APPENDIX A

BACKGROUND ON THE CLEAN WATER ACT AND EFFLUENT GUIDELINES PROGRAM

APPENDIX A BACKGROUND ON THE CLEAN WATER ACT AND EFFLUENT GUIDELINES PROGRAM

This appendix provides information on the Clean Water Act (CWA) and an explanation of different levels of controls for effluent limitations guidelines and standards (ELGs).

A.1 Effluent Limitation Guidelines and Pretreatment Standards Overview

The national clean water industrial regulatory program is authorized under Sections 301, 304, 306, and 307 of the CWA.

The CWA directs EPA to promulgate categorical regulations through six levels of control:

1. Best practicable control technology currently available (BPT)
2. Best available control technology economically achievable (BAT)
3. Best conventional control technology (BCT)
4. New source performance standards (NSPS)
5. Pretreatment standards for existing sources (PSES)
6. Pretreatment standards for new sources (PSNS)

For point sources that discharge pollutants directly into the waters of the United States (direct dischargers), the limitations and standards promulgated by EPA are implemented through National Pollutant Discharge Elimination System (NPDES) permits. See CWA Sections 301(a), 301(b), and 402. For sources that discharge to POTWs (indirect dischargers), EPA promulgates pretreatment standards that apply directly to those sources and are enforced by POTWs and state and federal authorities. See CWA Sections 307(b) and (c). Figure A-1 illustrates the relationship between the regulation of direct and indirect dischargers.

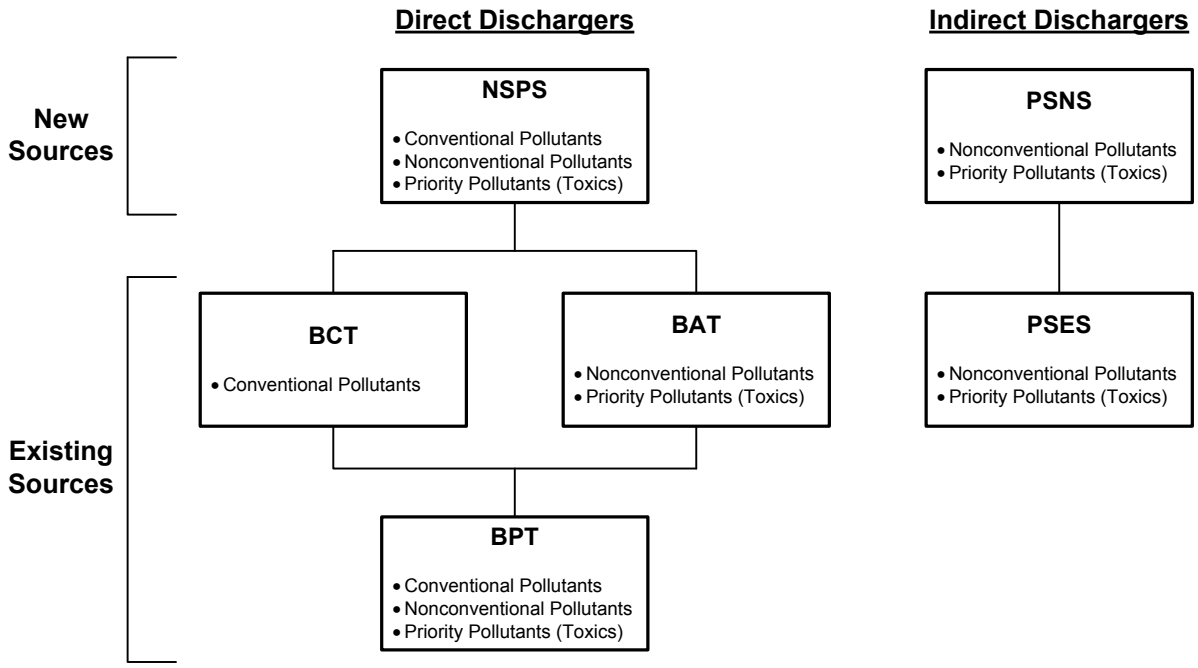

Figure A-1. Regulations of Direct and Indirect Wastewater Discharges

A.2 BPT — CWA Sections 301(b)(1)(A) and 304(b)(1)

EPA develops effluent limitations based on BPT for conventional, toxic, and nonconventional pollutants. CWA Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD_5), total suspended solids, fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (see 44 FR 44501). EPA has identified 65 pollutants and classes of pollutants as toxic pollutants, of which 126 specific substances have been designated priority toxic pollutants. See Appendix A to Part 423, reprinted after 40 CFR Part 423.17. All other pollutants are considered to be nonconventional.

