

Regulatory Analysis Form

(Completed by Promulgating Agency)

INDEPENDENT REGULATORY REVIEW COMMISSION

(All Comments submitted on this regulation will appear on IRRC's website)

(1) Agency

Environmental Protection

(2) Agency Number: 7

Identification Number: 553

IRRC Number: #####

(3) PA Code Cite:

25 Pa Code, Chapter 93 & Chapter 96

(4) Short Title:

Water Quality Standards for Manganese and Implementation

(5) Agency Contacts (List Telephone Number and Email Address):

Primary Contact: Laura Edinger; 717.783.8727; ledinger@pa.gov

Secondary Contact: Jessica Shirley; 717.783.8727; jessshirley@pa.gov

(6) Type of Rulemaking (check applicable box):

- Proposed Regulation
- Final Regulation
- Final Omitted Regulation

- Emergency Certification Regulation;
- Certification by the Governor
- Certification by the Attorney General

(7) Briefly explain the regulation in clear and nontechnical language. (100 words or less)

Section 303(c)(1) of the Federal Clean Water Act (CWA) requires that states periodically, but at least once every three years, review and revise as necessary, their water quality standards to reflect current scientific knowledge and recommendations. Further, states are required to protect existing uses of their waters. This proposed regulation is undertaken as part of the Department of Environmental Protection's (Department) ongoing review of Pennsylvania's Water Quality Standards.

The Environmental Quality Board (Board) proposes to amend 25 Pa. Code Chapter 93 (relating to water quality standards) and 25 Pa. Code Chapter 96 (relating to water quality standards implementation). The amendments propose to delete the existing manganese numeric criterion from Table 3 at § 93.7 (relating to specific water quality criteria) which was established for the protection of the Potable Water Supply use and to add a manganese criterion to Table 5 at § 93.8c (relating to human health and aquatic life criteria for toxic substances) designed to protect human health from the neurotoxicological effects of manganese when exposure to levels necessary to maintain adequate health are exceeded. Additionally, the amendments propose two alternative points of compliance for the proposed manganese criterion. The first alternative point of compliance moves the point of compliance to the point of all existing or planned surface potable water supply withdrawals. The second alternative point of compliance maintains the existing point of compliance in all surface waters (i.e., at or near the point of discharge). The proposed regulations, set forth in Annex A, present both alternatives for consideration.

(8) State the statutory authority for the regulation. Include specific statutory citation.

This proposed rulemaking is being made under the authority of sections 5(b)(1) and 402 of The Clean Streams Law (35 P.S. §§ 691.5(b)(1) and 691.402), which authorize the Board to develop and adopt rules and regulations to implement The Clean Streams Law (35 P.S. §§ 691.1—691.1001). Additional authority for this proposed rulemaking includes sections 1920-A(b) and (j) of The Administrative Code of 1929 (71 P.S. § 510-20(b) and (j)), which grants to the Board the power and duty to formulate, adopt and promulgate rules and regulations for the proper performance of the work of the Department and mandates that the Board “promulgate regulations under the act of June 22, 1937 (P.L. 1987, No. 394), known as The Clean Streams Law, or other laws of this Commonwealth that require that the water quality criteria for manganese established under 25 Pa. Code Ch. 93 (relating to water quality standards) shall be met, consistent with the exception in 25 Pa. Code § 96.3(d) (relating to water quality protection requirements).” In addition, sections 101(a)(2) and 303 of the Federal Clean Water Act (CWA) (33 U.S.C.A. §§ 1251(a)(2) and 1313) set forth requirements for water quality standards, which the State must meet to implement the CWA in the Commonwealth. Section 101(a)(3) of the CWA declares the national policy that the discharge of toxic pollutants in toxic amounts be prohibited (33 U.S.C.A. § 1251(a)(3)).

(9) Is the regulation mandated by any federal or state law or court order, or federal regulation? Are there any relevant state or federal court decisions? If yes, cite the specific law, case or regulation as well as, any deadlines for action.

Subsection (j) to Section 1920-A of The Administrative Code of 1929, 71 P.S. § 510-20(j) (known as “Act 40 of 2017”), requires the following: “the board shall promulgate regulations under the act of June 22, 1937 (P.L. 1987, No. 394), known as The Clean Streams Law (CSL), or other laws of this Commonwealth that require that the water quality criteria for manganese established under 25 Pa. Code Ch. 93 (relating to water quality standards) shall be met, consistent with the exception in 25 Pa. Code § 96.3(d) (relating to water quality protection requirements). Within ninety days of the effective date of this subsection, the board shall promulgate proposed regulations.”

Under sections 4, 5 and 402 of the CSL, the Department has the duty to formulate regulations that prevent and eliminate water pollution. “Pollution” is defined by the law as “contamination of any waters of the Commonwealth such as ... to render such waters harmful, detrimental or injurious to public health..., or to domestic, municipal, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life...” (35 P.S. §§ 691.4, 691.5, and 691.402) Section 1920-A of the Administrative Code of 1929 authorizes the Board to formulate, adopt and promulgate such rules and regulations as may be determined by the Board for proper performance of the work of the Department (71 P.S. § 510-20(b)). Where a pollutant found in discharges to surface waters is toxic to human health or aquatic life, the Commonwealth’s regulations require development of appropriate water quality criteria to control pollution.

In addition, it is the duty of the Department, pursuant to Section 5 of the CSL, to consider water quality management, pollution control in the watershed as a whole, as well as the present and possible future uses of waters in adopting regulations.

