



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

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WATER STANDARDS &  
FACILITY REGULATION

APR 15 2010

The Honorable John Hanger  
Secretary  
Pennsylvania Department of  
Environmental Protection  
Rachel Carson State Office Building  
P.O. Box 2063  
Harrisburg, Pennsylvania 17105-2063

Dear Secretary Hanger:

The Pennsylvania Environmental Quality Board adopted revisions to the Commonwealth's water quality standards regulation at Chapter 93, Title 25 of the Pennsylvania Code at its meetings of September 16, 2008 and January 20, 2009. The revisions were published as final in the Pennsylvania Bulletin on May 16, 2009, along with revisions to Chapter 16, the Commonwealth's Water Quality Toxics Management Strategy. The Pennsylvania Department of Environmental Protection's (PADEP) Office of Chief Counsel certified that these regulatory changes to Chapters 93 and 16 were adopted pursuant to the Commonwealth's legal procedures, and that the Office of Attorney General and the Governor's Office of General Counsel has also approved the final regulatory changes for form and legality. In accordance with Section 303(c)(2)(A) of the Clean Water Act (CWA), 33 U.S.C. §1313(c)(2)(A), and 40 CFR §131.20(c), PADEP forwarded the amended regulation to the U.S. Environmental Protection Agency (EPA), Region III, on July 9, 2009, and we received it on July 14, 2009.

The revisions to the Commonwealth's regulation resulted from PADEP's triennial review of its water quality standards in accordance with CWA Section 303(c)(1), and EPA commends PADEP for its diligence in fulfilling this statutory requirement. The purpose of this letter is to approve the new and revised provisions of the Commonwealth's water quality standards regulation. The specific provisions that EPA, Region III, is approving and the rationale for the Agency's approval can be found in Enclosure 1 (Chapter 93), Enclosure 2 (Chapter 93, Table 5) and Enclosure 3 (Chapter 16) to this letter.

Although EPA has found the revisions to be approvable, several provisions are being approved subject to completion of the Endangered Species Act (ESA) section consultation with the National Marine Fisheries Service (NOAA Fisheries). Under Section 7 of the ESA, 42 U.S.C. §1536, EPA has the obligation to determine if the Agency's approval of these modifications to the Commonwealth's water quality standards regulation will adversely affect threatened and endangered species and their critical habitat in Pennsylvania. To fulfill our

obligation, EPA prepared an biological evaluation of the new and revised provisions of Pennsylvania's regulation, included here as Enclosure 4, and made a finding that our approval will have no effect, or may affect, but is not likely to adversely affect, threatened and endangered species in the Commonwealth. The Pennsylvania Field Office of the Fish and Wildlife Service (FWS) concurred with this determination on December 9, 2009 (Enclosure 5). The Northeast Regional Office of the National Marine Fisheries Service (NOAA Fisheries) has not yet had the opportunity to concur so several provisions are being approved subject to completion of the ESA consultation.

It should also be noted that in accordance with the Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act (66 FR 11202; February 22, 2001), EPA is scheduled to consult nationally with the Services on EPA's aquatic life criteria recommendations published under Section 304(a) of the CWA, 33 U.S.C. §1314(a). All of the aquatic life parameters which Pennsylvania has revised in this action, and which EPA is approving in Enclosure 2 to this letter, will be subject to this consultation. Therefore, EPA's approval of the aquatic life criteria is subject to the results of the national consultation. Please note that in approving Pennsylvania revised water quality standards subject to consultation, EPA may need to revise its approval decision if either the NMFS consultation or the national consultation identifies a situation where the approved water quality standards may not be adequate.

Again, EPA would like to commend PADEP's water quality standards staff for their completion of this review of the Commonwealth's water quality standards regulation. We look forward to their continued best efforts as they continue to address the issues of total dissolved solids and nutrient criteria, and embark upon the next triennial review. My staff is prepared to assist PADEP in these efforts.

If you have any questions regarding this action, please contact me, or have your staff contact Denise Hakowski of my staff at (215)814-5726.

Sincerely,



John M. Capacasa, Director  
Water Protection Division

Enclosures (5)

cc: John Hines (PADEP)  
Richard Shertzer (PADEP)  
Thomas Barron (PADEP)  
David Densmore (USFWS)  
Patricia Kurkal (NOAA Fisheries)

WATER STANDARDS &  
FACILITY REGULATION

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**ENVIRONMENTAL PROTECTION AGENCY, REGION III  
COMMONWEALTH OF PENNSYLVANIA WATER QUALITY STANDARDS  
APPROVAL OF 2009 NEW AND REVISED PROVISIONS (Chapter 93)**

Section Approved	Description of Revision	EPA Rationale
Table of Contents	Amended to show the incorporation of sections of Chapter 16 into Chapter 93 and other revisions	Minor modifications to reflect reorganization of the regulation.
§ 93.1: Definitions		EPA reviewed these definitions in the context of the new and revised Water Quality Standards (WQS) listed below. Approval of those new and revised WQSs includes approval of the use of the terms defined here as they are applied in the approved WQSs
<ul style="list-style-type: none"> <li>• Conventional treatment</li> </ul>	Definition added to clarify the reference to the term in the description of the potable water supply use	The Federal water quality standards regulation does not specify a definition of conventional treatment. The definition incorporates the practices identified by the drinking water program that are commonly understood to provide conventional treatment.
<ul style="list-style-type: none"> <li>• Toxic substance</li> </ul>	Definition revised to clarify that the substances referred to in the definition will be identified in Chapter 93, rather than 16	Minor modification to reflect reorganization of the regulation
<ul style="list-style-type: none"> <li>• Water Effect Ratio (WER)</li> </ul>	Definition relocated without modification from Chapter 16.	Minor modification to reflect reorganization of the regulation