In specifying BPT, EPA looks at a number of factors. EPA first considers the total cost of applying the control technology in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed and any required process changes, engineering aspects of the control technologies, non-water-quality environmental impacts (including energy requirements), and such other factors the EPA Administrator deems appropriate. See CWA Section 304(b)(1)(B). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performances of facilities within the industry of various ages, sizes, processes, or other common characteristics. Where existing performance is uniformly inadequate, BPT may reflect higher levels of control than currently in place in an industrial category if the Agency determines that the technology can be applied practically.

A.3 BCT — CWA Sections 301(b)(2)(E) and 304(b)(4)

The 1977 amendments to the CWA required EPA to identify effluent reduction levels for conventional pollutants associated with BCT for discharges from existing industrial point sources. In addition to the other factors specified in Section 304(b)(4)(B), the CWA requires that EPA establish BCT limitations after consideration of a two-part "cost-reasonableness" test. EPA explained its methodology for the development of BCT limitations in 1986 (see 51 FR 24974, July 9, 1986).

A.4 BAT — CWA Sections 301(b)(2)(A) and 304(b)(2)

For toxic pollutants and nonconventional pollutants, EPA promulgates effluent guidelines based on BAT. See CWA Sections 301(b)(2)(A), (C), (D), and (F). The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, non-water-quality environmental impacts (including energy requirements), and such other factors the EPA Administrator deems appropriate. See CWA Section 304(b)(2)(B). The technology must also be economically achievable; see CWA Section 301(b)(2)(A). In addition to end-of-pipe wastewater treatment, BAT limitations may be based on effluent reductions attainable through changes in a facility's processes and operations. Where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved within a particular subcategory based on technology transferred from a different subcategory or category. BAT may be based upon process changes or internal controls, even when these technologies are not common industry practice.

A.5 NSPS — CWA Section 306

NSPS reflect effluent reductions that are achievable based on the best available demonstrated control technology. New sources have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, NSPS should represent the most stringent controls attainable through the application of the best available demonstrated control technology for all pollutants (i.e., conventional, nonconventional, and priority pollutants). In establishing NSPS, EPA takes into consideration the cost of achieving the effluent reduction and any non-water-quality environmental impacts and energy requirements. See CWA section 306(b)(1)(B).

A.6 PSES — CWA Section 307(b)

PSES apply to indirect dischargers and are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs, including wastewater conveyance and sludge disposal. Pretreatment standards are technology-based and are analogous to BAT effluent limitations guidelines. See CWA section 301(b)(1)(A).

The General Pretreatment Regulations, which set forth the framework for implementing national pretreatment standards, are found at 40 CFR Part 403.

A.7 PSNS — CWA Section 307(c)

Like PSES, PSNS apply to indirect dischargers and are designed to prevent the discharges of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. PSNS are to be issued at the same time as NSPS. See CWA Section 307(c). New indirect dischargers have the opportunity to incorporate into their plants the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating NSPS.

APPENDIX B

QUALITY ASSURANCE ACTIVITIES SUPPORTING THE 2012 ANNUAL REVIEW REPORT

APPENDIX B QUALITY ASSURANCE ACTIVITIES SUPPORTING THE 2012 ANNUAL REVIEW REPORT

B.1 Background, Data Needs, and Data Sources

This appendix provides documentation on the data usability and quality of the new data sources for the 2012 Annual Review.

B.2 Background

For the 2012 Annual Review, EPA explored additional data sources and conducted six new analyses to supplement the toxicity rankings analysis (TRA) conducted as part of the 2011 Annual Review. The six analyses EPA explored during the 2012 Annual Review included:

- Identification of Industrial Wastewater Pollutants in Sewage Sludge
- Review of Chemical Action Plans
- Identification of Wastewater Discharges Related to Air Pollution Control Not Currently Covered by ELGs
- Review of Toxic Release Inventory (TRI) Industry Sectors Expansion
- Review of Analytical Methods
- Review of Industrial Wastewater Treatment Technologies

EPA's goals in conducting these specific analyses were to identify new wastewater discharges or pollutants not previously regulated and to identify wastewater discharges that can be eliminated or treated more effectively. During the 2012 Annual Review, EPA continued preliminary category reviews for three point source categories (40 CFR Parts 419 – Petroleum Refining, 430 – Pulp, Paper, and Paperboard, and 432 – Meat and Poultry Products) identified during EPA's 2011 Annual Review (U.S. EPA, 2012). Additionally, EPA reviewed public comments and input from stakeholders as part of the 2012 Annual Review. For more information on the methodology for EPA's 2012 Annual Review, see Part II (EPA's 2012 Annual Review Methodology and Analyses) of this report.

