by internal and external parties. (Beginning immediately, and added as available for the duration of this plan).	X	X	X	X	X					
	1.1.4	Identify how wetland data can be used to implement watershed planning. All three levels (tiers) will be used to inform watershed planning by helping to prioritize activities based on wetland condition. Initially, we will use Level 1-Landscape data derived from analyses of the setting existing National Wetlands Inventory (NWI) polygons, and summed by watershed. For consistency with other water programs in Pennsylvania, we will use the Water Plan watersheds. Landscape data will be derived from two sources: 1) landscape metrics related to condition derived by Riparia for Pennsylvania (e.g., Brooks et al. 2004a, Brooks et al. 2009); and 2) landscape metrics and ecosystem services derived by VIMS as part of the Mid-Atlantic Regional Wetlands Assessment. These initial Level 1 analyses will be shared with other water program managers. Data from Levels 2 and 3 will be shared, when available. (Level 1-Landscape - 2011 for data acquisition and summation, 2012 for interpretation; Levels 2 & 3 – initial data exploration by 2014 for selected watersheds)	X	X	X	X	X	X	X	X		
	1.1.5	Reserved.										

1.2	**Define wetland monitoring objectives and strategies.**										
	1.2.1	Coordinate with relevant partners, through existing organizational structures and pathways (e.g., Water Resources Advisory Committee (WRAC), etc.: Other PADEP bureaus and Commonwealth of Pennsylvania agencies (e.g., DCNR, PFBC, PGC, PennDOT. Academic institutions: Pennsylvania State University, Lycoming College, Stroud Research Center and other NGOs. Other regional organizations (e.g., MAWWG, SRBC, DRBC, CBP, etc.) USEPA Region 3 and Headquarters. U.S. Army Corps of Engineers (Baltimore, Philadelphia and Pittsburgh Districts) USDA Natural Resource Conservation Service (NRCS) U.S. Fish and Wildlife Service (FWS) – State College Field Office, National Wetlands Inventory, etc.	X	X	X	X	X	X	X	X	X	X
	1.2.2	Identify and examine other sources of monitoring information within the state.										
	1.2.3	Identify monitoring objectives. (2011)	X									
	1.2.4	Define data needs and uses. (2011)	X									
	1.2.5	Coordinate with Pennsylvania's Water Quality Monitoring Program to identify shared goals and activities. (periodic meetings beginning in 2012)		X								
	1.2.6	Examine how to integrate wetlands monitoring strategy into existing water quality monitoring efforts as feasible. (outgrowth of 1.2.5, 2014)				X						
	1.2.7	Finalize wetlands monitoring strategy. (previously drafted 2009)		X								
	1.2.8	Reserved.										

1.3	**Develop monitoring design and approach.**										
	1.3.1	Determine classification scheme. Explore the use of a combination of existing NWI terminology (Cowardin et al. 1979), domain labels based on lands use (i.e., forested, agricultural, urban) (Brooks et al. 2006), and a new HGM-based classification system by Brooks et al. (2011). The system that best serves our needs will be described by 2014.	X	X	X	X						
	1.3.2	Update National Wetland Inventory mapping with plant community typing based on PA MAP aerial photography, PA MAP Lidar imagery, existing PNHP survey data and additional ground truthing. This effort would better inform our inventory of the Commonwealths' wetland ecological resources, and provide better estimates of the extent and distribution of both common and rare wetland plant community types.				X	X	X	X	X	X	X
	1.3.3	Describe site selection process and the universe of available wetland resources. Based on project objectives (e.g., tool development, long-term trends, ambient condition assessment, mitigation performance, etc.), we will use a combination of site sampling approaches that includes Riparia's reference wetlands, spatial and probability-based GRTS, existing permitted sites and mitigation projects, voluntary restoration projects, and sites chosen based on opportunities.	X	X	X	X						
	1.3.4	Develop a continuous wetland inventory.				X	X	X	X	X	X	X
	1.3.5	Reserved.										