Section Approved	Description of Revision	EPA Rationale
§ 93.3: Protected water uses (Table 1)	Clarifying the definition of <i>Migratory Fishes</i> to explain that the fishes move to and from flowing waters to complete their life cycle in other waters	The Federal water quality standards regulation does not specify a definition of migratory fishes. EPA finds this clarification to be appropriate for the designation and protection of migratory fish.
§ 93.3: Protected water uses (Table 1)	Clarifying the definition of <i>Irrigation</i> to include maintenance of golf courses, athletic fields and other commercial horticultural activities	The Federal water quality standards regulation does not specify a definition of irrigation. EPA finds this clarification to be appropriate for the designation and protection of irrigation activities.
§ 93.7: Specific water quality criteria (Table 3)	Corrective amendment to include the unit of measurement and the critical uses the Ammonia Nitrogen criterion protects	As the unit of measurement and critical uses were inadvertently omitted from the regulation, this is a minor modification, but EPA finds the unit of measurement and critical uses to be appropriate for the Ammonia Nitrogen criterion
§ 93.7: Specific water quality criteria (Table 3)	Change to footnote for "Critical Use" to clarify that other intervening uses may become the most sensitive use if it is determined that the specified Critical Use is not providing adequate protection for all statewide and protected uses	Consistent with EPA regulation at 40 CFR §131.11(a)(1) which states that for waters with multiple use designations, the criteria shall support the most sensitive use.
§ 93.7(b) : Specific water quality criteria	Modification to be a more specific reference to the drainage lists rather than §93.9 as a whole	Minor modification that directs the reader to specific information this provision refers to rather than the subsection as a whole.
§ 93.7(d): Specific water quality criteria	Modification to refer to Table 5 in Chapter 93, rather than Chapter 16, Appendix A Table 1.	Minor modification to reflect reorganization of the regulation.
§ 93.8: Development of site-specific water quality criteria	Relocated with modifications to 93.8d	See rationale under 93.8d

Section Approved	Description of Revision	EPA Rationale
§ 93.8a(b) Water quality criteria for toxic substances	Language relating to Chapter 16 and the toxics criteria replaced with reference to Chapter 93 and establishes the repurpose of Chapter 16, Appendix A, Table 1.	Minor modification to reflect reorganization of the regulation.
§ 93.8a(h) Water quality criteria for toxic substances	"At intervals not exceeding 1 year" deleted, and "at least once every 3 years" added to reflect that the regulatory process will generally extend longer than 1 year, and this function will now become part of the triennial review process	The Clean Water Act at 303(c)(1) that a state review applicable water quality standards from time to time, but at least once each three year period
§ 93.8a(j)(3) Water quality criteria for toxic substances	Revision to clarify the location of anti-degradation requirements that are now in Chapters 93 and 96.	Minor modification to reflect reorganization of the regulation.
§ 93.8b Metals criteria	Relocated from 16.24(b), with modification to the conversion factor for the acute lead criteria	The conversion factor is consistent with EPA's 304(a) recommended criteria and is scientifically defensible as explained in 65 FR 31681 (May 18, 2000) and supporting documents.
§ 93.8c(a) Human health and aquatic life criteria for toxic substances	Modification to reflect reorganization of the regulation, and to include inhalation and dermal adsorption as probable modes of exposure.	Inclusion of inhalation and dermal adsorption as probable modes of exposure is consistent with EPA guidance found in the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)
§ 93.8c(b) Human health and aquatic life criteria for toxic substances	Modification to reflect reorganization of the regulation	Minor modification to reflect reorganization of the regulation.
§ 93.8c Human health and aquatic life criteria for toxic substances: Table 5	Relocated from Chapter 16, Appendix A with modification. Definition of several acronyms added	See Enclosure 2 to this letter for EPA's rationale for approval for new and revised criteria.

Section Approved	Description of Revision	EPA Rationale
<p>§ 93.8d Development of site-specific water quality criteria</p> <p>§ 93.8e Special criteria for the Great Lakes System</p>	<p>Modification to reflect reorganization of the regulation and refinement of the procedure for informing the public of how site-specific water quality criteria will be incorporated into water quality standards.</p> <p>Relocated from Chapter 16.61 with minor modifications to reflect reorganization of the regulation</p>	<p>EPA is not taking action on these procedures as they are not water quality standards. EPA will review and approve site-specific criteria when it is submitted to EPA in accordance with CWA Section 303(c).</p> <p>Minor modification to reflect reorganization of the regulation.</p>
<p>§ 93.9(a): Designated water uses and water quality criteria</p>	<p>Clarification added to indicate that the county being referenced in the stream drainage lists is the county in which the mouth "or downstream limit of the zone being described for that entry" is located.</p>	<p>Minor modification to clarify how the county location is determined by PADEP</p>
<p>§ 93.9(b): Designated water uses and water quality criteria</p>	<p>Statement added that clarifies that the most stringent water quality standards applies between PADEP's standards and interstate or international agency standards</p>	<p>Minor modification which clarifies PADEP application of the regulation established at 25 Pa. Code §93.2(b)</p>
<p>§ 93.9: Designated water uses and water quality criteria</p> <p>§§ 93.9a - 93.9o and 93.9z</p>	<p>Add MF to drainage lists A-O and Z</p>	<p>This revision adds basin-wide protection of the migratory fishes designation for drainage lists A through O and Z (unless specific exceptions are noted). PADEP supports this decision in the preamble for the proposed rulemaking (1/12/2008)</p>
<p>§ 93.9d: Designated water uses and water quality criteria</p> <p>Drainage List D</p>	<p>Correction and clarification: Hazle Creek missing from the list, Koons Creek and Brushy Hollow Run on PADEP's stream directory but left off of drainage list</p>	<p>Corrective amendments, will not affect current stream use designations for these waters.</p>

Section Approved	Description of Revision	EPA Rationale
§ 93.9f: Designated water uses and water quality criteria Drainage List F	Correction of errors and clarification UNTs (2) to Schuylkill River from the Berks Chester-Montgomery County border to Valley Creek; Mellshamic Creek determined to be local name for a UNT to Schuylkill	Corrective amendments, will not affect stream use designations for these waters published by the Commonwealth as final on 2/12/2005.
§ 93.9i: Designated water uses and water quality criteria Drainage List I	Correction for clarification: Correct the name of North Fork Mehoopany Creek to North Branch Mehoopany Creek. Change name of Leslie Creek to Nine Partners Creek to clarify stream name)	Corrective amendment, will not affect current stream use designations for these waters.
§ 93.9l: Designated water uses and water quality criteria Drainage List L	Clarification: The origin of Rauchtown Creek is the confluence of Rocky Run and Gottshall Run	Corrective amendment, will not affect current stream use designations for these waters.
§ 93.9m: Designated water uses and water quality criteria Drainage List M	Correction: Correct the name of Buddys Run to Bennys Run	Corrective amendment, will not affect current stream use designations for these waters.
§ 93.9q: Designated water uses and water quality criteria Drainage List Q	Corrections and clarifications: Shirley Run, a HQ-CWF designated stream, was inadvertently listed as CWF and will be corrected. Clarify that the mouth of West Branch Caldwell Creek lies in Warren County.	Corrective amendments, will not affect stream use designations for these waters published by the Commonwealth as final on 10/11/1997.
§ 93.9v: Designated water uses and water quality criteria Drainage List V	Clarifications: Two entries for Tenmile Creek modified to indicate that the headwaters lie across boundary of Greene and Washington Counties, the mouth of lies at the border of three counties, Green, Washington and Fayette.	Corrective amendments, will not affect current stream use designations for these waters.

