

Region 1
NPDES Program and Permit Quality Review
Connecticut

Review Date: November 14–15, 2018
Report Date: December 23, 2019

Environmental Protection Agency – Region 1
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Contents

- Executive Summary..... 3
- I. PQR BACKGROUND..... 5
- II. STATE PROGRAM BACKGROUND 7
 - A. Program Structure 7
 - B. Universe and Permit Issuance 10
 - C. State-Specific Challenges..... 11
 - D. Current State Initiatives..... 11
- III. CORE REVIEW FINDINGS..... 12
 - A. Basic Facility Information and Permit Application 12
 - 1. Facility Information 12
 - 2. Permit Application Requirements 13
 - B. Developing Effluent Limitations 14
 - 1. Technology-based Effluent Limitations..... 14
 - 2. Reasonable Potential and Water Quality-Based Effluent Limitations 17
 - 3. Final Effluent Limitations and Documentation 21
 - C. Monitoring and Reporting Requirements 24
 - D. Standard and Special Conditions..... 26
 - E. Administrative Process 28
 - F. Administrative Record and Fact Sheet 29
- IV. NATIONAL TOPIC AREA FINDINGS 31
 - A. Permit Controls for Nutrients in Non-TMDL Waters..... 31
 - B. Effectiveness of POTW NPDES Permits with Food Processor Contributions 32
 - C. Small Municipal Separate Storm Sewer System (MS4) Permit Requirements 35
- V. REGIONAL TOPIC AREA FINDINGS 36
 - A. Clean Water Act Section 316(b) 36
- VI. REVIEW OF PROGRESS ON ESSENTIAL ACTION ITEMS FROM LAST PQR 41
 - Table 1. Essential Action Items Identified During Last PQR 2012 41
- VII. RECOMMENDED ACTION ITEMS FROM LAST PQR..... 43
- VIII. ACTION ITEMS FROM FY 2018–2022 PQR CYCLE 43
 - Table 2. Essential Action Items from FY 2018-2022 PQR Cycle 44
 - Table 3. Recommended Action Items from FY 2018-2022 PQR Cycle 46

Executive Summary

EPA Region 1's National Pollutant Discharge Elimination System (NPDES) Program and Permit Quality Review (PQR) for Connecticut found that permits issued in the state were generally well-developed and consistent with federal regulations. Since our last PQR review in 2012, we note the progress Connecticut has made in addressing nutrient pollution through a successful phosphorus reduction strategy that imposes phosphorus limits that are well-defined and clearly described within permits. Connecticut has a robust grant program to support POTW upgrades through a state-wide grant program. We also appreciate the willingness of Connecticut to work with us on this round of the PQR; for the most part, their files are well-maintained and their permitting processes show a high degree of efficiency. They use tables effectively to convey information. Where fact sheets are brief (as with many of the industrial permits), they are accompanied by thorough individual attachments.

The PQR examined 16 permits for discharges in Connecticut along with 1 General Permit issued by the Connecticut Department of Energy and Environmental Protection (CT DEEP), and CT DEEP permitting regulations. The PQR also focused on several national and regional priority areas including:

- Permit Controls for Nutrients in Non-TMDL Waters,
- Effectiveness of POTW NPDES Permits with Food Processor Contributions,
- Small Municipal Separate Storm Sewer System (MS4) Permit Requirements, and
- Clean Water Act 316(b) Regulations Regarding Cooling Water Intake Structures

Connecticut administers 135 individual NPDES permits. As of November 2018, 36 percent of Connecticut's permits are current.

Based on the review conducted by this PQR, several areas have been identified for additional action. Although the permits reviewed commonly conformed to national requirements, the review identified some inconsistencies with federal regulations such as with state application forms regarding data requirements for municipal facilities and the documentation of effluent limitations in fact sheets for municipal permits as well as application requirements such as the need to evaluate a full list of pollutants of concern and the identification of industrial users. (The CT DEEP has indicated they are immediately taking action to require a full priority pollutant scan from major municipal facilities as required by the federal permit application requirements.)

Since many of the deficiencies seem to stem from internal procedures, we believe they can be best resolved if the CT DEEP updates the permit application forms to require necessary data consistent with the recently issued NPDES update rule and develop standard operating procedures for effluent limitation development and documentation. Based on this PQR, EPA is recommending modifications to the State's procedures for developing the administrative record and documenting data collection during the permit application process. In addition to the items listed above, the report provides an overview of the Connecticut NPDES permitting program and identifies specific areas where EPA and Connecticut DEEP can work together to continue to strengthen permit language and documentation in state NPDES permits. Finally, the

PQR recognizes the many state and region-specific challenges faced by the State of Connecticut, including administering permits for facilities subject to Clean Water Act (CWA) Section 316(b) and reviewing and evaluating numerous technical studies, including dilution studies.