Section 303(c) of the federal CWA and 40 CFR Part 131 require states to develop water quality standards that consist of designated uses, water quality criteria to protect those uses, and antidegradation requirements. Such standards must “protect the public health or welfare and enhance the quality of water” (33 U.S.C.A. § 1313(c)). In addition, such standards must take into consideration water uses including

public water supplies, propagation of fish and wildlife, recreational purposes, agricultural purposes, and industrial purposes. Section 101(a)(3) of the CWA declares the national policy that the discharge of toxic pollutants in toxic amounts be prohibited (33 U.S.C.A. § 1251(a)(3)).

(10) State why the regulation is needed. Explain the compelling public interest that justifies the regulation. Describe who will benefit from the regulation. Quantify the benefits as completely as possible and approximate the number of people who will benefit.

Change in Criteria

Because the manganese water quality criterion designed to be protective of the Potable Water Supply use has been in place, without reevaluation, since June 28, 1967, the Department reviewed current scientific and current toxicological information to comprehensively evaluate the manganese standard as it relates to the water uses identified in § 93.3 (related to protected water uses) and, in particular, to determine the need to develop manganese toxics criteria related to human health and aquatic life exposure. Because Act 40 of 2017 involves proposing a regulation that moves the point of compliance for manganese, it is necessary to consider the appropriate criterion to protect human health, the Potable Water Supply use and other water uses.

The purpose of developing water quality standards is to protect the uses and users of Pennsylvania's surface waters. Pennsylvania's surface waters, through the water quality standards program, are protected for a variety of uses including: drinking water supplies for humans, livestock, and wildlife; industrial water supplies; irrigation for crops; aquatic life uses; and recreation and fish consumption. All of the residents and visitors of this Commonwealth will benefit from updating the Chapter 93 water quality standards to include a water quality criterion for manganese of 0.3 mg/L because it provides the appropriate level of water quality protection for all water uses and users of the surface waters. Current scientific data demonstrates that manganese is a neurotoxin when levels to maintain adequate health are exceeded.

Change in Point of Compliance

The need to propose a change to the point of compliance for the manganese criterion is driven by Act 40 of 2017. See response to #9.

Under the first alternative point of compliance, movement of the point of compliance away from discharges and to the point of all downstream existing or planned surface potable water supply withdrawals will be beneficial to facilities that have National Pollutant Discharge Elimination System (NPDES) permits to discharge manganese in their wastewater. It will reduce monitoring and treatment costs for these discharging facilities, which includes mining industry discharges.

Under the second alternative point of compliance, which would maintain the point of compliance in all surface waters (i.e., at or near the point of discharge), the manganese criterion would provide protection of human health and would be applicable in all surface waters. Application of the proposed criterion in all surface waters will protect all other water uses, including potable water supplies and aquatic life. It is widely known that high levels of manganese are toxic to aquatic life. By protecting the water uses, and the quality of the water necessary to maintain the uses, benefits may be gained in a variety of ways by all residents and visitors of the Commonwealth. For example, clean surface water used as source water for drinking water supplies benefits consumers by lowering drinking water treatment costs and reducing medical costs associated with drinking water-related illnesses. Additionally, by maintaining water quality standards, clean surface water is available for irrigation of crops and livestock and for use in industrial

processes. Clean surface waters also benefit the Commonwealth by providing for increased tourism and recreational use of the waters. Clean water provides for increased wildlife habitat and more productive fisheries.

(11) Are there any provisions that are more stringent than federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulations.

EPA does not currently have national recommendations concerning surface water quality criteria for manganese. However, the Federal CWA Section 303(c)(2)(A) requires that Pennsylvania develop water quality criteria that are protective of existing and designated uses, even in the absence of federal recommended criteria, if such protection is deemed necessary for Pennsylvania's waters. The proposed ambient water quality criterion for manganese for the protection of human health at 25 Pa. Code § 93.8c, Table 5 is necessary since manganese is discharged through wastewater from industrial facilities and is a pollutant found in many Pennsylvania streams. Current scientific literature identifies manganese as a neurotoxin when the level necessary to maintain adequate health is exceeded and the proposed regulation was developed to provide the appropriate protection for human health exposure associated with surface waters.

(12) How does this regulation compare with those of the other states? How will this affect Pennsylvania's ability to compete with other states?

Other states are also required to maintain water quality standards, based on the federal mandate at section 303(c) of the federal CWA and 40 CFR Part 131. While there are no federally recommended CWA Section 304(a) criteria for manganese, amendments in this proposed rulemaking are not expected to put Pennsylvania at a competitive disadvantage to other states since other states with similar geology, resource extraction activities, or industries to Pennsylvania also have similar obligations under the federal CWA and a need for such protections. Water quality standards for manganese may not be necessary for some states if manganese is not discharged to the surface waters within that state.

See Table – Manganese RAF Question #12

(13) Will the regulation affect any other regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations.