Section Approved	Description of Revision	EPA Rationale
<p>§ 93.9x: Designated water uses and water quality criteria Drainage List X</p>	<p>Add reference to both the PA Department of Health's regulations and the Federal regulation at 40 CFR 131.41 (except subsection (f)), setting forth bacteria criteria with the Commonwealth for coastal recreation waters on Lake Erie.</p>	<p>Consistent with Federal statute at CWA §303(i)</p>



**ENVIRONMENTAL PROTECTION AGENCY, REGION III  
COMMONWEALTH OF PENNSYLVANIA WATER QUALITY STANDARDS  
APPROVAL OF 2009 NEW AND REVISED PROVISIONS  
Water Quality Criteria for Toxic Substances (Chapter 93, Table 5)**

\*\*\* Criterion applies EPA's current CWA 304(a) recommendations which can be found at the following web address:  
<http://www.epa.gov/waterscience/criteria/wqtable/index.html>

Parameter Revised	Description of Revision (all values listed in µg/l)	EPA's Rationale for Approval
Antimony	Human health criterion revised = 5.6	***
Arsenic	Human health criterion revised = 10	EPA is approving the MCL because it is appropriate for protecting drinking water supplies.
Silver	Fish and aquatic life criteria/criterion maximum concentration revised = $0.850 \times \text{Exp}(1.72 \times \ln[H] - 6.590)$	***
Thallium	Human health criterion revised = 0.24	***
Cyanide, free	Human health criterion revised = 140	***
2-Chlorophenol	Human health criterion revised = 81	***
2,4-Dichlorophenol	Human health criterion revised = 77	***
2,4-Dimethylphenol	Human health criterion revised = 380	***
4,6-Dinitro-o-cresol	Human health criterion revised = 13	***
2,4-Dinitrophenol	Human health criterion revised = 69	***
Pentachlorophenol	Human health criterion revised = 0.27	***
2,4,6-Trichlorophenol	Human health criterion revised = 1.4	***
Acrolein	Human health criterion revised = 190	***
Acrylonitrile	Human health criterion revised = 0.051	***
Carbon Tetrachloride	Human health criterion revised = 0.23	***
Chlorobenzene	Human health criterion revised = 130	***

Parameter Revised	Description of Revision (all values listed in µg/l)	EPA's Rationale for Approval
Chlorodibromomethane	Human health criterion revised = 0.40	***
Dichlorobromomethane	Human health criterion revised = 0.55	***
1,1-Dichloroethylene	Human health criterion revised = 33	PADEP used the Federal recommended criterion (330 µg/l), but divided by 10 to account for this compound being classified as a possible carcinogen, as per 25 Pa. Code §16.33(f)(3).
1,3-Dichloropropylene	Human health criterion revised = 0.34	***
Ethylbenzene	Human health criterion revised = 530	***
Methyl bromide	Human health criterion revised = 47	***
Methylene chloride	Human health criterion revised = 4.6	***
Tetrachloroethylene	Human health criterion revised = 0.69	***
Toluene	Human health criterion revised = 1300	***
1,2-trans-Dichloroethylene	Human health criterion revised = 140	***
1,1,2-Trichloroethane	Human health criterion revised = 0.59	***
Trichloroethylene	Human health criterion revised = 2.5	***
Vinyl Chloride	Human health criterion revised = 0.025	***
Acenaphthene	Human health criterion revised = 670	***
Anthracene	Human health criterion revised = 8300	***
Benzidine	Human health criterion revised = 0.000086	***
Benzo(a)-Anthracene	Human health criterion revised = 0.0038	***
Benzo(a)pyrene	Human health criterion revised = 0.0038	***
3,4-Benzo-Fluoranthene	Human health criterion revised = 0.0038	***
Benzo(k)fluoranthene	Human health criterion revised = 0.0038	***
Bis(2-chloroethyl)ether	Human health criterion revised = 0.030	***
Bis(2-Ethyl-hexyl)phthalate	Human health criterion revised = 1.2	***

Parameter Revised	Description of Revision (all values listed in µg/l)	EPA's Rationale for Approval
Buthyl/benzyl phthalate	Human health criterion revised = 150	PADEP used the Federal recommended criterion (1500 ug/l), but divided by 10 to account for this compound being classified as a possible carcinogen, as per 25 Pa. Code §16.33(f)(3). ***
2-Chloronaphthalene	Human health criterion revised = 1000	***
Chrysene	Human health criterion revised = 0.0038	***
Dibenzo(a,h)Anthracene	Human health criterion revised = 0.0038	***
1,2-Dichlorobenzene	Human health criterion revised = 420	***
1,3-Dichlorobenzene	Human health criterion revised = 420	PADEP applies the criterion for 1,2-Dichlorobenzene to 1,3-Dichlorobenzene as newer data is available for 1,2-Dichlorobenzene, and the isomers are toxicologically similar. ***
1,4-Dichlorobenzene	Human health criterion revised = 420	PADEP applies the criterion for 1,2-Dichlorobenzene to 1,4-Dichlorobenzene as newer data is available for 1,2-Dichlorobenzene, and the isomers are toxicologically similar. ***
3,3-Dichlorobenzidine	Human health criterion revised = 0.021	***
Diethyl phthalate	Human health criterion revised = 17000	***
Dimethyl phthalate	Human health criterion revised = 270000	***
Di-n-butyl phthalate	Human health criterion revised = 2000	***
1,2-Diphenylhydrazine	Human health criterion revised = 0.036	***
Fluoranthene	Human health criterion revised = 130	***
	Human health criterion revised = 1100	***