EPA documented the usability and quality of the data from each source used to support the six new analyses. Quality assurance, at the project level, is the system of procedures used to assess and evaluate project data, information, or analysis outputs against data quality objectives and acceptance criteria. This appendix evaluates quality assurance for the data collected, evaluated, and cited in this 2012 Annual Review Report.

EPA followed three Quality Assurance Project Plans (QAPPs) to conduct the annual review steps and analyze existing data sources: the *Revised Quality Assurance Project Plan for the 2009 Annual Screening-Level Analysis of TRI, ICIS-NPDES, and PCS Industrial Category Discharge Data* (ERG, 2009) and the *Draft Quality Assurance Project Plan for Use of the Existing Data in EPA's Screening-Level Analyses for Review of Industrial Discharges* (ERG, 2011) and the *Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP)* (ERG, 2013a). The following sections provide information on the data needs and sources for the 2012 Annual Review, and an evaluation of the data quality for each data source identified and used in the 2012 Annual Review.

B.3 Data Needs and Sources

EPA used the following data sources to characterize wastewater discharges during the 2012 Annual Review:

- Enforcement and Compliance History Online (ECHO)/Online Tracking Information System (OTIS).
- Supporting documentation to the Office of Air Quality Planning and Standards (OAQPS) Regulations: National Emission Standards for Hazardous Air Pollutants (NESHAP) and New Source Performance Standards (NSPS).
- Conference proceedings, water-related journals, industry-specific organization literature.
- Data provided by trade association contacts.
- State regulatory agency data.
- Data obtained directly from industry.
- Purdue University Calumet Water Institute-Argonne National Laboratory Task Force (Purdue-Argonne Task Force) Report.
- Steam Detailed Study Report (DSR).
- Targeted National Sewage Sludge Survey (TNSSS).
- EPA, state, and local government representative data and information.
- EPA Office of Water, Office of Ground Water and Drinking Water (OGWDW), and Office of Research and Development (ORD) Analytical Methods..
- EPA Office of Pollution Prevention and Toxic Substances (OPPT) program data sources: Chemical Action Plans (CAPs), Significant New Use Rule (SNUR).
- Office of Environmental Information (OEI) Toxic Release Inventory (TRI) Sectors Expansions Rulemaking Data.
- Perfluoroctanoic acid (PFOA) data sources: OPPT PFOA Stewardship Program, Long-Chain Perfluorinated Chemicals (PFCs) public docket.
- Office of Ground Water and Drinking Water (OGWDW) Drinking Water Treatability Database.

In addition, EPA used TRI and discharge monitoring report (DMR) data during the 2012 Annual Review. EPA documents quality assurance and criteria in the *Revised Quality Assurance Project Plan for the 2009 Annual Screening-Level Analysis of TRI, ICIS-NPDES, and PCS Industrial Category Discharge Data* (ERG, 2009).

B.4 Data Quality Criteria

EPA used existing data to support analyses of the impact of industrial discharges on the environment. These analyses relied on published literature identified during review of materials related to the targeted analyses. EPA obtained the existing data from publications and databases

available from other EPA offices, www.regulations.gov, and other websites, as well as directly from industry and regulators (including EPA representatives). EPA considered the accuracy, reliability, and representativeness of data sources to assess their usability as follows.

Accuracy. EPA assumed that the underlying data and information contained in state and federal reports, selected conference proceedings, and peer-reviewed journal articles were accurate. That is, EPA assumed that data from these sources were of sufficient quality to identify characteristics of industrial discharges and that known analytical methods were used for any pollutant measurements.