With respect to whether the proposed regulation may affect any other regulation, the first alternative point of compliance may affect the ability of drinking water suppliers to comply with existing state and federal safe drinking water regulations. Under this alternative, the point of compliance for the manganese criterion will be at the point of any planned or existing potable water supply withdrawal. Water suppliers will likely need to conduct additional source water monitoring at their facilities to determine the effects of increased source water manganese levels on their operations. As the levels of manganese change in the surface water, all water supply facilities using surface waters as their source water will need to monitor the raw water manganese levels to ensure adequate manganese removal will be achieved through their treatment processes and may require facility upgrades or additional chemical usage to continue achieving the secondary maximum contaminant level (SMCL) for manganese of 0.05 mg/L in the finished water, which is required under the Pennsylvania Safe Drinking Water Act (35 P.S. §§ 721.3 and 721.5) and regulations at 25 Pa. Code Chapter 109.202(b) (relating to state MCLs, MRDLs and treatment technique requirements). The SMCL for manganese in Pennsylvania is based on the Federal standard found at 40 CFR § 143.3.

Additional burdens to water suppliers may apply based on other drinking water requirements. EPA developed one-day, 10-day and lifetime Health Advisory Limits (HALs) for manganese, pursuant to the Federal Safe Drinking Water Act (42 U.S.C.A. §§ 300f-300j-26). The lifetime HAL of 0.3 mg/L protects against concerns of potential neurological effects. The one-day and 10-day HALs of 1 mg/L are for acute exposure and it is advised that for infants younger than 6 months, the lifetime HAL of 0.3 mg/L be used even for an acute exposure of 10 days, because of the concerns for differences in manganese content in human milk and formula and the possibility of higher absorption and lower excretion in young infants. Because EPA developed HALs for manganese, public water suppliers may be subject to additional monitoring and public notification requirements if the HALs are exceeded in the finished water. In accordance with the current regulations found at Chapter 93, the Potable Water Supply water quality criterion ensures that public water systems receive raw water at their intake structures that can achieve compliance with 25 Pa. Code Chapter 109 Safe Drinking Water (SDW) standards utilizing only conventional treatment. If a water supplier or the Department indicates a contaminant is present in the potable water supply and may cause a potential health hazard, additional monitoring may be required under 25 Pa. Code § 109.302(b) (relating to special monitoring), which may then trigger additional treatment requirements pursuant to § 109.4 (relating to general requirements). If source water for public water supply operations is received at or above 0.3 mg/L, sequestration of manganese is no longer an option and modifications to operations and/or additional treatment technologies for removal of manganese would be required. Sequestration does not remove the manganese so it is still present and still bioavailable and as such it can act as a neurotoxin. Finally, under § 109.407(a)(9) (relating to general public notification requirements) and § 109.408(a)(11) (relating to Tier 1 public notice—categories, timing and delivery of notice), Tier 1 public notice requirements may be triggered if exceedance of the HALs has the “potential to have serious adverse effects on human health as a result of short-term exposure.”

(14) Describe the communications with and solicitation of input from the public, any advisory council/group, small businesses and groups representing small businesses in the development and drafting of the regulation. List the specific persons and/or groups who were involved. (“Small business” is defined in Section 3 of the Regulatory Review Act, Act 76 of 2012.)

The Department published, within 90 days of the effective date of Act 40 of 2017, an advance notice of proposed rulemaking (ANPR) in the *Pennsylvania Bulletin* on January 27, 2018 (48 Pa. B. 605), soliciting information necessary to prepare the rulemaking documents required by Commonwealth and Federal law to support the Board’s adoption of the required proposed regulations. In response to the ANPR, the Department received comments from 15 organizations or individuals, including EPA, Pennsylvania Anthracite Council, American Rivers, PA American Water, Rosebud Mining Company, Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Coal Alliance, Counsel to the Manganese Interest Group, PennFuture, Pennsylvania Public Utility Commission (PUC), CONSOL Energy, Corsa Coal Corporation, City of Lancaster Public Works Philadelphia Water Department, and SUEZ-FCGA.

On November 29, 2018, May 23, 2019 and July 25, 2019, the Department met with the Water Resources Advisory Committee (WRAC) to discuss the scientific literature and information available to support manganese water quality criteria development and other regulatory issues relating to manganese. On July 25, 2019, WRAC voted on a motion to: acknowledge the legislative requirement in Act 40 of 2017 to propose a regulation moving the point of compliance for manganese to the point of all existing or planned surface potable water supply withdrawals; support proposing a regulation that adds manganese to Table 5 in section 93.8c as a toxic substance for human health at the level of 0.3 mg/L, recognizing that the compliance point for this standard will be met in all surface waters, as described in section 96.3(c); and recommend that the Board request public comment on this combined approach for consideration in developing a final regulation.

The Department met with the Agricultural Advisory Board on October 25, 2018, June 20, 2019 and August 29, 2019 to present information and seek additional agriculture-related information relating to manganese and this proposed rulemaking. Also, the Department met with the Small Water Systems Technical Assistance Center Advisory Board (TAC) on January 31, 2019 and August 8, 2019 to present information and seek additional water supply treatment information relating to manganese and this proposed rulemaking. TAC voted to concur with WRAC's motion.

(15) Identify the types and number of persons, businesses, small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012) and organizations which will be affected by the regulation. How are they affected?

All persons, groups, or entities with proposed or existing point source discharges of manganese into surface waters of the Commonwealth must comply with the regulation. There are approximately 925 NPDES permits that currently contain manganese monitoring and report requirements and/or manganese effluent limits. These permits are associated with mining operations, industrial and sewage treatment facilities, food processing facilities, landfills and water supply facilities. A subsampling of the 925 NPDES permits indicates that a majority of them are not associated with small businesses as defined in in Section 3 of the Regulatory Review Act, Act 76 of 2012.