1.4	**Select a core set of indicators to represent condition or a suite of functions.**										
	1.4.1	Identify indicators that are relevant for established monitoring objectives. We have been working internally, with Riparia, and with MAWWG to develop, select, test and implement a variety of indicators at all three levels of efforts. Currently, we are focused on using Level 1-Landscape indicators as described in 1.1.4 (2012), and Level 2-Rapid assessment procedures for use in conducting periodic condition assessments. We are comparing the utility of using a Rapid Assessment Procedure (RAP) developed internally (PA-RAP) and a recently developed RAP, the Unified Mid-Atlantic RAP (Brooks et al. unpublished) (2012). In addition, we have developed a Headwater Reference Population Strategy (see 2.3.1) that will focus primarily on assessment headwater streams, but will lay the groundwork for incorporating wetlands data from the protocols mentioned above. We plan to continue to collaborate with Riparia on using Level 3-Intensive assessments to calibrate Level 1 and 2 efforts, and to assess performance of mitigation projects as compared with natural wetlands (Gebo 2009, Gebo and Brooks in prep., Brooks unpublished)(2011).	X	X	X	X	X					
	1.4.2	Confirm indicators are scientifically defensible. We will use standard methods of peer review, best professional judgment, and/or publication of journal articles, books or reports to document and justify the scientific merit of selected indicators.	X	X	X	X	X	X	X	X	X	X
	1.4.3	Develop and select field methods. See 1.4.1. This process will be continued for the duration of this plan.	X	X	X	X	X	X	X	X	X	X

	1.4.4	Add supplemental indicators as needed. This process will be continued for the duration of this plan.	X	X	X	X	X	X	X	X	X	X
	1.4.5	Reserved										
1.5	**Reserved.**											

2.0 Objective: Implement a sustainable monitoring program consistent with the wetlands monitoring strategy.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2.1	**Ensure the scientific validity of monitoring and laboratory activities.**											
	2.1.1	Draft and peer review Quality Management Plan. (????)										
	2.1.2	Draft and peer review Quality Assurance Project Plan (QAPP). As a standard practice and as part of contracting requirement with USEPA, we develop and have approved QAPPs for all major projects related to this plan. (Continuous process for the duration of this plan).		X	X	X	X	X	X	X	X	X
	2.1.3	Draft and peer review Field Operation Manual (or Standard Operating Procedures, SOPs). When specific approaches or tools are deemed to be ready for operational use, we will complete SOPs for that portion. Thus, there will be an organic process to develop the products for SOPs (for the duration of this plan).	X	X	X	X	X	X	X	X	X	X
	2.1.4	Select, prioritize, and peer review candidate assessment indicators. Based on our continuous process of developing and pilot-testing indicators, we will accumulate a set of indicators deemed suitable for operational use in Pennsylvania. We anticipate that the initial group of indicators and tools will reach operational status in 2013, with a focus on those related to Levels 1 and 2.	X	X	X							

	2.1.4.1	Floristic Quality Assessment Index (FQAI). One of the most promising indicators is the FQAI, developed under the leadership of Riparia at Penn State (Miller et al. in prep.). Building upon Miller and Wardrop (2006) and Miller et al. (2006), the entire flora of wetlands has been given FQAI scores for the Mid-Atlantic Region. An automated FQAI score calculator has been developed and will available on the Riparia website in 2011. A simple list of plant species allows a practitioner to compute a FQAI score for each wetland sampled, and compare to reference conditions.	X									
	2.1.5	Establish wetland community classification key consistent with national classification standards including rarity rankings.	X	X								
	2.1.6	Evaluate utility of using wetland community classification and condition relative to FQAI as a rapid IBI approach for establishing the quality of wetlands based upon community classification and either Level 2 condition assessment or by assessing the level of departure the vegetation community has from reference types.			X	X	X					
	2.1.7	Reserved										
2.2	**Monitor wetland resources as specified in strategy.**											
	2.2.1	Identify, train and assign staff for monitoring activities.			X	X	X					
	2.2.2	Verify monitoring strategy using pilot monitoring projects.			X	X	X					