The State of Connecticut reviewed and provided comments on the draft PQR on October 21, 2019. The State agreed with many of the draft PQR's findings and recommendations and committed to take action to address many of the proposed action items. Several of these actions, are already underway (see Section VI, Table 1).

I. PQR BACKGROUND

National Pollutant Discharge Elimination System (NPDES) Program and Permit Quality Reviews (PQRs) are an evaluation of a select set of NPDES permits to determine whether permits are developed in a manner consistent with applicable requirements established in the Clean Water Act (CWA) and NPDES regulations. Through this review mechanism, EPA promotes national consistency, and identifies successes in implementation of the NPDES program as well as opportunities for improvement in the development of NPDES permits. EPA conducted a PQR of the Connecticut NPDES permitting program on July 11–12, 2012. The PQR summary report is available at: https://www.epa.gov/sites/production/files/2015-09/documents/pqr_connecticut_report.pdf. The evaluation team proposed various action items to improve the Connecticut NPDES permitting program.

As part of the current PQR, EPA requested updates from Connecticut on the progress on those action items. EPA identified 61 action items in the last PQR process (see pages 49-58 of the summary report, citation above). The large number of suggested action items was because the 2012 PQR was the first Permit Quality Review EPA conducted with Connecticut Department of Energy and Environmental Protection (CT DEEP). CT DEEP highlighted some of the more significant progress it has made during the PQR review such as the work it has done to implement a phosphorus strategy. Of the 13 action items identified during the last PQR as being Essential¹ tasks, the majority have been resolved and the remainder represent longer-term activities (Section VI of this report contains a review on the progress of the essential action items. In addition, EPA identified Recommended action items to improve Connecticut's program; Connecticut has either implemented, or is in the process of implementing, the majority of the Recommended actions.

During this review, the evaluation team proposed action items to improve Connecticut NPDES permit program. The proposed action items are identified within sections III, IV, and V of this report and are divided into two categories to identify the priority that should be placed on each item and facilitate discussions between regions and states.

- **Essential Actions** - Proposed essential action items address noncompliance with respect to a federal regulation, which EPA has cited for each essential action item. The permitting authority must address these action items in order to come into compliance with federal regulations.
- **Recommended Actions** - Proposed recommended action items are recommendations to increase the effectiveness of the state's or Region's NPDES permit program.

The Essential findings are used to augment the existing list of "follow up actions" currently tracked by EPA Headquarters on an annual basis and reviewed during subsequent PQRs.

¹ During the 2012-2017 PQR cycle, these action items were known as "Category 1" and address deficiencies or noncompliance with respect to federal regulations. EPA is now referring to these action items going forward, as Essential. In addition, previous PQR reports identified recommendations as either "Category 2" or "Category 3" action items. EPA is now consolidating these categories of action items into a single category: Recommended.

EPA's review team, consisting of four Regional staff and one contractor staff conducted a review of the Connecticut NPDES permitting program which included an on-site visit to the CT DEEP in Hartford on November 14–15, 2018.

The Connecticut PQR included reviews of core permit components and national and regional topic areas, as well as discussions between the PQR review team and Connecticut staff addressing their program status and permit issuance process. The permit reviews focused on core permit quality and included a review of the permit application, permit, fact sheet, and any correspondence, reports or documents that provide the basis for the development of the permit conditions and related administrative process. The PQR also included conversations between EPA and the State on program status, the permitting process, responsibilities, organization, staffing, and program challenges the state is experiencing.

A total of 17 permits were reviewed as part of the PQR. Of these, ten permits were reviewed for the core review, six permits were reviewed for national topic areas (three of these were also part of the core review) along with one general permit for stormwater, and three permits were reviewed for regional topic areas. Permits were selected based on issue date and the review categories that they fulfilled.

Core Review

The core permit review involved the evaluation of selected permits and supporting materials using basic NPDES program criteria. Reviewers completed the core review by examining selected permits and supporting documentation, assessing these materials using standard PQR tools, and talking with permit writers regarding the permit development process. The core review focused on the *Central Tenets of the NPDES Permitting Program*² to evaluate the Connecticut NPDES program. Core topic area permit reviews are conducted to evaluate similar issues or types of permits in all states.