Parameter Revised	Description of Revision (all values listed in µg/l)	EPA's Rationale for Approval
Fluorene	Human health criterion revised = 0.00028	***
Hexachlorobenzene	Human health criterion revised = 40	***
Hexachlorocyclopentadiene	Human health criterion revised = 1.4	***
Hexachloroethane	Human health criterion revised = 0.0038	***
Ideno(1,2,3-cd)pyrene	Human health criterion revised = 35	***
Isophorone	Human health criterion revised = 3.3	***
N-Nitroso-dimethylamine	Human health criterion revised = 830	***
Pyrene	Human health criterion revised = 35	***
1,2,4-Trichlorobenzene	Human health criterion revised = 0.000049	***
Aldrin	Human health criterion revised = 0.0026	***
alpha-BHC	Human health criterion revised = 0.0091	***
beta-BHC	Human health criterion revised = 0.098	***
gamma-BHC (Lindane)	Human health criterion revised = 0.098	PADEP used the Federal recommended criterion (0.98 ug/l), but divided by 10 to account for this compound being classified as a possible carcinogen, as per 25 Pa. Code §16.33(f)(3).
Chlordane	Human health criterion revised = 0.00080	***
4,4-DDT	Human health criterion revised = 0.00022	***
4,4-DDE	Human health criterion revised = 0.00022	***
4,4-DDD	Human health criterion revised = 0.00031	***
Dieldrin	Human health criterion revised = 0.000052	***
alpha-Endosulfan	Human health criterion revised = 62	***

Parameter Revised	Description of Revision (all values listed in µg/l)	EPA's Rationale for Approval
beta-Endosulfan	Human health criterion revised = 62	***
Endrin	Human health criterion revised = 0.059	***
Endrin Aldehyde	Human health criterion revised = 0.29	***
Heptachlor	Human health criterion revised = 0.000079	***
Heptachlor Epoxide	Human health criterion revised = 0.000039	***
PCB	Human health criterion revised = 0.000064	***
PCB-1242, PCB-1254, PCB-1221, PCB 1232, PCB1248, PCB-1260, PCB-1016	Deleted	PADEP will regulate total PCBs, rather than congener by congener. This approach conforms with EPA's 304(a) recommendation.
Toxaphene	Human health criterion revised = 0.00028	***
2,3,7,8-TCDD (Dioxin)	Human health criterion revised = 5.0 E-9	***
Diazinon	Fish and aquatic life criteria/criterion continuous concentration revised = 0.17	***
Diazinon	Fish and aquatic life criteria/criterion maximum concentration revised = 0.17	***
Metolochlor	New human health criterion = 69	***
		PADEP calculated the criterion using toxicological data found in the EPA's Registration Eligibility Decision document (EPA 738-R-95-006, April 1995), and applying the guideline in 25 Pa. Code §16.33 for nonthreshold effects and as updated by EPA's 2000 methodology for deriving ambient human health criteria.

**ENVIRONMENTAL PROTECTION AGENCY, REGION III  
COMMONWEALTH OF PENNSYLVANIA WATER QUALITY STANDARDS  
APPROVAL OF 2009 NEW AND REVISED PROVISIONS (Chapter 16)**

<b>Section Approved</b>	<b>Description of Revision</b>	<b>EPA Rationale</b>
§ 16.1 General	Language added to refer to the listing of site-specific criteria in Chapter 16	Minor modification to reflect reorganization of the regulation
§ 16.11 Toxic substances	Citation added to specify EPA's recent methodologies for the development of human health criteria, as amended or updated	Correct citation of EPA's methodologies for the development of human health criteria
§ 16.22 Criteria development	Clarifies that amended and updated documents can be used for aquatic life criteria development	This provision refers specifically to EPA's 1985 guidelines for developing aquatic life criteria. By adding this language, PADEP is allowing updates or amendments to these guidelines to be used
§16.24 Metals criteria (dissolved criteria)	Dissolved criteria relocated to Chapter 93, Table 5 and the conversion factors located in new section 93-8a	Minor modification to reflect reorganization of the regulation
§ 16.32 Threshold level toxic effect & § 16.33 Nonthreshold effects (cancer)	Adds new fish consumption rate of 17.5 grams; Changes the term "bioaccumulation factor" to a "bioconcentration factor"; Adds a citation to allow for the use of other approved data sources to obtain risk assessment values for developing threshold and nonthreshold toxics criteria as referred	Consistent with EPA's Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)

Section Approved	Description of Revision	EPA Rationale
§ 16.41 Additional changes and additions	through IRIS Language has been updated to indicate that the toxics criteria are now housed in Chapter 93	Minor modification to reflect reorganization of the regulation
§ 16.51 Human health and aquatic life criteria	Citation added to establish that additional state derived and site-specific criteria are also housed in Chapter 16, Appendix A, Table 1; Clarifies that toxics criteria without a priority pollutant number are state-derived.	Minor modification to clarify current PADEP practices and to reflect reorganization of the regulation
§ 16.61 Special provisions for the Great Lakes System (4) Criteria for Great Lakes System (5) Wildlife criteria	The Great Lakes criteria relocated to Chapter 93. Aquatic life and human health criteria to §93.8d, Table 6, and the wildlife criteria to Table 7	Minor modification to reflect reorganization of the regulation
Section 16.101 Introduction	Language changed to support the use of the purest water available for each analytical method	Not considered a water quality standard and does not require CWA §303(c) review.
Appendix A, Table 1 Water Quality Criteria for Toxic Substances	State-wide water quality criteria relocated to Chapter 93 (§93.8c, Table 5). Table renamed "Site-Specific Water Quality Criteria for Toxic Substances"	Minor modification to reflect reorganization of the regulation
Appendix A Table 1 1,4 Dioxane (West Branch Perkiomen Creek, Berks Co)	New site-specific fish and aquatic life criteria/criterion continuous concentration = 103,000 ug/l	PADEP calculated the criterion using relevant toxicity data found in the EPA's ECOTOX database and the Great Lakes Tier II aquatic life criteria guidelines as outlined in the Federal Register – Vol. 60, No. 56 (March 23, 1995).