Under the second alternative point of compliance, persons with an existing NPDES permitted discharge or proposing to add a new discharge to a stream could be adversely affected upon permit renewal or issuance of a new permit if they need to provide a higher level of treatment to meet any new standard established by this proposed rulemaking. For example, increased costs may take the form of higher engineering, construction or operating cost for point source discharges. Monitoring and treatment costs are site-specific and depend upon the size of the discharge in relation to the size of the stream and many other factors. It is therefore not possible to precisely predict the actual change in costs or the number of entities that will be affected by the regulation. Economic impacts would primarily involve the potential for higher monitoring and treatment costs for permitted discharges to streams to meet the new water quality standards requirements. The initial costs resulting from the installation of technologically advanced wastewater treatment processes may be offset by potential savings from and increased value of improved water quality through more cost-effective and efficient treatment over time.

Under the first alternative point of compliance, any of the approximately 287 public water supply systems with an existing or planned potable water supply surface water withdrawal may see increased costs if there is a need to provide a higher level of raw water treatment to continue meeting the existing SMCL for manganese, 0.05 mg/L, in the finished (i.e., potable) water. For example, increased costs may take the form of increased source water sampling and monitoring, facility upgrades, treatment modifications or additional operation and maintenance costs for treatment chemicals and waste disposal. Treatment modifications and associated costs are site-specific and will depend upon the specific treatment processes employed by a facility, the quality of the source water and many other factors. It is therefore not possible to precisely predict the actual change in costs or the number of entities that will be affected by the regulation. Economic impacts would primarily involve the potential for higher monitoring and treatment costs for public water supply facilities located downstream of permitted manganese discharges, which would likely result in water fee increases for the water supply rate payers. A review of statewide potable water supply withdrawals and permitted manganese discharges suggests a significant overlap exists between the two regulated communities, which means treatment may be necessary in areas with mining discharges.

A review of the U.S. Small Business Size Regulations under 13 CFR Part 121 provides a standard for determining what constitutes a small business for the NAICS category relating to public water systems. A public water system falls within NAICS category 221310, Water Supply and Irrigation Systems, which comprises establishments primarily engaged in operating water treatment plants and/or operating water supply systems. The small size standard for this NAICS category is annual receipts of not more than \$27.5 million.

For the 287 public water supply systems with an existing or planned potable water supply surface water withdrawal, the Department has no way to estimate annual receipts. Therefore, the Department used the federal definition of a small water system in 40 CFR 141.2, which states that a small water system is “a water system that serves 3,300 persons or fewer”. Under this regulatory package, a public water system owned by a private individual or investor serving less than or equal to 3,300 persons was considered to be a small business. In this Commonwealth, there are less than 25 public water supply systems with existing or planned potable water supply surface water withdrawals that are considered small businesses.

Facilities with water supply intakes for use in food and beverage production or preparation, paper and textile manufacturing, aquaculture, and irrigation may also see increased costs if there is a need to provide a higher level of raw water treatment to continue meeting their industry specific standards and the need for a certain level of raw water quality. Economic impacts would primarily involve the potential for higher monitoring and treatment costs for facilities located downstream of permitted manganese discharges, which would likely result in the increased costs for the goods or services provided by these facilities being passed on to consumers.

In comments received on the ANPR, PFBC indicated that if source water concentrations of manganese are greater than 1.0 mg/L there would be a need to pretreat the source water used in the agency’s fish hatchery facilities to reduce the level of manganese to an acceptable level for fish culture. There are 14 PFBC State hatcheries, 166 cooperative fish hatcheries, and several private hatcheries across the State.

(16) List the persons, groups or entities, including small businesses, that will be required to comply with the regulation. Approximate the number that will be required to comply.

All persons, groups, or entities with proposed or existing point source discharges of manganese into surface waters of the Commonwealth must comply with the regulation. There are approximately 925 NPDES permits that currently contain manganese monitoring and report requirements and/or manganese effluent limits. These permits are associated with mining operations, industrial and sewage treatment facilities, food processing facilities, landfills and water supply facilities. A subsampling of the 925 NPDES permits indicates that a majority of them are not associated with small businesses as defined in in Section 3 of the Regulatory Review Act, Act 76 of 2012.

Also, see response #15.

(17) Identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor communities and other public and private organizations. Evaluate the benefits expected as a result of the regulation.

Overall, the Commonwealth’s residents and visitors and its natural resources benefit from providing the appropriate level of protection to preserve the integrity of existing and designated uses of surface waters in this Commonwealth. Protecting water quality provides: economic value to present and future generations in the form of a clean water supply for human consumption, wildlife, irrigation and industrial use; recreational

opportunities such as fishing (also for consumption), water contact sports, and boating; and aquatic life protection.

All of the Commonwealth's residents and visitors will benefit by having a manganese criterion that is protective of aquatic life. It is widely known that high levels of manganese are toxic to aquatic life. PFBC provided information indicating that manganese is one of several heavy metals associated with acid mine discharges that act on aquatic organisms as metabolic poisons. Depending on the water chemistry, manganese will often settle on stream beds as a black, sticky coating that interferes with the colonization, abundance, and diversity of stream dwelling aquatic insects which are very important in the aquatic ecosystem. Based on the proposed water quality criterion for manganese and the first alternative point of compliance, additional compliance costs may be imposed on the regulated drinking water community due to potential increases in source water levels of manganese, while reducing compliance costs for the wastewater dischargers.