	2.2.3	Develop a schedule for monitoring wetland resources. At this time, we are assuming a rotating watershed approach that would focus on a portion of watersheds in each of six PADEP Regions based on a prioritized assessment (see 1.1.4). The initial assessment will be conducted at the Landscape level (1). Based on selection of priority watersheds and the availability of funding and staff resources, other M&A activities will be applied sequentially to those priority watersheds. Ideally, we are planning for a 5-year rotation system, but this will evolve with experience.			X	X	X					
	2.2.4	Track sites that are monitored. Our approach to tracking will be to maintain a relational database based tracking internally, with the intent to develop where these data can be stored and accessed. If feasible, we want this effort to dovetail with a continuous wetland inventory (see 1.3.3).	X	X	X							
	2.2.5	Re-establish a long-term hydrologic monitoring of wetlands to track subtle changes that may not appear over brief monitoring periods but which can have the effect of altering the wetland dramatically. Builds on Level 3 reference domain site data collection efforts. Currently over 40 sites have ten year hydrologic data and another 25 that have a five year record of data. The long-term monitoring of such sites provides useful data for a variety of uses from design standard, understanding degradation process to detecting shifts due to climate change.		X	X	X	X					

	2.2.6	Continue to identify wetland plant communities that have been under sampled or otherwise poorly characterized due to insufficient information. Maintaining an accurate wetland plant community classification provides a common frame of reference for wetland types in the context of assessing wetland impacts, mitigation, restoration, protection and regulation.		X	X	X	X	X	X	X	X	X
	2.2.7	Reserved										
2.3	**Establish reference condition.**											
	2.3.1	Develop a strategy to establish a reference domain for headwater streams. Existing program efforts will be identified and if possible, included to build the reference domain quickly. The strategy will identify partners and develop the frame work for establishing the reference domain. Ultimately reference data will be used to build functional models to inform and refine the regulatory program efforts for protection and compensation.		X								
	2.3.2	Reserved										
2.4	**Track monitoring data is a system that is accessible, timely, geo-referenced, and integrated with other relevant water-based data.**											
	2.4.1	Design and administer a data management system that supports program objectives, including re-sampling of selected sites.				X	X	X				

	2.4.2	Make data system compatible with and regularly update with Water Quality Standards. We anticipate that Wetland Water Quality Standards (Wetland-WQS) will evolve as the M&A program matures. Wetland-WQS are likely to use a reference-based approach, displayed as a stressor-response graph. There will likely be a series of tiers that span the gradient from highest ecological integrity (reference standard) to lowest ecological integrity (severely disturbed, ultimately impaired), similar to the approach described by Davies and Jackson (2006) for tiered aquatic life use (TALU). Biological data, particularly for plants, will be developed initially, although physical, chemical, and landscape measures will all be considered, and probably used, too. Using data from all three levels of effort, narrative and numeric criteria will be developed for each "standard" based on the response of the indicator to human disturbance, as characterized by an array of stressors (Brooks unpublished).						X	X	X	X	X
	2.4.3	Integrate with other water quality data systems.										
	2.4.4	Reserved										
2.5	**Analyze monitoring data to evaluate wetland extent and condition/function and/or to inform decision-making.**											
	2.5.1	Document data analysis and assessment procedures. Where these tasks are covered in publications, protocols or reports, those will be cited rather than repeating a description in this document.	X	X	X	X	X	X	X	X	X	X
	2.5.2	Develop assessment methods to determine condition thresholds relative to reference standard condition. Unless and until more sites are needed, Pennsylvania will use the set of reference wetlands and data established by Riparia; www.riparia.psu.edu - (2011).	X	X	X	X						