<b>Section Approved</b>	<b>Description of Revision</b>	<b>EPA Rationale</b>
Appendix A Table 1 1,4 Dioxane (West Branch Perkiomen Creek, Berks Co)	New site-specific fish and aquatic life criteria/criterion maximum concentration = 515,000 ug/l	PADEP calculated the criterion using relevant toxicity data found in the EPA's ECOTOX database and the Great Lakes Tier II aquatic life criteria guidelines as outlined in the Federal Register – Vol. 60, No. 56 (March 23, 1995).
Appendix A Table 1 1,4 Dioxane (West Branch Perkiomen Creek, Berks Co)	New site-specific human health criterion = 3.0 ug/l	PADEP calculated the criterion using risk assessment values from EPA's Integrated Risk Information System and applying the guideline in 25 Pa. Code §16.33 for nonthreshold effects (cancer).
Appendix A Table Acrylamide (Stump Creek, Henderson Twp, Jefferson Co)	New site-specific human health criterion = 0.008 ug/l	PADEP calculated the criterion using risk assessment values from EPA's Integrated Risk Information System and applying the guideline in 25 Pa. Code §16.33 for nonthreshold effects (cancer).





**Biological Evaluation for the Approval of  
the Commonwealth of Pennsylvania  
Water Quality Standards Regulations  
and Statement of Policy  
by EPA Region III  
under Clean Water Act 303(c)(3)**

**Federal Action:**

The Federal action being evaluated is the Environmental Protection Agency's (EPA) approval of new and revised sections of the Water Quality Standards published as final in the Pennsylvania Bulletin on May 16, 2009. Only those parts of the regulation that were added or revised were considered as part of this evaluation.

**Background on Pennsylvania's Water Quality Standards Modification:**

This modification of Pennsylvania's water quality standards regulation represents the Commonwealth's triennial review. The amendments were finalized at the Environmental Quality Board (EQB) meetings on September 16, 2008 and January 20, 2009. Although that notice indicated that these amendments were effective upon publication in the Pennsylvania Bulletin, according to Federal regulation, new and revised water quality standards regulations are not effective until EPA approves the amendments. The regulation was sent to EPA on July 9, 2009 for our review and approval under Clean Water Act (CWA) Section 303(c), and was received on July 16, 2009. Under the CWA, EPA now has 60 days to approve or 90 days to disapprove the new or revised provisions.

**Action Area:**

The area evaluated for action is the Commonwealth of Pennsylvania. In particular the Commonwealth's water quality standards, which are set forth in part in Chapter 93, and implement sections 5 and 402 of the Clean Streams Law and section 303 of the Federal CWA, as they are applied to protect the uses of the surface waters of the Commonwealth. Surface waters are defined in Chapter 93 as "(p)erennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps and estuaries, excluding water at facilities approved for wastewater treatment such as wastewater treatment impoundments, cooling water ponds, and constructed wetlands used as part of a wastewater treatment process." EPA is also evaluating Chapter 16, the Commonwealth's water quality toxics management strategy.

**List of Federally Listed Species Which May be Found Within the Action Area:**

The list (Attachment 1) includes all threatened and endangered species compiled by the Fish Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) for the

#### Enclosure 4

Commonwealth of Pennsylvania. The species listed include plants, mollusks, fishes, reptiles, birds, and mammals. The level of information for each species varies. Only a limited number of threatened or endangered species are aquatic organisms. For this evaluation we are considering the aquatically dependent species that still occur in Pennsylvania. These would include the northeastern bulrush, the clubshell mussel, the northern riffleshell mussel, the shortnose sturgeon, the bog turtle and the bald eagle.

#### *Plants:*

The two listed plants have the common names of the northeastern bulrush and small-whorled pogonia. The northeastern bulrush (*Scirpus ancistrochaetus*) is listed as endangered and is currently found in Adams, Bedford, Blair, Cambria, Carbon, Centre, Clinton, Columbia, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Lackawanna, Lehigh, Lycoming, Mifflin, Monroe, Perry, Snyder Tioga and Union counties. In Pennsylvania, this plant is found in forested wetlands, woodland ponds, vernal pools, emergent wetlands, and ombrotrophic march/shrub swamps. According to the recovery plan, the most immediate threats to the species are human-related activities that lead to the destruction or modification of its habitat. In the Commonwealth, the threats to the population include agricultural runoff, timbering and residential development. There is also evidence that deer, nutrient enrichment and the intrusion of exotic plant species are impacting the remaining populations.

The other plant is the small-whorled pogonia (*Isotria medeoloides*). Listed as threatened, it is currently found in Centre, Chester and Venango counties. Its preferred habitat is second growth or relatively mature forests. The main threats to this orchid are collecting and habitat alteration.

#### *Mollusk:*

There are three endangered mussels listed for the Commonwealth of Pennsylvania, The clubshell mussel (*Pleurobema clava*) and the northern riffleshell mussel (*Epioblasma torulosa*) are both listed as endangered, and they are found in the French Creek and Allegheny River watersheds, which span Clarion, Crawford, Erie, Forest, Mercer, Venango and Warren counties. The clubshell mussel is also found in the Shenango River in Mercer and Crawford counties.

According to the recovery plan, few mussel species have declined in numbers as drastically as these two species. The clubshell is found in clean, coarse sand and gravel in runs, often just downstream of a riffle. It cannot tolerate mud or slackwater conditions, and is very susceptible to siltation. The northern riffleshell also occurs in packed sand and gravel in riffles and runs. Both species are threatened by runoff and channelization, domestic and commercial pollution, in-stream sand and gravel mining, impoundments, and zebra/quagga mussel infestation.

The third endangered mussel listed for Pennsylvania is the dwarf wedgemussel (*Alasmodonta heterodon*). This species is found in the Delaware River in Pike and Wayne counties. According to the recovery plan, the dwarf wedgemussel population is in decline as a result of continued environmental assaults in the form of agricultural, industrial, commercial and domestic pollution/runoff. Channelization, removal of shoreline vegetation, development, and road and

dam construction also threaten some populations.

*Fish:*

Shortnose sturgeon (*Acipenser brevirostrum*) is the only fish listed as endangered in Pennsylvania. The shortnose sturgeon live in fresh and saltwater environments, migrating between freshwater and mesohaline river reaches. One of their sensitive life stages, spawning, is connected to river temperature. For shortnose sturgeon which are located in the Delaware River, they spawn near Scudders Falls north of Lambertville, New Jersey. The shortnose sturgeon are benthic omnivores continuously feeding on crustaceans, insect larvae, worms, and mollusks. According to the recovery plan shortnose sturgeon are affected by dredging, pollutant discharges and impingement from intake structures, and bridge and dam construction.