Topic Area Reviews

The national topics reviewed in the Connecticut NPDES program were: Permit Controls for Nutrients in Non-TMDL Waters, Small Municipal Separate Storm Sewer System (MS4) Permit Requirements, and Effectiveness of POTW NPDES Permits with Food Processor Contributions.

Regional topic area reviews target regionally-specific permit types or particular aspects of permits. The regional topic area selected by EPA Region 1 included CWA Section 316(b) which regulates cooling water intake structures. These reviews provide important information to Connecticut, EPA Region 1, EPA HQs and the public on specific program areas.

² <https://www.epa.gov/npdes/central-tenets-npdes-permitting-program>

II. STATE PROGRAM BACKGROUND

A. Program Structure

The Connecticut DEEP develops, issues and administers NPDES permits in Connecticut. Municipal wastewater permitting is conducted within the Bureau of Water Protection and Land Reuse. Industrial wastewater permitting is conducted within the Bureau of Materials Management and Compliance Assurance. The CT DEEP's headquarters is in Hartford and this office administers all wastewater permits and oversees most of the major programs and services offered by CT DEEP. The NPDES permit staff consists of six FTEs (3 industrial, 2 municipal, 1 stormwater) and 9 staff at estimated 0.25 support. Support for municipal NPDES permitting is provided by water quality planners and modelers and for industrial permitting, support is provided by program planning staff, Bureau managers, and administrative staff.

The Connecticut DEEP's Water Quality Group and Monitoring Group conduct ambient monitoring and related assessments of the state's waters to collect data to characterize the physical, chemical, and biological integrity of surface waters. These data support the evaluation of pollution control program effectiveness, baseline characterization of reference conditions of State waters, assessment of water quality trends, identification of existing and emerging pollution concerns, and collection of data as required by state and federal regulations. These two groups also develop TMDLs, assess water quality criteria, conduct risk assessment and technical analyses of data, and develop the Integrated Water Quality Report and Connecticut Water Quality Standards regulations.

The Connecticut DEEP indicated that they recently hired two new engineers to support the pretreatment unit and plan to hire two supervisors, one for the pretreatment unit and the other for the stormwater unit, in 2019. In addition, CT DEEP indicated that newer engineering staff are being actively cross trained to become multi-functional for probable future redeployment within the Water Permitting and Enforcement Division (WPED) (e.g., moving among Industrial Pretreatment, Industrial NPDES & Stormwater NPDES) to meet ongoing and emerging environmental and health priorities.

The Connecticut DEEP's supervisors and experienced engineers provide one-on-one internal training to new staff. Further, new staff are paired with more experienced engineers to mentor and to assist with training. Staff are also provided training through attendance at national training events (e.g., EPA NPDES Permit Writers' Course, Whole Effluent Toxicity Training, and the national stormwater conference). Each new permit writer is provided with both technical and administrative documents to review as part of their training and to use for future reference. Also, permit staff are routinely invited to attend hearings and meetings to observe proceedings to better prepare them for future cases. CT DEEP also maintains a library of technical review manuals, books, and other resources that staff can use to assist them.

The Connecticut DEEP's permit writers are required to keep current project lists. Each CT DEEP position has a detailed job specification which is used to match projects with permit writers. Permits are assigned to permit writers based on several factors, including job specification, existing workload, experience (senior permit writers will get more complex or controversial

permits), and areas of expertise. Junior permit writers are assigned progressively more complex projects to challenge them and foster professional development. In some cases, certain permit writers may be assigned a permit because they wrote the previous permit.

The water permitting staff use the Integrated Compliance Information System (ICIS) and the Site Information Management System (SIMS) to track permit data. SIMS contains permit data, enforcement information, document management, and geo-spatial site information. The state also has an electronic discharge monitoring report (DMR) system (Net DMR). Registrations for the construction stormwater general permit, the industrial stormwater general permit and no-exposure certifications are filed electronically via DEEP's ezFile portal with document management handled through IBM Case Manager. Excel spreadsheets are used to track stormwater permit monitoring data.