Reliability. During the review of existing literature, EPA encountered sources that contained limited documentation of actual measurements, and instead provided qualitative discussion. For example, numerous media articles state that perfluorinated chemicals cause cancer, but the articles do not cite the source for the statement, do not provide numerical measurements of cancer incidence (increased risk), and do not provide amounts of exposure (such as mg/kg). These data sources represented a lower level of reliability than peer-reviewed literature, but provided useful information for capturing the full range of environmental impacts associated with industrial discharges. EPA also evaluated existing data for use in qualitative analyses for reliability based on the following factors:

- The scientific work is clearly written, so that all assumptions and methodologies can be identified.
- The variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods, or models are evaluated and characterized.
- The assumptions and methodologies are consistently applied throughout the analysis as reported in the source.
- Wastestream, parameters, units, and detection limits (when appropriate) are clearly characterized.

Representativeness. EPA evaluated existing data for use in qualitative analyses based on whether the data provide a national perspective and are relevant to and representative of the industry to which the data are applied. Specifically, EPA evaluated the data for the presence of the following information (as applicable to the relevant data sources):

- Actual facility wastewater discharge data (using EPA approved analytical methods).
- Wastewater impacts directly related to air regulations (as stated in air regulation documentation).
- Wastewater treatment effectiveness.
- Flow and concentration data (types of pollutants and corresponding loads) of wastewater discharges to surface water bodies and publicly owned treatment works (POTWs).
- Industry process information (e.g., how is the pollution generated?).
- Fate of biosolids in wastewater treatment.

- Information (qualitative and quantitative) about the manufacture of chemicals.
- Amount of pollutants in the United States and its effects on human health.

B.5 Evaluating Data Quality

This section describes the sources and summarizes how data sources met (or did not meet) the evaluation criteria listed above. Table B-1 at the end of this section details the criteria applied and the conclusions reached on each data source.

B.6 ECHO/OTIS

The ECHO/OTIS databases provide inspection, violation, and enforcement data for the CWA, Clean Air Act, and hazardous waste laws. The OTIS database is a collection of search engines that provides government agencies with access to a wide range of data. The ECHO database provides the general public with access to similar data. For its annual reviews, EPA extracted industrial discharge data from OTIS CWA reports. The underlying data in the ECHO/OTIS databases are from facility DMRs. While errors in data transcription and units errors are possible, the data are based on industry self-monitoring (DMR data), which specify analytical methods and are monitored in accordance with NPDES permitting requirements. EPA considered this data usable to characterize wastewater, evaluate industrial sector trends, and estimate pollutant loads.

B.7 OAQPS Regulations: NESHAP and NSPS

OAQPS compiled data in support of promulgating air regulations that include NESHAP and NSPS. These documents discuss industry profile information, manufacturing data, and, for some industries, an evaluation of changes in wastewater characteristics due to air pollution control. EPA evaluated supporting documentation for rules promulgated after 1990, including data published in the *Federal Register* (FR). In some cases, the rules supplemented older rules from the 1970s or 1980s, and EPA reviewed the older documentation as well. These documents, including citations supporting statements of fact, are written clearly. Overall, EPA considered these data accurate, reliable, and representative, and therefore usable to identify industrial sector trends and to qualitatively evaluate wastewater characteristics. These data were not used to calculate pollutant loads.

B.8 Conference Proceedings, Water-Related Journals, Industry-Specific Organization Literature

EPA is collecting, reviewing, and compiling into a searchable database data on the performance of new or improved wastewater treatment technologies. EPA obtained data from conference proceedings, water-related journals, and literature from industry-specific organizations. Section 6.6.1.3 of this 2012 Annual Review Report (Data Quality Assurance and Control Criteria) specifically discusses the data quality assurance criteria and methodology EPA used to conduct a literature review and develop the industrial wastewater treatment technology database. For more information on EPA's efforts to ensure that the data sources meet the data quality criteria, see the methodology documented in the *Supplemental Quality Assurance and Control Plan for the Development and Population of the Industrial Wastewater Treatment Technology Database* (ERG, 2013b).

B.9 Trade Association Data

EPA obtained facility information from two trade associations in the 2012 Annual Review: the National Council for Air and Stream Improvement, Inc. (NCASI) and the American Forest & Paper Association (AF&PA). The trade associations gathered wastewater discharge data directly from facilities and provided results of dioxin analyses to EPA, including sample detection limits. EPA determined these data were usable for computing pollutant loadings. The trade associations also provided EPA with updates on the pulp and paper plants' bleaching processes, which EPA found usable for characterizing industry practices.