All of the Commonwealth's residents and visitors, both present and future, will benefit from having clean water that is protected and maintained. Any reduction in the total toxic load in Pennsylvania waterbodies is likely to have a positive effect on the human health of Pennsylvanians. This will translate into a yet unknown economic benefit through avoided cleanup or remediation costs that would have been incurred later in time, as well as avoided costs for the treatment and caring for persons with diseases and disabilities that can be reasonably attributed to environmental contaminants in surface water.

By implementing a human health standard applicable in all surface waters of the Commonwealth, users downstream will not have to bear the costs associated with remediating discharge from upstream users before the water can be used. For example, lower levels of manganese in surface waters may reduce costs incurred by downstream surface water users who have to pre-treat water for industrial or commercial use (i.e., food processors). Also, reductions at the point of discharge reduce the costs for water suppliers who will have to treat water that is high in manganese at their intakes to meet drinking water standards. Passing on the treatment to water suppliers will increase costs to drinking water customers. Any intervening water uses such as Irrigation, Livestock Water Supply, and Fishing, between the point of discharge and the point of use, will be protected by limiting the amount of manganese that may be discharged. Under these scenarios, multiple surface water users will benefit—industrial, agricultural, commercial, and potable water users.

Reduced toxics in Pennsylvania's waterways will likely increase recreational fishing and tourism to swimming and fishing locations throughout the state. Additionally, cleaner rivers and fish may lead to increased birding and wildlife viewing opportunities, as the benefits of cleaner water and less contaminated fish work themselves up the food chain, resulting in substantial economic benefits. Persons who recreate on the waters and who fish, both for sport and consumption, will benefit from better water quality protection.

A reduction in toxics found in Pennsylvania's waterways may lead to increased property values for properties located near rivers or lakes. The study, *The Effect of Water Quality on Rural Nonfarm Residential Property Values*, (Epp and Al-Ani, American Journal of Agricultural Economics, Vol 61, No. 3 (Aug. 1979)), used real estate prices to determine value of improvements in water quality in small rivers and streams in Pennsylvania. Water quality, whether measured in pH or by the owner's perception, has a significant effect on the price of adjacent property. Their analysis showed a positive correlation between water quality and housing values. They concluded that buyers are aware of the environmental setting of a home and that differences in the quality of nearby waters affects the price paid for a residential property.

A 2006 study from the Great Lakes region ("*Economic Benefits of Sediment Remediation*," <http://www.nemw.org/Econ>) estimated that property values were significantly depressed in two regions associated with toxic contaminants (PAHs, PCBs, and heavy metals). The study showed that a portion of the Buffalo River region (approx. 6 miles long) had depressed property values of between \$83 million and \$118 million for single-family homes, and between \$57 million and \$80 million for multi-family homes as a result of toxic sediments. The same study estimated that a portion of the Sheboygan River (approx. 14 miles long) had depressed property values of between \$80 million and \$120 million as the result of toxics. While this study related to the economic effect of contaminated sediment in other waters in the Great Lakes region, the idea that toxic pollution depresses property values is easily transferable to Pennsylvania. A reduction in toxic pollution in Pennsylvania's waters has a substantial economic benefit to property values in close proximity to waterways.

There are economic benefits to be gained by maintaining clean water for potable and other water supply uses. Water suppliers, and their customers, may benefit from lower pretreatment costs if water is withdrawn that meets surface water quality standards. Assuring the availability of clean water will cut down on the costs to consumers for purchasing household pretreatment/water filtration systems and bottled water (see "*The Real Cost of Bottled Water*," San Francisco Chronicle, Feb. 18th, 2007, which estimates the cost of bottled water to be anywhere between 240 and 10,000 times more expensive than tap water). An additional benefit to greater reliance on tap water is the reduction of containers that need to be recycled or disposed of in landfills. Persons may incur a cost benefit by reducing their dependence on bottled waters and household water filtration systems based on their confidence in source water quality.

There are also economic benefits to be gained by having clearly defined remediation standards for surface waters. Under Pennsylvania's Land Recycling and Environmental Remediation Standards Act, liability relief is available, by operation of law, if a person demonstrates compliance with the environmental remediation standards established by the law. Surface water quality criteria are used to develop remediation standards under the law. Persons performing remediation depend upon these criteria to obtain a liability relief benefit under the law. An article in the Duquesne University Law Review discusses the importance of liability limitation as "vital to the participation in the remediation process" ("*COMMENT: Pennsylvania's Land Recycling Program: Solving the Brownfields Problem with Remediation Standards and Limited Liability*," Creenan, James W. and Lewis, John Q., Duquesne University Law Review, 34 *Duq. L. Rev.* 661 (Spring 1996)). The article recognizes that "liability protection provides the missing ingredient—financial incentive—for undertaking the cleanup of an industrial site." Industrial land redevelopers will benefit from these regulations by having financial certainty when choosing a surface water cleanup standard and by being eligible for liability relief under state law.

Also, see responses #10 and #15.

(18) Explain how the benefits of the regulation outweigh any cost and adverse effects.

Section 4 of the Pennsylvania Clean Streams Law (Declaration of Policy) clearly states "clean, unpolluted streams are absolutely essential if Pennsylvania is to attract new manufacturing industries and to develop Pennsylvania's full share of the tourist industry." 35 P.S. 691.4(1).