The water permitting group has developed a significant number of tools that support the permit development process. Following a LEAN process (i.e., customer-focused, continual improvements in process) in 2009/2010 that addressed NPDES permit processing coordination, the group has developed NPDES permitting Standard Operating Procedures (SOPs). Permit writers also use water quality spreadsheets to conduct reasonable potential (RP) analysis and to develop water quality-based effluent limits (WQBELs). Permit writers enter certain receiving water data, existing effluent quality data, and discharge flows into the water quality spreadsheets to evaluate RP and calculate WQBELs. Permit writers also conduct statistical effluent quality reviews using Excel to calculate average, maximum and typical pollutant ranges when developing limits. For municipal permits, CT DEEP uses a water quality-based spreadsheet which is administered by the Aquatic Toxicity program. Other information sources include DMR and Monthly Operating Report (MOR) monitoring data, and CT-ECO, which is a map and geospatial data management system. CT DEEP also requires applicants to conduct mathematical modeling and dye studies on a case-by-case basis to help evaluate appropriate mixing zones and zones of influence that are protective of waters of the state and consistent with state water quality standards.

Connecticut DEEP has used permit and fact sheet templates for many years. The origin, refinement, and use of these tools has developed separately for municipal permits in the Bureau of Water Protection and Land Reuse and for industrial permits in the Bureau of Materials Management and Compliance Assurance. The Bureau of Water Protection and Land Reuse has one comprehensive template for municipal permits and fact sheets. In the Bureau of Materials Management and Compliance Assurance, a comprehensive set of SOPs linked to various tools and templates are used for industrial facility permits. Over the years, each set of tools has been improved.

The Connecticut DEEP has an existing internal review process, which is documented in its NPDES SOPs. All permit documents are reviewed by the supervisor and management. This review process helps to ensure that draft permits are consistently written with the appropriate permit language, limits, monitoring, and regulation references. Since conducting a LEAN event in 2009 and 2010, NPDES permit writers have been engaging the permittees early in the process (e.g., as much as 310 days prior to expiration) to identify areas of concern and improve

the likelihood that permits are timely renewed. Prior to issuing a notice of tentative determination for a 30-day public notice period, every permit is routed for technical review and approval by senior staff of the municipal facilities section, the Bureau of Materials Management and Compliance Assurance's Water Permitting and Enforcement Division, and the Aquatic Toxicity Program. The draft is then reviewed and approved by management prior to the issuance of a public notice. Once the draft permit has cleared the 30-day public notice period with no adverse comments, the draft permit is re-routed for final review and approval by the management. New municipal POTW permits and renewals that include flow increases are routed for review and approval by CT DEEP's Commissioner. There is an NPDES permit review checklist that permit writers complete and the supervisor and assistant director review. For municipal permits, the permit template is used as a reference document in the permit developing process. Permit writers for individual permits frequently discuss permits with each other and share experiences and language to assist with the permit development. The permit supervisor routinely directs staff to refer to similar operations and permits, which helps facilitate this process. Permit supervisors also have permit status meetings with management to identify complicated issues and to discuss ways to solve them. All individual permits go through the same basic review process, except different supervisors review different categories of individual permits. In addition, reviews for all industrial pretreatment permits for discharges to publicly owned treatment works (POTWs) are coordinated with the Municipal Facilities Section to ensure that any relevant POTW issues are addressed during the permit process. In many cases, draft NPDES permits to surface waters are reviewed by the Planning and Standards Division, Aquatic Toxicity Section.

Regarding the development of all general permits, in-house CT DEEP workgroups review and comment on initial drafts and stakeholder workgroups (including environmental and business advocacy groups) provide input on later drafts and throughout the hearing/public notice process. Both the Bureau of Materials Management and Compliance Assurance, and the Bureau of Water Protection and Land Reuse develop general permits depending on the specific focus of the permit.

The 401 Water Quality Certification program, administered by the Inland Water Resources Division, Office of Long Island Sound Programs and the Office of Planning and Program Development, regulates any applicant for a federal license or permit who seeks to conduct an activity that may result in any discharge into the navigable waters, including all wetlands, watercourses, and natural and man-made ponds. Such persons must obtain certification from CT DEEP that the discharge is consistent with the federal CWA and the Connecticut Water Quality Standards. Any conditions contained in a water quality certification become conditions of the federal permit or license. In deciding on a request for 401 Water Quality Certification, CT DEEP must consider the effects of proposed discharges on ground and surface water quality and existing and designated uses of waters of the state.