B.10 State Regulatory Agency Data

State regulatory agency data used in the 2012 Annual Review include data from the Nebraska Department of Environmental Quality, Illinois Environmental Protection Agency, North Carolina Department of Environment and Natural Resources, Virginia Department of Environmental Quality, Michigan Department of Environmental Quality, Pennsylvania Department of Environmental Protection, Texas Commission on Environmental Quality, Iowa Department of Natural Resources, and Alabama Department of Environmental Management. The state regulatory agencies gathered wastewater discharge data directly from facilities. EPA obtained DMRs, permits, fact sheets, and data from knowledgeable government representatives. The DMRs are certified by the facilities submitting them. Permits and fact sheets are factual documents containing well-documented information and are also accurate, reliable, and representative. EPA determined that general data provided by government representatives was useable for discharge characterization, permit limit comparison, and pollutant loads estimation.

B.11 Data Obtained from Industry

Specific facilities that were contacted during the 2012 Annual Review provided wastewater discharge data to EPA. EPA required that the discharge data include units, analytical method, detection limit information, and identifying data (date, outfall, etc.). EPA determined these data were usable for calculating pollutant loadings, wastewater characterization, industrial sector trends, and performance/efficiency.

B.12 Purdue-Argonne Task Force Report

The Purdue-Argonne Task Force collected data on treatment technologies that could help the BP Whiting (Indiana) Refinery meet wastewater discharge permit limits, such as the use of ultrafiltration treatment for mercury. The Task Force Report is a summary of a series of published documents that have undergone extensive review by multiple authors and include citations as backup documentation. EPA determined that this is a reliable, accurate, and representative source for evaluating the treatability of certain pollutants in petroleum refining wastewater, as well as for evaluating treatment effectiveness.

B.13 Steam DSR

The Steam DSR includes data documenting the performance of chemical precipitation and biological treatment at power plants, specifically of flue gas desulfurization wastewater treatment systems. This report also contains information on the evaluation of the industry profile for the steam electric power generating industry, including information on steam generating units

that do not produce electric power for distribution and/or sale as their primary purpose. This report is a published EPA document, has undergone extensive review by multiple authors, and includes citations as backup documentation. EPA determined that this is a reliable, accurate, and representative source for evaluating treatment system performance.

B.14 TNSSS

The TNSSS includes three published EPA documents that have gone through extensive review: a summary document, a document that provides details on sampling techniques and location, as well as analytical methods, and a document on statistical analyses of the data. The three published documents state how pollutants were selected for analysis, list sampling techniques performed, interpret analytical results, and provide in-depth statistical analyses. Because the survey was performed on sludge, the data do not represent wastewater characteristics. However, when combined with toxic release inventory (TRI) data, the TNSSS data can provide useful information on how pollutants in industrial wastewater partition to sludge. EPA found all documents to be accurate, reliable, and representative, and therefore usable for industrial sector trends, pollutant load considerations, and consideration of environmental fate of pollutants.

B.15 EPA, State, and Local Government Representatives Data and Information

As part of the 304m process, EAD collected data and information from EPA Regional and Headquarters offices, as well as state and local government representatives. EPA considers these data useful for qualitative discussion, to provide general information on industrial sector trends. From discussions with government representatives, EPA often obtains published information; however, EPA evaluates the quality of this published information separately.

B.16 EPA OW, OGWDW, and ORD Analytical Methods

EPA periodically develops new or updates existing analytical methods in response to developments such as the identification of a new class of pollutants, or if impairments to water bodies indicate the need for altered or new methods. Available analytical method information from three EPA offices was analyzed for the 2012 Annual Review: EPA's Office of Water (OW), Office of Science and Technology, Engineering and Analysis Division; EPA's OGWDW; and EPA's Office of Research and Development (ORD).

The OW Analytical 2012 Method Update Rule provides a comprehensive list of updates to 40 CFR Part 136. The OGWDW Unregulated Contaminant Monitoring Rule (UCMR) provides a comprehensive list of new contaminants that drinking water utilities will analyze and report. ORD develops new analytical methods for drinking water and a variety of other emerging pollutants of concern. EPA considers all of these data sources to be accurate, reliable, and representative regarding the latest changes in analytical methods for wastewater and developments in drinking water, respectively.

EPA did not use the data or information obtained from its review of analytical methods to evaluate specific industrial discharges or pollutant loads. Instead, EPA evaluated the information to assess new analytical methods or changes to existing analytical methods that may help EPA identify new pollutants of concern or strengthen existing requirements for regulated pollutants in industrial wastewater discharge.