Under the first alternative point of compliance, adverse effects may occur at an existing or planned potable water supply. A surface water supplier may see increased costs if there is a need to provide a higher level of raw water treatment to continue meeting the existing SMCL for manganese, 0.05 mg/L, in the finished (i.e., potable) water. Facilities with water supply intakes for use in food and beverage production or preparation,

paper and textile manufacturing, aquaculture, and irrigation may also see increased costs if there is a need to provide a higher level of raw water treatment

Under the second alternative point of compliance, adverse effects associated with the adoption of new criteria may take the form of additional wastewater treatment requirements. Sometimes these requirements require costly upgrades. If new criteria apply to a facility and if treatment requirements require significant and costly changes operationally, there are regulatory mechanisms in place, through the NPDES permitting program, to manage an appropriate schedule for meeting the new standards.

Health and welfare benefits to all residents and visitors of the Commonwealth accrue from protecting the surface waters of the Commonwealth at the appropriate level. The benefits from substantial revenue and jobs associated with clean drinking water, recreational fisheries, and other industries that rely on clean water, outweigh the cost and adverse effects associated with selective effluent treatment technology for those who discharge pollutants to the surface waters.

Protection of water quality, up front, reduces the need for costly remedial measures that are often difficult to retrofit. In addition, maintenance of water quality eliminates the need for spending taxpayer dollars to meet additional regulatory obligations such as federally mandated total maximum daily loads (TMDLs). If a waterbody becomes impaired and is not meeting its protected water uses, the Commonwealth will be obligated to develop TMDLs and impose more stringent water quality standards. By maintaining the appropriate water quality to protect the uses, expensive remediation costs can be avoided.

Also, see response #15 and #17.

(19) Provide a specific estimate of the costs and/or savings to the regulated community associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

For both alternative points of compliance, specific estimates of treatment costs and savings cannot be determined at this time because each activity affected by this regulation must be reviewed based on site-specific considerations.

Under the first alternative point of compliance, regulated wastewater dischargers may experience cost savings through reduced monitoring and treatment costs associated with removing manganese from their permitted discharges. However, regulated public water suppliers with an existing or planned potable water supply surface water withdrawals may see increased costs since there will be a need to conduct additional source water monitoring, and some facilities may need to provide a higher level of raw water treatment to continue meeting the existing SMCL for manganese, 0.05 mg/L, in the finished (i.e., potable) water.

Under the second alternative point of compliance, the compliance and treatment costs for regulated wastewater dischargers may increase based on site-specific considerations. These site-specific considerations include, but are not limited to the size, flow volume, and the chemical, biological, and physical properties of both the receiving water and the effluent discharge. These unique parameters result in a site-specific analysis. Conversely, this alternative may result in cost savings to the drinking water suppliers as manganese levels in source waters will be lower and less treatment will be necessary to meet drinking water regulations.

The Department is required to establish monitoring requirements and/or water quality-based effluent limitations for the discharge of pollutants in an NPDES permit. There are factors that may be considered by

the Department that may result in the modification of effluent limitations or the deadline by which compliance with limitations must be achieved. Cost and/or savings may be affected by the remedial measures leading to compliance with the effluent limitations. Based on site-specific evaluations, effluent limitations developed based on new water quality criteria may be modified, or more time for compliance may be granted under applicable regulations.

Information on the analytical laboratory costs, based on the analytical method used, can be obtained from the National Environmental Methods Index (NEMI) website. This website can be used to access most EPA approved analytical methods (www.nemi.gov). Based upon current information in NEMI, analytical costs for manganese water samples can be expected to range between \$50-\$400 and vary based upon the analytical method used.

(20) Provide a specific estimate of the costs and/or savings to the local governments associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

No costs will be imposed directly upon local governments by this regulation. This proposed rulemaking is based on and will be implemented through existing Department programs, procedures, and policies. Certain municipally-owned water suppliers that treat surface water or municipally-owned wastewater treatment plants that discharge manganese to surface waters may be affected by this regulation as described in #15. The costs associated with permits and performance or design requirements will be site-specific and depend upon the alternative point of compliance for the proposed criterion.

Under the first alternative point of compliance, municipally-owned water suppliers may realize increased treatment costs if the level of manganese increases at their point of surface water withdrawal. Based on information provided by the Pennsylvania PUC, the Local Government Association estimates that for a small water treatment plant: "...a municipal water authority operating a 1 MGD (million gallons/day) water treatment plant, estimated an additional annual cost of \$20,000 just for chemical usage (Potassium Permanganate) to treat manganese". The Local Government Association further states that, "diligent monitoring and sampling would be required by operators to ensure removal to prevent unpleasant taste and odor, discoloration and staining, and potential health impacts from high Manganese levels."

Under the second alternative point of compliance, the compliance and treatment costs for municipally-owned wastewater treatment plants may increase if manganese is present in the discharge, but each facility will require an evaluation based on site-specific considerations. No additional costs are expected for local governments that own public water supplies under this alternative because manganese in wastewater discharges would be treated to achieve compliance with the proposed criterion at the point of discharge.

In addition to cost savings, under the second alternative point of compliance, a municipality may derive additional revenue and employment from the outdoor recreation and tourism industries when waters are protected by the proposed manganese criterion.

(21) Provide a specific estimate of the costs and/or savings to the state government associated with the implementation of the regulation, including any legal, accounting, or consulting procedures which may be required. Explain how the dollar estimates were derived.

No costs will be imposed directly upon state governments by this regulation. This proposed rulemaking is based on and will be implemented through existing Department programs, procedures, and policies. However, certain state agencies that operate regulated drinking water supplies or wastewater treatment

plants that discharge manganese to surface waters may be affected by this regulation as described in #15. The costs associated with permits and performance or design requirements will be site-specific.