	2.5.3	Establish baseline wetland condition. PADEP, with assistance from others, will establish baseline condition at all three levels of effort. The data from Levels 1, 2 and 3 need to be integrated, and thus, there will be independent estimates of conditions for Levels 1 and 2, with Level 3 data being used to calibrate the other levels. (Level 1 – 2011, Level 2 – available on a watershed basis, available statewide after a full cycle of watersheds completed, Level 3 – used for calibration only, available now, 2011)	X	X	X	X	X	X	X	X	X	X
	2.5.4	Analyze changes in wetland extent or condition relative to reference conditions. As stated in 2.5.3, changes would be assessed at both Levels 1 and 2 after sufficient data are available.						X	X	X	X	X
	2.5.5	Analyze changes in wetland extent or condition in response to climate change. (This effort likely to be conducted in collaboration with other entities; PADEP does not anticipate taking the lead role.)										
	2.5.6	Regularly report wetlands status and trends. PADEP plans to initially report findings for ambient wetlands conditions based on Level 1-Landscape data, perhaps in 2012. These data would first appear in 305(b) reports on a watershed basis, as described in section 1.1.4. Reporting on trends would occur after at least one additional assessment was completed in the future. Assessments using Level 2-Rapid approaches would likewise occur in the future, with 2014 as a target date (see section 1.4.1) with reporting following sampling.		X			X					

3.0 Objective: Incorporate monitoring data into agency decision-making. At this time, it is premature to describe these actions and activities in detail. As information becomes available, it will be incorporated into agency decision-making to assist in setting policy and regulatory decision regarding wetlands. As studies and assessments are completed, the findings will be utilized to modify existing or establish new policies and regulatory revisions as necessary to improve the underlying programs.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
3.1	Reserved											
	3.1.1	Reserved										

Core Element: Regulatory Program

Goal: The goal is to develop a comprehensive regulatory program that protects the physical, chemical, and biological integrity of the Commonwealth's aquatic resources.

1.0 Objective: Clearly define the jurisdictional scope of the program.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.1	**Provide clear and comprehensive jurisdictional coverage of aquatic resources**											
	1.1.1	Adopt definition of waters of the state or tribe at least as inclusive as CWA	Completed									
	1.1.2	Delineate wetlands in a manner that is at least equivalent with the federal program	Completed									
	1.1.3	Extend state/tribal jurisdiction to aquatic resources that are not "waters of the US" (e.g., isolated wetlands)	Completed									
	1.1.4	Base all water related regulatory programs within state/tribe on the same definition of waters of the State	Completed									
	1.1.5	Revise state regulations to clarify that floodways/floodplains are included as an integral part of waterway resources.	X	X	X							
	1.1.6	Reserved										
1.2	**Clearly identify a comprehensive scope of activities to be regulated**											
	1.2.1	Adopt clear definition of regulated activities that is as extensive as CWA. All changes to the course, current or cross-section of a body of water are considered regulated activities. This broad definition of regulated activities is more comprehensive than the CWA.	Completed									

	1.2.2	Coordinate with other CWA or state aquatic regulatory programs to cover all impact types and methods (e.g., quality vs. quantity, point vs. nonpoint source pollution, classes of activities). Revise state regulation to clarify that diminution and discharge of water to wetlands is a regulated activity.	X	X	X						
	1.2.3	Extend state/tribal jurisdiction to activities that are not regulated under the CWA (e.g. excavation or ditch maintenance). State regulations cover all activities that change the course, current or cross-section of a body of water.	Completed								
	1.2.4	Reserved									
1.3	**Provide clear guidance to public on how to identify jurisdictional waters and activities**										
	1.3.1	Develop clear, publicly accessible guidance and / or training on how to identify waters of the State for wetlands, streams, and other waters. State regulations require the use of the same wetland delineation manual as the Army Corp of Engineers.	Completed								
	1.3.2	Develop clear, publicly accessible guidance on what activities in waters of the state require what authorizations. State program has numerous fact sheets and guidance available to the public describing activities that are regulated. Update will be necessary after finalization of regulation changes.			X						
	1.3.3	Reserved									
1.4	**Evaluation**										
	1.4.1	Periodic review of state/tribal program to ensure all potentially regulated activities are addressed, and take appropriate programmatic action. This review is conducted as new issues arise, regulatory initiatives are undertaken or as otherwise needed. This activity will occur on an on-going basis.	X	X	X	X	X	X	X	X	X	X
	1.4.2	Reserved									