B.17 OPPT Data Sources: CAPs and SNUR

OPPT data sources (CAPs and SNUR) are published government documents that have undergone extensive review by multiple authors. EPA CAPs summarize available hazard, exposure, and use information for each chemical; outline the risks that each chemical may present; and identify the specific steps OPPT is taking to address those concerns. A SNUR is a regulation that requires manufacturers who intend to use a chemical for the identified significant new use to submit an application to the Agency for review prior to beginning that activity. EPA determined that these data are accurate, reliable, and representative. EPA determined these data are usable for documenting the manufacture, import, or processing of chemicals. When chemical release data are included in the documentation associated with these reports, EPA determined that they are usable for characterizing wastewater discharges.

B.18 OEI TRI Sectors Expansions Rulemaking Data

OEI initiated a rulemaking to add or expand the coverage of TRI for six industries in June 2011. OEI published information about the proposed rulemaking at www.regulations.gov (TRI Exchange: http://exchange.regulations.gov/topic/trisectorsrule/agencyintro/tri-exchange) and asked for public comment on the six industries considered as part of the expansion. EPA considers these data useful for qualitative discussion to provide general information on the industries considered as part of the expansion.

B.19 PFOA Data sources: OPPT PFOA Stewardship Program, PFCs Public Docket

OPPT's PFOA Stewardship Program was developed to help minimize the potential impact of PFOA in the environment by asking manufacturing companies to commit voluntarily to reducing PFOA emissions and product content by 95 percent by 2010. Additionally companies that chose to participate in the program would work to eliminate PFOA emissions and product content by 2015. EAD collected publicly available data characterizing PFCs in industrial discharges by reviewing the docket supporting the PFOA enforceable consent agreement (ECA) process (available in docket EPA-HQ-OPPT-2003-0012). These backup data vary in content and quality. EPA found that monitoring data submitted by facilities were usable for characterizing wastewater and estimating pollutant loads, as long as analytical methods and sampling details were provided.

B.20 OGWDW Drinking Water Treatability Database

OGWDW's Drinking Water Treatability Database presents information on technologies that treat contaminants in drinking water. Its many uses include identifying effective treatment processes, planning for future treatment plant upgrades, and recognizing research needs. The database is published by EPA and undergoes review prior to release. Data characterize treatability levels for drinking water. This may not be representative of how technologies will perform on industrial wastewater. As a result, the TDB data are considered accurate and reliable, and therefore usable to qualitatively discuss treatability of compounds. For example, the treatability database shows that PFOA is not removed by biological treatment and may actually form during biological processes; whereas granular activated carbon (GAC) and ultraviolet irradiation, at wavelengths in the 185–200 nm range, remove PFOA. Although these observations relate to drinking water treatment, the same chemical processes would occur in wastewater treatment.

B.21 References for Quality Assurance Activities Supporting the 2012 Annual Review Report

1. ERG. 2009. Revised Quality Assurance Project Plan for the 2009 Annual Screening-Level Analysis of TRI, ICIS-NPDES, and PCS Industrial Category Discharge Data. (September). EPA-HQ-OW-2008-0517-0507.

2. ERG. 2011. Draft Quality Assurance Project Plan for Use of the Existing Data in EPA's Screening-Level Analyses for Review of Industrial Discharges. (October). EPA-HQ-OW-2010-0824. DCN 07752.

3. ERG. 2013a. Eastern Research Group, Inc. Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP). Chantilly, VA. (May). EPA-HQ-OW-2010-0824. DCN 07754.

4. ERG. 2013b. Eastern Research Group, Inc. Supplemental Quality Assurance and Control Plan for the Development and Population of the Industrial Wastewater Treatment Technology Database. Chantilly, VA. (November 22). EPA-HQ-OW-2010-0824. DCN 07753.

5. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA-821-R-12-001. EPA-HQ-OW-2010-0824-0195.