Under the first alternative point of compliance, state-owned wastewater treatment plants will benefit from the proposed regulation through reduced monitoring and treatment costs associated with removing manganese from their permitted discharges. In addition, bond forfeiture sites for mining activities where the Commonwealth is responsible for mine drainage treatment would potentially have a reduction in treatment costs. However, state agencies that provide drinking water may realize increased treatment costs if the level of manganese increases at their point of surface water withdrawal.

Under the second alternative point of compliance, the compliance and treatment costs for the state-operated wastewater plants may increase. However, this alternative should also result in cost savings for the state agencies that provide drinking water since manganese levels in source waters will be lower and less treatment will be necessary to meet drinking water regulations.

In addition to cost savings, under the second alternative point of compliance, the state may derive additional revenue and employment from the outdoor recreation and tourism industries when waters are protected by the proposed manganese criterion.

Also, see response #17 and 20.

(22) For each of the groups and entities identified in items (19)-(21) above, submit a statement of legal, accounting or consulting procedures and additional reporting, recordkeeping or other paperwork, including copies of forms or reports, which will be required for implementation of the regulation and an explanation of measures which have been taken to minimize these requirements.

Each activity that will result in a discharge of pollutants to waters of this Commonwealth requires a review that is based on site-specific considerations, including the specific levels of manganese expected or known to be in the discharge to waters of this Commonwealth, as well as the physical and chemical properties of the receiving water. Existing Department procedures will be used to implement this regulation.

Persons with existing or proposing new or expanded activities or projects which result in discharge of manganese to waters of the Commonwealth will be required to implement treatment of effluent and the appropriate protections to meet the water quality standards established by this regulation. These requirements are generally implemented upon renewal or amendment of existing NPDES permits.

(22a) Are forms required for implementation of the regulation?

No additional forms are required as a result of this regulation.

(22b) If forms are required for implementation of the regulation, attach copies of the forms here. If your agency uses electronic forms, provide links to each form or a detailed description of the information required to be reported. Failure to attach forms, provide links, or provide a detailed description of the information to be reported will constitute a faulty delivery of the regulation.

N/A

(23) In the table below, provide an estimate of the fiscal savings and costs associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years.

	Current FY Year (2019-20)	FY +1 Year (2020-21)	FY +2 Year (2021-22)	FY +3 Year (2022-23)	FY +4 Year (2023-24)	FY +5 Year (2024-25)
SAVINGS:	\$	\$	\$	\$	\$	\$
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	“	“	“	“	“	“
State Government	“	“	“	“	“	“
Total Savings	“	“	“	“	“	“
COSTS:						
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	“	“	“	“	“	“
State Government	“	“	“	“	“	“
Total Costs	“	“	“	“	“	“
REVENUE LOSSES:						
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	“	“	“	“	“	“
State Government	“	“	“	“	“	“
Total Revenue Losses	“	“	“	“	“	“

(23a) Provide the past three-year expenditure history for programs affected by the regulation.

Program	FY -3 (2016-17)	FY -2 (2017-18)	FY -1 (2018-19)	Current FY (2019-20)
160-10381 Enviro Protection Operations	\$86,462,000	\$89,215,000	\$93,190,000	\$84,523,000
161-10382 Enviro Program Management	\$26,885,000	\$29,413,000	\$30,932,000	\$28,420,000

(24) For any regulation that may have an adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), provide an economic impact statement that includes the following:

(a) An identification and estimate of the number of small businesses subject to the regulation.

Persons with proposed or existing discharges into surface waters of the Commonwealth must comply with the regulation. Also, see response #15.

(b) The projected reporting, recordkeeping, and other administrative costs required for compliance with the proposed regulation, including the type of professional skills necessary for preparation of the report or record.

Each activity that will result in a discharge of pollutants to waters of this Commonwealth requires a review that is based on site-specific considerations. NPDES permits and other approvals will be required for discharges to surface waters, using the water quality criteria and standards identified in the regulations. Existing Department procedures will be used to implement this proposed regulation.

(c) A statement of probable effect on impacted small businesses.

Each activity that will result in a discharge of pollutants to waters of this Commonwealth requires a review that is based on site-specific considerations. NPDES permits and other approvals will be required for discharges to surface waters, using the water quality criteria and standards identified in the regulations. Existing Department procedures will be used to implement this proposed regulation.

(d) A description of any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation.

There were no non-regulatory alternatives or less intrusive methods available to consider in order to achieve the purpose of this regulation.

In addition to the flexibility afforded by the regulatory mechanisms in the NPDES permitting program, the water quality standards regulations include a provision that allows for the development of site-specific water quality criteria, in lieu of the statewide criteria, under certain circumstances. In particular, in accordance with § 93.8d(a), if site-specific biological or chemical conditions of the receiving waters differ from the conditions upon which the statewide criteria are based, or there exists a need for a site-specific criterion for a substance not listed in § 93.8c, Table 5, the Department will consider a request for site-specific criteria. A discharger has the opportunity to weigh the costs of developing a site-specific standard against the usage of an existing statewide standard.

(25) List any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, the elderly, small businesses, and farmers.

There are no such provisions in this rulemaking.

(26) Include a description of any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected.