*Reptiles:*

The bog turtle (*Clemmys muhlenbergii*) is listed as threatened in Pennsylvania. It is currently found in Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York counties. Bog turtles live in relatively open portions of sphagnum bogs, swamps or marshy meadows with slow moving, spring fed streams or spring runs with soft bottoms. The primary reason that bog turtles are threatened is the draining or other destruction of their habitat. Also, many have been illegally removed for commercial purposes.

*Birds:*

The piping plover (*Charadrius melodus*) is listed as endangered, and is found at Presque Isle in Erie County. The bird is migratory, and no nesting has been observed in Pennsylvania since the mid-1950s, although there have been some recent colonization attempts. According to the recovery plan, the major causes of the current downtrend in piping plover population is habitat loss and degradation, disturbance by humans and domestic animals, and increased predation.

*Mammals:*

The only mammal listed is the Indiana bat (*Myotis sodalis*). It is listed as endangered, and can potential winter in caves of abandoned mines state-wide and summer in forests or wooded areas state-wide. Causes of decline listed in the recovery plan include natural hazards, such as the flooding of hibernation caves, and human causes, such a disturbance during hibernation, and habitat destruction.

**Description of Pennsylvania's Water Quality Standards:**

The Commonwealth's Water Quality Standards are set forth in Title 25, Chapter 93 of the Pennsylvania Code and implement sections 5 and 402 of the Commonwealth's Clean Streams

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Law and section 303 of the Federal Clean Water Act (CWA). The standards are adopted and implemented to maintain, protect and improve the surface waters within the Commonwealth of Pennsylvania. This would provide protection for the aquatic and aquatically dependent listed species. The standards are based on federal criteria, regulation, and guidance.

Pennsylvania also has Chapter 16, which is its Water Quality Toxics Management Strategy. Chapter 16 is a water quality policy for managing toxic pollutants and houses the Commonwealth's guidelines for development of criteria for toxic substances, and lists the water quality criteria and analytical methods and detection limits for toxic substances. A major revision in this triennial review was Pennsylvania's consolidation of the numeric toxic water quality criteria into Chapter 93.

### **Organization of Biological Evaluation**

The major revisions which resulted from this triennial review were the movement of the toxic water quality criteria from Chapter 16 to Chapter 93, update of a majority of Pennsylvania criteria for the protection of human health, and a limited number of updates to aquatic life criteria. The balance of the new and revised provisions resulting from the triennial review was a number of clarification, corrections and minor modification to reflect the reorganization of the regulation. Based on EPA's review of the submittal and our likely approval, the triennial review resulted in few major changes that may have an impact on threatened and endangered aquatic species. The following is a list these particular new or revised sections of the Commonwealth's water quality standards a description of the revision.

This evaluation does not consider those provisions proposed for adoption and then discarded, finalized in other rulemakings, or proposed for amended in a future rulemaking. The new and revised provisions of Pennsylvania's water quality standards regulation can be found in the *Pennsylvania Bulletin* (May 16, 2009) Part II, Rules and Regulations (39 Pa.B. 2523), Environmental Quality Board. Chapter 16 can found in that same *Pennsylvania Bulletin*, but in the Statements of Policy section under the Department of Environmental Protection (39 Pa.B. 2543). These documents are included as Attachments 2 & 3 with this evaluation. The relationship between EPA's intended action on the standards revisions and threatened or endangered species will also be addressed.

The seven provisions to be addressed in this biological evaluation are as follows:

#### §93.3 Protected water uses (Table 1)

Pennsylvania clarified the definition of Migratory Fishes (MF) to explain that the fishes move to and from flowing waters to complete their life cycle in other waters.

#### §93.7 Specific water quality criteria (Table 3)

The footnote for "Critical Use" has been modified to clarify that other intervening uses may become the most sensitive use if it is determined that the specified Critical Use is not

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providing adequate protection of all statewide and protected uses, identified in section 93.3 and 93.4, in or on the waterbody.

§93.8b Metals criteria (Conversion Factors Table)

Pennsylvania modified the conversion factor for the acute lead criteria to meet Federal CWA 304(a) recommendations.

§93.8c Water Quality Criteria for Toxic Substances (Table 5)

Pennsylvania modified the criterion for the protection of aquatic species from acute exposures to silver to meet the Federal CWA 304(a) recommendations. It also added the Federally recommended diazinon criteria for the protection of aquatic species from acute and chronic exposures.

§93.8d Development of site-specific water quality criteria

In addition to relocating this provision from Chapter 16, Pennsylvania made a number of modifications. The modification of interest is a provision to allow for more stringent criteria to protect more sensitive, intervening uses and to allow for criteria for any parameter, not just those for which there exists statewide or regional criteria.

§93.9 Designated water uses and water quality criteria (§§93.9a – 93.9o and 93.9z)

Adds the Migratory Fishes designated use to all waters in the three major eastern drainage basins within Pennsylvania: the Delaware, Susquehanna and Potomac (unless there are specific exceptions noted). Pennsylvania made this modification because the greater Mid-Atlantic slope has historically supported the passage, maintenance and propagation of migratory fish.

§16.22 Criteria development

This modification clarifies that amended and updated documents can be used for aquatic life criteria development.

**Manner in Which the Federal Action May Affect Listed Species:**

Aquatic Life Criteria

In the triennial review, PADEP included several new and revised aquatic life criteria. In §93.8b, Pennsylvania modified the conversion factor for the acute lead criteria. In Table 5, the Water Quality Criteria for Toxic Substances found at §93.8c, Pennsylvania modified the criterion for the protection of aquatic species from acute exposures to silver and added the Federally

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recommended diazinon criteria for the protection of aquatic species from acute and chronic exposures. All of these new criteria and revisions comply with EPA 304(a) recommended criteria. EPA, Region III is likely to approve all of these modifications.