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
ECHO/OTIS	Industry self monitoring data (DMR data), which specify analytical methods and are monitored in accordance with NPDES permitting requirements.	The data are clearly written and variability and uncertainty can be evaluated and addressed through outlier analyses and comparisons to permit limits.	Data are directly representative of wastewater discharges because the data are based on actual facility wastewater measurements using EPA approved analytical methods.	Data are accurate, reliable, and representative, and therefore usable to characterize wastewater, evaluate industrial sector trends, and estimate pollutant loads.
OAQPS Regulations: NESHAP, NSPS	The regulations and supporting documentation cite published data and reports.	The regulations and supporting documentation are clearly written and document assumptions.	In some cases, the regulations listed wastewater impacts, although regulations were for air discharges. EPA found the supporting data usable to identify potential pollutants transferred to wastewater due to air pollution control, and in cases where wastewater impacts were listed, identified likely pollutants transferred to wastewater.	Data are accurate, reliable, and representative, and therefore usable to identify industrial sector trends and to qualitatively evaluate wastewater characteristics. These data were not used to calculate pollutant loads.
Conference Proceedings, Water-Related Journals, and Industry-Specific Organization Literature	See *Supplemental Quality Assurance and Control Plan for the Development and Population of the Industrial Wastewater Treatment Technology Database* (ERG, 2013b)			
Trade Association Data: American Forest and Paper Association (AF&PA) and the National Council for Air and Stream Improvement (NCASI)	Data are obtained from the facility that provided backup documentation, including sample detection limits.	Facilities provided detailed documentation of actual measurements gathered and any assumptions and methodologies.	Data are directly representative of wastewater discharges because the data are actual facility wastewater measurements. The trade associations also provided EPA with updates on the pulp and paper plants' bleaching processes.	Data are accurate, reliable, and representative, and therefore usable for estimating pollutant loads and characterizing industry practices.

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
State Regulatory Agency Data	EPA obtained DMRs, permits, fact sheets, and data from knowledgeable government representatives. The DMRs are certified by facilities submitting them. Permits and fact sheets are factual documents containing well-documented information.	DMRs include actual pollutant measurements certified by facilities, including analytical method and detection limits. Facility permits and fact sheets are factual documents containing well-documented information.	Data are directly representative of wastewater discharges because the data include actual facility wastewater measurements.	Data are accurate, reliable, and representative, and therefore usable for discharge characterization, permit limit comparison, and pollutant loads estimation.
Data Obtained from Industry	Data received from facilities included units, analytical methods used, detection limit information, and identifying data.	EPA only accepted data that was clearly written, and where variability and uncertainty could be evaluated and addressed through outlier analyses and comparisons to permit limits.	Data are directly representative of wastewater discharges because the data are actual facility wastewater measurements.	Data are accurate, reliable, and representative, and therefore usable for updating databases of DMR data, calculating pollutant loadings, wastewater characterization, industrial sector trends, and performance/ efficiency.
Purdue-Argonne Task Force Report	Report is a series of published documents that have undergone extensive review by multiple authors and include citations as backup documentation.	Report contains detailed documentation of actual measurements, is clearly written, and documents assumptions and methodologies.	Data are directly representative of wastewater discharges because the data are based on actual facility wastewater measurements. Treatment system performance data are based on actual wastewater measurements, as well.	Data are accurate, reliable, and representative, and therefore usable for both estimating pollutant loads and treatment system performance.

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
Steam Detailed Study Report	Report has undergone extensive review by multiple authors and includes citations as backup documentation.	Data are published in an EPA document supporting a rulemaking.	Data report on wastewater treatment effectiveness for metals in industrial wastewater. Wastewater characteristics may be specific to steam electric generating facility discharges, but are representative of a sector of industrial wastewater discharges.	Data are accurate and reliable and therefore usable for documenting wastewater treatment technology effectiveness; however, EPA describes the data limitations. That is, EPA recognizes the treatment effectiveness may differ between industrial categories.
EPA's Targeted National Sewage Sludge Survey (TNSSS)	The three TNSSS reports are published EPA documents that have gone through extensive review, and the data collection and analysis are covered by an EPA QAPP.	Data are clearly written, and all assumptions and methodologies were reported in the source. The reports list sampling techniques performed, interprets analytical results, and provides in-depth statistical analyses.	EPA recognizes that industrial users are not identified in the TNSSS which is a limitation of the data. However, data can be combined with TRI data to relate wastewater discharges to POTW sludge, and therefore are usable to investigate the fate of pollutants in POTWs.	Data are accurate, reliable, and representative, and therefore usable for industrial sector trends and consideration of environmental fate of pollutants.