2.0 Objective: Administer regulatory activities efficiently and consistently.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2.1		**Adopt regulations or rules to implement State/Tribal and/or federal water quality statutes**										
	2.1.1	Adopt guidance to implement statutes as appropriate. Technical guidance development relating to aquatic resource compensation undergoing development and revision to comply with mitigation rule changes and changes in related state programs and based upon sound scientific underpinnings.	X	X								
	2.1.2	Adopt regulations that identify agency goals and responsibilities for all water quality statutes. Title 25 PA Code Chapter 105 rules and regulations establish the water quality standards and antidegradation analysis for wetland resources. These rules are cited within PA's general water quality rules and regulations as defined with Chapter 93.	Completed									
	2.1.3	Chapter 105 rules and regulations to undergo revisions for clarity and removal of redundancy. Clarification will cover impact determinations, resource compensation requirements, as well as other areas deemed necessary.	X	X	X							
	2.1.4	Reserved										
2.2		**Develop and operate according to a clear and effective set of criteria for reviewing and responding to applications**										

	2.2.1	Develop publicly accessible criteria for applying for and agency review of applications	Completed									
	2.2.2	Establish reasonable timelines for initially responding to applications in regulatory guidelines	Completed									
	2.2.3	Establish reasonable timelines for providing final responses to applications in regulatory guidelines	Completed									
	2.2.4	Develop and implement internal procedures for responding to federal actions on permits										
	2.2.5	Reserved										
2.3		**Actively review proposed impacts to waters of the state**										
	2.3.1	Actively review proposed impacts to waters of the state	Completed									
	2.3.2	Develop standard practices or general authorizations for like projects impacting similar aquatic resources. Existing permit structure including general permits and waiver of permit requirements to be evaluated under regulatory revision process and updated where necessary.	X	X	X							
	2.3.3	Establish programmatic approvals to authorize operation of restoration programs run by state and federal agencies to maximize efficient processes for expediting reviews.	X	X								
	2.3.4	Reserved										
2.4		**Adopt and apply comprehensive project review criteria**										
	2.4.1	Adopt 404(b)(1) Guidelines or comparable review criteria for assessing and minimizing impacts. Chapter 105 contains review criteria comparable to 404B1 guidelines and under certain cases is more stringent. Propose regulatory revisions will provide clarity and maintain the same level of review criteria.	Completed									

	2.4.2	Adopt more stringent review criteria than the 404(b)(1) Guidelines. Chapter 105 contains review criteria comparable to 404B1 guidelines and under certain cases is more stringent. Propose regulatory revisions will provide clarity and maintain the same level of review criteria.	Completed									
	2.4.3	Reserved										
2.5	**Coordinate among agencies, programs, and industry groups to reduce duplicative efforts by the programs and the regulated public**											
	2.5.1	Use joint review processes and practices. PA has had joint application and application process in place for more than 20 years and continues to refine this process to maximize both state and federal efficiencies.	Completed									
	2.5.2	Develop clear guidelines for roles, responsibilities, and procedures for review of permits for activities that require approval from more than one state / tribal agency. PA has numerous standard operating procedures jointly develop with the ACOE to ensure project reviews occur consistent with state and federal requirements.	Completed									
	2.5.3	Issue permit/certification decisions conditioned that they must meet the requirements of other agency permit decisions. All 401 certifications and other state permit issuance contain these provisions.	Completed									
	2.5.4	Continue development of electronic application processing and coordination systems within DEP to maximize efficiencies to eliminate wasted time and ensure coordination notices and responses occur without error.		X	X	X	X					
	2.5.5	Reserved										
2.6		**Require effective mitigation for authorized impacts**										

	2.6.1	Require effective mitigation for authorized impacts. Aquatic resource compensation requirements are undergoing review and modification to comply with federal mitigation rule and changes in state programs.	X	X								
	2.6.2	Require long-term protection at mitigation sites (e.g. restrictive covenant, easement, deed restriction). Aquatic resource compensation requirements are undergoing review and modification to comply with federal mitigation rule and changes in state programs.	X	X								
	2.6.3	Establish minimum requirements and review criteria for mitigation proposals. Aquatic resource compensation requirements are undergoing review and modification to comply with federal mitigation rule and changes in state programs.	X	X								
	2.6.4	Require financial assurances for mitigation projects. State rules provide ability to require financial assurances when necessary.	Completed									
	2.6.5	Establish a function based crediting system to ensure aquatic resource functions are adequately compensated.	X	X								
2.7		**Track permit\ certification program activity**										
	2.7.1	Track permit\ certification program activity. Permit tracking mechanisms need updated to match program changes related to compensation requirements, impact determinations and regulatory changes.		X	X							
	2.7.2	Map impact and mitigation sites. Integration with DEP's eMAP web tool requires revisions to ensure data complies with locational data policy.		X	X							
	2.7.3	Administer and regularly update publicly accessible tracking system for impacts and mitigation. Integration with DEP's eMAP web tool requires revisions to ensure data complies with locational data policy.		X	X							