All of the modifications to aquatic life criteria that PADEP has adopted are identical to the existing 304(a) recommendations. As such, it was agreed in the Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act (EPA-823-R-02-003) (MOA) that our approval of these revisions will be covered by the national 304(a) consultation, and that EPA may proceed with this action subject to the results of the national 304(a) consultations under Section 7 of the Endangered Species Act (ESA). EPA recognizes that it may need to revise its decision if the national 304(a) consultations identify situations where the approved criteria may not be adequate. If this should be the case, EPA will coordinate with the Services to determine a reasonable approach.

Until the national 304(a) consultation is completed, EPA will be monitoring issuance of National Pollutant Discharge Elimination System (NPDES) permits for potential impacts to Federally listed species, especially new or increased discharges. Based upon the 1991 Memorandum of Agreement between PADEP and EPA which established the terms, responsibilities and procedures by which the NPDES program would be operated by the Commonwealth, PADEP is required to transmit to EPA a copy of each draft NPDES permit at the time of issuance of public notice. EPA then has 30 days to comment upon, object to, or make recommendations with respect to the draft permit. If EPA objects, the Commonwealth cannot issue the permit until EPA's objection is addressed.

Although EPA waives its right to comment on some permits, such as minor discharges, we can also terminate that waiver, in whole or in part, at any time. We provide this information to reiterate that on a permit-by-permit basis, EPA has the authority to object to a permit should we find that it may adversely affect a threatened or endangered species. If the Services and EPA determine that a point source discharge will have a detrimental effect on Federally-listed species or critical habitat, we would follow the procedures outlined in Part IX of the MOA between EPA and Services.

#### Migratory Fishes Protected Use

Pennsylvania made two modifications that will impact migratory species. In §93.9, Table 1, the definition of Migratory Fishes (MF) is clarified to explain that the fishes move to and from flowing waters to complete their life cycle in other waters. In §93.9, Designated water uses and water quality criteria, Pennsylvania adds the MF designation to the Mid-Atlantic slope drainages to take into consideration the presence and/or potential for passage, maintenance and propagation of American eel, American shad, hickory shad, blueback herring, alewife, Atlantic striped bass and other fish species that migrate locally within the watershed to complete their life cycle. More notably for the consideration of threatened and endangered species, this would include shortnose sturgeon and Atlantic sturgeon (a candidate species).

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EPA finds that the likely approval of Pennsylvania addition of the MF protected use to the Mid-Atlantic slope drainage basins may affect, but is not likely to adversely affect, Federally-listed threatened and endangered species in the Commonwealth of Pennsylvania. Pennsylvania made this modification to encourage the continuation of restoration efforts that have been and continue to be successfully implemented in an effort to restore migratory fish populations into their historical ranges.

#### Critical Use

Pennsylvania modified the footnote to Table 3 found in §93.7, Specific water quality criteria, to clarify that other intervening uses may become the most sensitive use if it is determined that the specified Critical Uses is not providing adequate protection for all statewide and protected uses. The language added is "Other intervening more sensitive uses may apply at a given location on the waterbody." EPA's likely approval of this modified provision is based on 40 CFR §131.11(a)(1) which states that for water with multiple uses designations, the criteria shall support the most sensitive use. EPA finds that our likely approval may affect, but is not likely to adversely affect, Federally-listed threatened and endangered species in the Commonwealth of Pennsylvania. We base this determination on our finding that as critical use is the most sensitive designated or existing use the criteria are designed to protect, and that the existing use is expected to protect threatened and endangered species in Pennsylvania, should we find that a criterion is not being protective, PADEP would be obliged to determine more stringent site-specific criterion to protect that species.

#### Development of Criteria and Site-Specific Criteria

In this triennial review, Pennsylvania moved its provisions for developing site-specific water quality criteria from Chapter 16 to Chapter 93 with a number of modifications. EPA is likely to approve all of these modifications as it believes the modifications are consistent with EPA regulations and recommendations. In Chapter 16, Pennsylvania Department of Environmental Protection (PADEP) noted that amendments and updates to EPA's 1985 guidelines for deriving aquatic life criteria will be considered. EPA is also likely to approve this revision.

In this biological evaluation, EPA is making no determination as to the effects of our approval of these revised provisions on Federally-listed threatened and endangered species in the Commonwealth of Pennsylvania. EPA has come to this conclusion as these provisions strictly dictate the procedures Pennsylvania will use to develop statewide and site-specific criteria for toxic substances. As EPA must approve new or revised statewide criteria or site-specific criteria, EPA's determination of any actual effect on threatened and endangered species would be made at that time.

#### **Determination and Conclusion:**



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For the most part, EPA's approval of the new and revised provisions of Pennsylvania's water quality standards regulation may affect, but is not likely to adversely affect Federally-listed threatened and endangered species in the Commonwealth of Pennsylvania. EPA is confident in the finding, but recognizes that it will be important that the Services and EPA work together in.

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the application of the aquatic life criteria, as we are approving the Commonwealth's revisions to its aquatic life criteria subject to completion of the nation 304(a) consultation under Section 7 of the ESA. As consultation of the various parameters is completed, EPA is committed to working with the Commonwealth to address any modifications to the aquatic life criteria that is determined to be needed.

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**References:**

- (1) National Marine Fisheries Service, 1998. Recovery Plan for the Shortnose Sturgeon (*Acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 104pp.
- (2) U.S. Fish and Wildlife Service, 1988. Atlantic Coast Piping Plover Recovery Plan. U.S. Fish and Wildlife Service, Newton Corner, MA. 77pp.
- (3) U.S. Fish and Wildlife Service, 1983. Recovery Plan for the Indiana Bat. U.S. Fish and Wildlife Service, Newton Corner, MA. 99pp.
- (4) U.S. Fish and Wildlife Service. 1993. Northeastern Bulrush (*Scirpus ancistrochaetus*) Recovery Plan. Hadley, Massachusetts. 70pp.
- (5) U.S. Fish and Wildlife Service. 1994. Clubshell (*Pleurobema clava*) and Northern Riffleshell (*Epioblasma torulosa rangiana*) Recovery Plan. Hadley, Massachusetts. 68pp.
- (6) U.S. Fish and Wildlife Service. 1993. Dwarf Wedge Mussel (*Alasmindonta heterodon*) Recovery Plan. Hadley, Massachusetts. 48pp.
- (7) Wild Resource Conservation Fund. 1995. Endangered and Threatened Species of Pennsylvania.