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
EPA, State, and Local Government Representatives Data and Information	EPA regional and headquarters offices, and state and local government representatives provide information on programs at the federal, state, and local levels. For non-published material, such as historical program information provided from direct recall, EPA considers the information anecdotal.	Historic and policy information about government programs is considered representative of the programs only, and not usable for characterizing industry discharges.	Information obtained from government officials is considered representative of government programs.	Federal, state, and local representatives may provide program information that guides EPA research. For example, local pretreatment officials may provide anecdotal information on interferences, and EPA would pursue published reports on such interferences. The anecdotal information itself is not considered usable for characterizing wastewater discharges. EPA evaluates the quality of any published documents from federal, state, or local governments separately (e.g., DMRs).

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
EPA Analytical Methods	Published rules that demonstrate compliance or meet monitoring objectives for analytical measurement of substances in water. ORD and OGWDW focused on drinking water analysis; OW EAD focused on wastewater analysis.	Incorporate appropriate quality control criteria so that acceptable method performance is demonstrated during the analysis of samples.	Analytical methods related to wastewater are considered to be representative and useable for characterizing wastewater discharges. Analytical methods that evaluate drinking water may not work to evaluate industrial wastewater due to matrix interferences. However, EPA only used data and information to facilitate identification of new pollutants of concern in drinking water that may be attributed to industrial wastewater sources.	Data are considered accurate and reliable for the latest changes in analytical methods. Analytical methods for wastewater are representative for how well a contaminant can be measured, such as to which detection limit. Information on the detection limits achieved in wastewater measurements is usable for comparison with pollutant loads and wastewater characteristics. Information on drinking water methods is useable for identifying potential new pollutants of concern in drinking water from industrial sources.
OPPT Data sources: Chemical Action Plans (CAPs) and Significant New Use Rules (SNURs)	The data sources are published government documents that have undergone extensive review by multiple authors. Each CAP cites specific data sources, including peer-reviewed journal articles, technical encyclopedias, and chemical engineering textbooks.	Data are clearly written, and all assumptions and methodologies are reported in the source. In cases where wastewater discharge data is provided, numerical measurements and units are provided.	Represent manufacturing processes of each chemical listed in the specific OPPT data source, as well as the environmental releases from the process. In some cases, provide qualitative discussion of resulting chemicals discharged in wastewater. In other cases, provide quantitative discussion of chemicals discharged in wastewater.	Data are considered accurate, reliable, and representative and therefore usable for documenting the manufacture, import, or processing of chemicals. When chemical release data are included in the documentation associated with these reports, they are usable for characterizing wastewater discharges.

Table B-1. Data Sources Supporting New Analyses

Data source	Data Quality Criteria			Conclusions on Usability
	Accuracy	Reliability	Representativeness	
OEI TRI Sectors Expansion Rulemaking (TRI Exchange)	Qualitative information on the six industries considered as part of the rulemaking was reviewed and published on EPA's website.	Information is clearly presented and published on EPA's website.	Qualitative discussions on all six industries included as part of the rulemaking include information on industry profile, potential pollutants of concern, and information about potential impacts on wastewater.	Data are considered accurate, reliable, and representative for a qualitative discussion on the six industries considered as part of the TRI Sectors Expansion.
PFOA data sources: OPPT PFOA Stewardship Program, PFCs public docket	Supporting documentation for data varies in content and quality. Participating companies that provide data to EPA sometimes include analytical methods used and sampling details for the data submitted.	Data are certified as reliable by the companies submitting the data.	Data are directly representative of wastewater discharges because the data are actual facility wastewater measurements.	Data are considered accurate, reliable, and representative and therefore usable for characterizing wastewater and estimating pollutant loads, as long as analytical methods and sampling details are provided.
OGWDW Drinking Water Treatability Database	The papers reviewed to create the EPA published database come from a wide range of peer-reviewed journals and conference proceedings, and also include theses and dissertations, handbooks, web pages, and trade publications.	Data are clearly written, and all assumptions and methodologies are reported in the source.	Data characterize treatability levels for drinking water. This may not be representative of how technologies will perform on industrial wastewater.	Data are considered accurate and reliable, and therefore usable to qualitatively discuss treatability of compounds. For example, the treatability database shows that PFOA is not removed by biological treatment and may actually form during biological processes; whereas granular activated carbon (GAC) and ultraviolet irradiation, at wavelengths between 185–200 nm, remove PFOA. Although these observations relate to drinking water treatment, the same chemical processes would occur in wastewater treatment.