	2.7.4	Develop ability to electronically transfer permit related to ACOE as part of SPGP standard operation procedures to ensure consistency of data tracking and reporting.			X	X						
	2.7.5	Reserved										
2.8		**Track / Evaluate**										
	2.8.1	Program Development: • Adoption of state, tribal, or municipal rules to protect wetlands • Track state/tribal resources receiving protection beyond federal requirements (aquatic resource types and/or activities regulated)	Completed									
	2.8.2	Program Implementation: • # of 401 certifications waived without review • # of applications reviewed • # of permits/certifications issued annually • % applications responded to on schedule • % projects whose impacts changed from initial application to issuance/ certification • Ratio of impacted aquatic resources to mitigation required by aquatic resource type (e.g. wetland acres, stream linear feet). Changes to the tracking and data management systems referenced in 2.7.2-2.7.4 will provide better tracking and evaluation capabilities to ensure overall program performance.			X	X						
	2.8.3	Reserved										

3.0 Objective: Evaluate regulatory activities to ensure environmental results.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
3.1	**Monitor the implementation of permit / certification conditions**											
	3.1.1	Track: • % 401 certification conditions that are incorporated into the final permit • % 401 certification or State water quality permit conditions executed All state permit decisions are tracked for both individual permit and general permit issuances. All state permits include 401 certification as part of issuance and contain general and special condition when necessary to protect aquatic resources. Efforts will be made to electronically record special conditions with DEP's permit tracking system to ensure conditions are appropriately applied and readily available for review.		X	X	X						
	3.1.2	Track: • % post-construction sites monitored for compliance with permit conditions • % post-construction sites in compliance with conditions										
	3.1.3	Reserved										
3.2	**Enforce aquatic resource protections**											
	3.2.1	Develop and implement enforcement and compliance mechanisms to monitor compliance and deter violations										
	3.2.2	Set timeframe for sites to come into compliance										

	3.2.3	Reserved										
3.3	**Ensure impact assessments and mitigation crediting lead to replacement of aquatic resources with similar structural, functional or condition attributes**											
	3.3.1	Develop or adopt functional or condition assessment methodologies. Development of functional crediting systems in progress and includes utilization of resource condition assessments.	X	X								
	3.3.2	Establish performance standards and success criteria for mitigation. Performance standards development is in progress and based upon reference site data collected across the Commonwealth and when available from other states in the region.	X	X								
	3.3.3	Evaluate mitigation against reference and pre-impact sites regularly; revise performance standards, review criteria, and/or functional/condition assessment methods accordingly	X	X	X	X	X	X	X	X	X	X
	3.3.4	Coordinate regulatory programs with other entities conducting restoration to share best practices, mitigation/restoration priorities, and/or assessment methodologies	X	X	X	X	X	X	X	X	X	X
	3.3.5	Reserved										
3.4	**Incorporate the watershed approach into the regulatory decision-making process**											
	3.4.1	Establish methods for determining cumulative impacts to aquatic resources within a watershed.				X	X	X	X	X	X	X
	3.4.2	Evaluate cumulative impacts to aquatic resources within a watershed.				X	X	X	X	X	X	X
	3.4.3	In addition to required guidelines, use watershed plans to guide permitting and restoration priorities. The development of a new ILF program for PA will integrate existing plans where plans have sufficient details, encourage plan development or develop such plans where necessary.	X	X	X	X	X	X	X	X	X	X