**Attachments:**

- (1) List of threatened and endangered species in Pennsylvania.
- (2) *Pennsylvania Bulletin*. May 16, 2009. Rules and Regulations, Title 25 – Environmental Protection, Environmental Quality Board, Triennial Review of Water Quality Standards [39 Pa.B. 2523].
- (3) *Pennsylvania Bulletin*. May 16, 2009. Statements of Policy, Title 25 – Environmental Protection, Department of Environmental Protection, Water Quality Toxics Management Strategy [39 Pa.B. 2543].



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pennsylvania Field Office  
315 South Allen Street, Suite 322  
State College, Pennsylvania 16801-4850

December 9, 2009

Larry Merrill, Acting Associate Director  
Office of Standards, Assessment & TMDLs  
Water Protection Division  
U.S. Environmental Protection Agency  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

Dear Mr. Merrill:

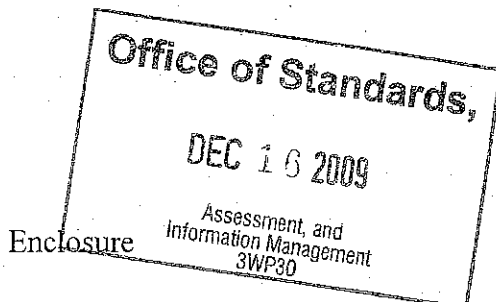
The Service has reviewed your August 18, 2009, letter and enclosed *Biological Evaluation for the Approval of the Commonwealth of Pennsylvania Water Quality Standards Regulations and Statement of Policy by EPA Region III under Clean Water Act 303(c)(3)*, referring to the triennial review published as final in the *Pennsylvania Bulletin* on May 16, 2009. This report is prepared in accordance with the requirements of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

We conclude that EPA's approval of the subject changes to Pennsylvania's water quality standards may affect, but will not adversely affect, federally listed threatened and endangered species in Pennsylvania. Consequently, additional consultation with the Service is not needed. An updated list of federally listed, proposed, and candidate species in Pennsylvania is enclosed for your information.

Thank you for the opportunity to offer these comments. If you have any questions, please contact me at 814-234-4090.

Sincerely,

Cindy Tibbott  
Acting Supervisor





<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u> <sup>1</sup>	<u>Distribution (Counties and/or Watersheds)</u>
<b>MUSSELS</b>			
(continued)			
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	C	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conneauttee Creek (Venango); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford); Shenango River (Crawford, Mercer)
Rayed bean	<i>Villosa fabalis</i>	C	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Cussewago Creek (Crawford); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford); Shenango River (Crawford, Mercer); Woodcock Creek (Venango)
			<i>Has not been found recently in 5 streams of historical occurrence in Armstrong, Lawrence, Mercer and Warren Co.</i>
Sheepnose	<i>Plethobasus cyphus</i>	C	Allegheny River (Forest and Venango Co.).
			<i>Has not been found recently in streams of historical occurrence, including: Allegheny River (Armstrong Co.), Beaver River (Lawrence Co.), Ohio River (Allegheny and Beaver Co.), and Monongahela River (Washington Co.)</i>
<b>FISH</b>			
Atlantic sturgeon <sup>2</sup>	<i>Acipenser oxyrinchus oxyrinchus</i>	C	Delaware River and other Atlantic coastal waters
Shortnose sturgeon <sup>2</sup>	<i>Acipenser brevirostrum</i>	E	Delaware River and other Atlantic coastal waters
<b>PLANTS</b>			
Northeastern bulrush	<i>Scirpus ancistrochaetus</i>	E	Adams, Bedford, Blair, Cambria, Carbon, Centre, Clinton, Columbia, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Lackawanna, Lehigh, Lycoming, Mifflin, Monroe, Perry, Snyder, Tioga, and Union Co.
			<i>Historically found in Northampton Co.</i>
Small-whorled pogonia	<i>Isotria medeoloides</i>	T	Centre, Chester and Venango Co.
			<i>Historically found in Berks, Greene, Monroe, Montgomery and Philadelphia Co.</i>

<sup>1</sup> E = Endangered; T = Threatened; P = Proposed for listing; C = Candidate

<sup>2</sup> Atlantic sturgeon and shortnose sturgeon are under the jurisdiction of the National Marine Fisheries Service

**Federally Listed, Proposed, and Candidate Species in Pennsylvania**  
(revised November 18, 2009)

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u> <sup>1</sup>	<u>Distribution (Counties and/or Watersheds)</u>
<b>MAMMALS</b>			
Indiana bat	<i>Myotis sodalis</i>	E	<u>Hibernacula</u> : Armstrong, Beaver, Blair, Centre, Fayette, Huntingdon, Lawrence, Luzerne, Mifflin and Somerset Co. <u>Maternity sites</u> : Adams, Armstrong, Bedford, Berks, Blair, Greene, and York Counties. Potential winter habitat state-wide in caves or abandoned mines. Potential summer habitat state-wide in forests or wooded areas.
<b>BIRDS</b>			
Piping plover	<i>Charadrius melodus</i>	E	Designated critical habitat on Presque Isle (Erie Co.). Migratory. No nesting in PA since 1950s, but recent colonization attempts at Presque Isle
<b>REPTILES</b>			
Bog turtle	<i>Clemmys (Glyptemys) muhlenbergii</i>	T	Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York Co.  <i>Historically found in Crawford, Mercer and Philadelphia Co.</i>
Eastern massasauga rattlesnake	<i>Sistrurus catenatus catenatus</i>	C	Butler, Crawford, Mercer and Venango Co.  <i>Historically found in Allegheny and Lawrence Co.</i>
<b>MUSSELS</b>			
Clubshell	<i>Pleurobema clava</i>	E	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conneaut Outlet (Crawford); Conneauttee Creek (Crawford); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford); Shenango River (Mercer)  <i>Has not been found recently in 13 streams of historical occurrence in Butler, Beaver, Fayette, Greene, Indiana, Lawrence, and Westmoreland Co.</i>
Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	E	Delaware River (Monroe, Pike, Wayne Co.).  <i>Has not been found recently in streams of historical occurrence in the Delaware River watershed (Bucks, Carbon, Chester, Philadelphia) or Susquehanna River watershed (Lancaster)</i>
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conewango Creek (Warren); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford)  <i>Has not been found recently in streams of historical occurrence, including Shenango River (Lawrence)</i>