Two alternative regulatory schemes are being proposed for consideration in achieving the correct level of protection for the waters of the Commonwealth. The amendments propose two alternatives for a point of compliance with the manganese water quality standard: the point of all existing or planned surface potable water supply withdrawals (First Alternative Point of Compliance); or all surface waters, near the point of discharge (Second Alternative Point of Compliance). The first alternative complies with Act 40 of 2017 and

the second alternative is consistent with the CSL and Pennsylvania's existing water quality program as it relates to toxic pollutants, since manganese is a neurotoxin at exposure levels beyond those necessary to maintain adequate health.

(27) In conducting a regulatory flexibility analysis, explain whether regulatory methods were considered that will minimize any adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), including:

(a) The establishment of less stringent compliance or reporting requirements for small businesses.

This rulemaking does not establish or revise compliance or reporting requirements for small businesses. There was no less stringent compliance or reporting requirements to consider in this case. Any water quality criteria that are less stringent than those recommended by the Department and accepted by the Board in the proposed rulemaking were not protective enough for the waters of the Commonwealth and would negate the benefits listed in #17. The rulemaking reflects the results of a scientific evaluation of regulatory criteria.

(b) The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses.

There were no non-regulatory alternatives available to consider in this case. Schedules of compliance and reporting requirements to meet the standards of this rulemaking may be considered when permit or approval actions are taken, in accordance with 25 Pa. Code Chapter 92a. They are not considered as part of this scientific evaluation of the correct water quality criteria needed to protect surface waters.

(c) The consolidation or simplification of compliance or reporting requirements for small businesses.

Schedules of compliance and reporting requirements to meet the standards of this rulemaking may be considered when permit or approval actions are taken. They are not part of this scientific evaluation and establishment of the correct water quality criteria needed to protect surface waters.

(d) The establishment of performing standards for small businesses to replace design or operational standards required in the regulation.

The regulations represent performance standards. They identify the instream goals for water quality protection and do not identify the design or operational standards that must be used to meet the goals.

(e) The exemption of small businesses from all or any part of the requirements contained in the regulation.

There were no such exemptions of small businesses to consider in this case.

(28) If data is the basis for this regulation, please provide a description of the data, explain in detail how the data was obtained, and how it meets the acceptability standard for empirical, replicable and testable data that is supported by documentation, statistics, reports, studies or research. Please submit data or supporting materials with the regulatory package. If the material exceeds 50 pages, please provide it in a searchable electronic format or provide a list of citations and internet links that, where possible, can be accessed in a searchable format in lieu of the actual material. If other data was considered but not used, please explain why that data was determined not to be acceptable.

Please see the attached rationale document for criteria development and specific literature reviews and citations.

The Department assessed the peer-reviewed technical documentation and scientific literature and found it was scientifically sound.

(29) Include a schedule for review of the regulation including:

- | | |
|--|---|
| A. The length of the public comment period: | <u>45 days</u> |
| B. The date or dates on which any public meetings or hearings will be held: | <u>TBD</u> |
| C. The expected date of delivery of the final-form regulation: | <u>Quarter 4, 2020</u> |
| D. The expected effective date of the final-form regulation: | <u>Upon publication in the Pennsylvania Bulletin as final-form rulemaking for Clean Streams Law permit and approval actions, or as approved by EPA for purposes of CWA permits.</u> |
| E. The expected date by which compliance with the final-form regulation will be required: | <u>Upon issuance or renewal of NPDES permits or other approvals of the Department only after publication in the final-form rulemaking in the Pennsylvania Bulletin</u> |
| F. The expected date by which required permits, licenses or other approvals must be obtained: | <u>When permits or approvals are issued or renewed.</u> |

(30) Describe the plan developed for evaluating the continuing effectiveness of the regulations after its implementation.

This regulation will be reviewed, as required, at least once every three years, in accordance with the federal CWA. As newer science is developed, the standards will be updated, as needed.

TABLE - MANGANESE RAF QUESTION #12
Summary: Criteria Update for Other States

State	Human Health		Aquatic life		Agriculture	Potable Water Supply
	Water + Fish	Fish Consumption	Acute	Chronic		
New York	--	--	--	--	--	0.3 mg/L
West Virginia	1.0 mg/L ¹	--	5.0 mg/L ²	--	--	--
Washington, D.C.	--	0.1 mg/L ³	--	--	--	--
Alaska	0.05 mg/L	0.1 mg/L	--	--	0.2 mg/L ⁴	--
Arizona	0.98 mg/L	--	--	--	10.0 mg/L ⁴	--
Colorado	--	--	2.986 mg/L ⁵	1.650 mg/L ⁵	0.2 mg/L	0.05 mg/L
Illinois	--	--	4.181 ug/L ⁶	1.778 mg/L ⁶	--	1.0 mg/L
Maine	--	0.1 mg/L	--	--	--	--
Nebraska	--	--	--	1.0 mg/L	--	0.05 mg/L
New Hampshire	0.05 mg/L	0.1 mg/L	--	--	--	--
Wyoming	--	--	3.110 mg/L ⁶	1.462 mg/L ⁶	--	0.05 mg/L

¹ Applies within 5-mile zone immediately upstream above a known water supply

² Site-specific acute criteria for manganese applies to Fly Ash Run of Daugherty Run.

³ Class D Human Health Criteria for Metals based on Total Recoverable Metals; Noncarcinogen; 30 day average

⁴ Standard is for irrigation and does not include livestock water supply

⁵ Hardness dependent equation. Value is based on a CaCO₃ of 100 mg/L.

⁶ Hardness dependent equation. Value is based on a CaCO₃ of 100 mg/L. Value is based on the dissolved amount.