	3.4.4	Use watershed plans to set priority areas for mitigation. The development of a new ILF program for PA will integrate existing plans where plans have sufficient details, encourage plan development or develop such plans where necessary.	X	X	X	X	X	X	X	X	X	X
	3.4.5	Use watershed plans to set priority areas for enforcement.										
	3.4.6	Use Special Area Management Plans, as appropriate										
3.5	**Perform public education and outreach about wetland protection, regulated waters and activities, and authorization process**											
	3.5.1	Make education/outreach documents or activities available on important programmatic topics such as: • Importance of aquatic resources • Regulatory program requirements • How to identify protected waters • Listing regulated activities • Regulatory program performance • Opportunities for public participation in the protection of aquatic resources	X	X	X	X	X	X	X	X	X	X
	3.5.2	Make program information available through readily accessible outlets (hotline, website, brochures, etc.). Wetland education series similar to current vernal pools brochure for other wetland types/settings (e.g., riparian wetlands, shrub wetlands, bogs and fens, seeps, etc.). Target audience – schools, state parks, environmental education programs, environmental education centers.	X	X	X	X	X	X	X	X	X	X
	3.5.3	Wetland community abstracts available on the web to inform land managers and owners of ways to protect sensitive wetland plant communities. Recommended BMPs for adjacent land uses that will ensure protection of the wetland resources.	X									
	3.5.4	Reserved										
3.6	**Measure Environmental Results**											

	3.6.1	Track: • % permitted sites that are inspected per year • % permits in compliance • % non-compliant sites where enforcement actions taken • % non-compliant sites brought into compliance within timeframe • # of unauthorized impacts brought into compliance (annual tracking) • % mitigation sites monitored • % mitigation sites established • % mitigation sites meeting performance goals	X	X	X	X	X	X	X	X	X	X
	3.6.2	Reserved										

Core Element: Voluntary Restoration and Protection

Goal: To be completed at a later date.

1.0 Objective: Clearly and consistently define restoration and protection goals throughout state.

2.0 Objective: Protect wetlands from degradation or destruction.

3.0 Objective: Restore wetland acres, condition and function.

4.0 Objective: Monitor and track progress over time, document results and modify practices as appropriate.

Core Element: Water Quality Standards

Goal: Wetland Water Quality Standards (Wetland-WQS) will evolve as the M&A program matures. Wetland-WQS are likely to use a reference-based approach, displayed as a stressor-response graph. There will likely be a series of tiers that span the gradient from highest ecological integrity (reference standard) to lowest ecological integrity (severely disturbed, ultimately impaired), similar to the approach described by Davies and Jackson (2006) for tiered aquatic life use (TALU). Biological data particularly for plants will be developed initially, although physical, chemical, and landscape measures will all be considered, and probably used, too. Using data from all three levels of effort, narrative and numeric criteria will be developed for each "standard" based on the response of the indicator to human disturbance, as characterized by an array of stressors (Brooks unpublished).

1.0 Objective: Ensure that wetlands are treated as waters within state water quality programs.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.1	**Adopt an appropriate definition of wetlands**											
	1.1.1	Include wetlands in state/tribal legal definition of waters. Wetlands have been included in definition of what constitutes waters of the Commonwealth.	Completed									
	1.1.2	Ensure legal definition of waters is at least as inclusive as the CWA definition. The legal definition is more inclusive than the CWA definition and encompasses the entire resource including manmade wetlands.	Completed									
	1.1.3	Remove any regulatory language excluding defined wetlands from water quality standards. There are no exclusions contained within the state definitions.	Completed									
	1.1.4	Reserved										

1.2	**Ensure the appropriate wetlands definition is included in WQS**											
	1.2.1	Include appropriate definition of wetlands in state/tribal policy or regulations authorizing water quality standards program (e.g., wetland size, type, ownership). Water quality standards are authorized under state regulations and currently consist of narrative criteria.	Completed									
	1.2.2	Reserved										

2.0 Objective: Develop wetland specific water quality standards.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.1	**Gather and analyze monitoring data and other information that will become basis of water quality standards**											
	1.1.1	Define wetland types/classes. Current proposal is to adopt Mid Atlantic HGM wetland classification, additional classification modifiers are being evaluated as described in Monitoring and Assessment section.	X	X	X							
	1.1.2	Establish reference conditions for defined wetland types in terms of functional/condition performance and other physical measurements. Reference conditions have been established for most HGM wetland types, however other classification modifier have not been established. Work will continue on establishing reference standards for all wetland classifications as described in Monitoring and Assessment section.	X	X	X	X	X					
	1.1.3	Reserved										
1.2	**Establish and adopt appropriate wetland-specific designated uses to be achieved and protected**											
	1.2.1	Establish designated uses for different wetland types (e.g., recreation, wildlife habitat,)					X	X	X	X		
	1.2.2	Map where designated uses apply										
	1.2.3	Reserved										
1.3	**Establish and adopt narrative criteria that qualitatively describe the condition or suite of functions that must be achieved to support a designated use**											
	1.3.1	Establish narrative physical criteria (e.g., fill material not present; no hydrologic alterations)					X	X	X	X		

	1.3.2	Establish narrative biologic criteria (e.g., species composition, population dynamics, structure)					X	X	X	X		
	1.3.3	Develop technical documents to support the narrative criteria with numerical data. This document describes the types of narrative and numerical data that will be used in determining attainment of the standard					X	X	X	X		
	1.3.4	Reserved										
1.4	**Establish and adopt numeric criteria representing wetland specific values for chemical, physical, and biological parameters that may not be exceeded, must be exceeded, or some combination to protect or restore designated uses**											
	1.4.1	Establish numeric criteria for biological attributes based on wetland type and location (e.g., plant or macroinvertebrate indices, algae)								X	X	X
	1.4.2	Establish numeric criteria for chemical constituents based on wetland type and location (e.g., nutrients)										
	1.4.3	Establish numeric criteria for physical parameters based on wetland type and location (e.g., buffer characterizations, micro habitats)								X	X	X
	1.4.4	Reserved										
1.5	**Better define state/tribal antidegradation policies for wetlands, requiring full protection of existing uses (functions and/or condition), maintenance of functions/conditions in high quality wetlands, and a prohibition against lowering functions/conditions in outstanding national resource waters**											
	1.5.1	Include wetlands in antidegradation policies. Wetlands are included in antidegradation regulations and policies. Additional clarification and refine of evaluation criteria are necessary as the scientific basis improves. On-going revisions as needed.	X	X	X	X	X	X	X	X	X	X
	1.5.2	Include restoration potential of wetlands in antidegradation policies										

	1.5.3	Administer and enforce antidegradation policies for wetlands. Antidegradation requirements are being administer by various programs that may affect wetlands that otherwise do not require a wetland permit. Program changes are being evaluated under the Regulatory section to evaluate implementing use the best approach.	X	X	X							
	1.5.4	Develop measures to ensure antidegradation is being applied successfully in a manner specific to wetlands										

3.0 Objective: Incorporate wetland specific water quality standards into agency decision making.

Actions (x.x): / Activities (x.x.x):		Description	Schedule									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.1	**Use water quality standards as basis for regulatory decisions**											
	1.1.1	Base 401 certifications on wetland WQS										
	1.1.2	Base state/tribal permit decisions, including mitigation requirements, on WQS										
	1.1.3	Track wetland impacts avoided or mitigated based on WQS, via permitting actions										
	1.1.4	Reserved										
1.2	**Use water quality standards as basis for evaluating restoration/protection projects and mitigation/compensation projects**											
	1.2.1	Use water quality standards in restoration guidelines										
	1.2.2	Track restoration/protection projects that are monitored for compliance with water quality standards										
	1.2.3	Track restoration/protection sites that meet water quality standards										
	1.2.4	Identify remedial measures for sites that do not meet wetland WQS										
	1.2.5	Reserved										
1.3	**Incorporate water quality standards into monitoring and assessment program**											
	1.3.1	Update monitoring strategy and methods based on water quality standards										
	1.3.2	Track acres monitored for compliance with water quality standards										

	1.3.3	Regularly report on wetlands status and trends relative to water quality standards										
	1.3.4	Reserved										

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