Permit files are maintained in both electronic and hard copy form. Electronic copies of documents such as draft permits, water quality-based limit data, and public notices that are generated as part of the permit development process are stored electronically with the respective program files. Copies of public notices are uploaded to SIMS and the CT DEEP

website, and final permits are uploaded to SIMS. Hard copies of municipal permit application materials and general permits are held within the program office, while individual industrial and stormwater permit application materials are stored in the CT DEEP's public file room after permit issuance. Hard copy correspondence documents are stored by the program office for municipal and general permits, and in the CT DEEP's file room for individual industrial and stormwater permits. Regarding monitoring and reporting, recent individual industrial and stormwater permit aquatic toxicity reports (ATMRs) and DMRs are maintained within the program office, while older DMRs are sent to the public file room. DMR information is received, entered into ICIS, and filed by water permitting and enforcement division staff. Copies of MORs, ATMRs, and Nitrogen Analysis Reports (NARs) are received and filed by municipal facilities section staff within their program office. Hard copy enforcement action paperwork is entered into SIMS and ICIS. Copies of non-confidential enforcement documents are stored in the file room. Copies of stipulated judgments, orders, and Notices of Violation are uploaded to SIMS.

For general permit NOIs, electronic versions are maintained in SIMS, while paper versions are maintained within the relevant program office.

B. Universe and Permit Issuance

The Connecticut DEEP administers individual permits for 86 POTWs (67 major and 19 non-major) and 49 individual permits for non-municipal facilities (21 major and 28 non-major). Nine of these 28 non-major, non-municipal facilities are private domestic sewage treatment plants. In addition, CT DEEP administers 4 general permits and an individual MS4 permit. In the pretreatment program, CT also issues 183 Significant Industrial User (SIU) permits, of which, 131 are Categorical Industrial Users.

In addition to these individual permits, the CT DEEP administers stormwater general permits that cover 132 municipal permittees, 1,827 industrial permittees (265 of which are classified as no exposure), and 639 construction permittees (numbers are reflective of the time of the PQR and may have some variation). In addition, unlike the federal program, Connecticut DEEP has a fourth stormwater general permit for paved commercial sites that encompass 5 acres or more of impervious surface. There are 197 commercial permittees covered under this Commercial General Permit. The Connecticut DEEP also administers a Comprehensive General Permit for Discharges to Surface Water and Groundwater that consolidates former general permits and authorizes discharges of non-contact cooling water, water treatment wastewater, hydrostatic pressure testing wastewater, potable water system maintenance wastewater, fire suppression system testing wastewater, hydrant flushing wastewater, and boiler blowdown wastewater. At the time of the review of CT DEEP's files, there are currently 87 registrations in review for the Comprehensive General Permit (that number changes widely over time).

The Connecticut DEEP also has non-stormwater water NPDES general permits that address discharges from categories of activities to surface waters (i.e., Remediation Wastewaters, Swimming Pooling Wastewaters, Vehicle Maintenance Wastewaters, Point Source Discharges from the Application of Pesticides, and Nitrogen Discharges from POTWs). General permits are

available on the CT DEEP's website. Notices of intent (NOIs) to be covered under a general permit are tracked through SIMS.

According to responses the CT DEEP provided, it is estimated that 36 percent of NPDES permits are backlogged. The backlog has improved and the CT DEEP noted it is due to the slight increase in staff since 2012, although as an agency, they are still lacking staff. Some challenges exist for permits for facilities subject to CWA Section 316(b), which contribute to approximately 20 percent of the backlog for industrial permits.

Significant industries within the state include metal finishing, aircraft and aircraft engine manufacturing, submarine manufacturing, paper making, pharmaceutical manufacturing, steam electric power, organic chemical manufacturing, food processing, and sand and gravel mining.

C. State-Specific Challenges

The Connecticut DEEP indicated challenges exist with administering permits for facilities subject to CWA Section 316(b). In addition, the CT DEEP is challenged by analysis of dilution studies and seeks EPA's support with access to certain modeling and dilution tools. Further, the CT DEEP requests support with its efforts in conducting reviews of technical studies required by CWA Section 316(b). Connecticut DEEP expressed interest in receiving assistance to comply with the e-Reporting requirements for stormwater general permits, specifically the industrial stormwater permit. In addition, EPA has offered the CT DEEP webinars and other support related to the development of an ICIS algorithm that would specifically calculate the incidence of pretreatment significant non-compliance for facilities in Connecticut. The Connecticut DEEP also asked EPA if training for conducting compliance inspections is available which EPA has indicated it is willing to provide to CT DEEP.

D. Current State Initiatives

The Connecticut DEEP has been successful in implementing a phosphorus strategy over a short period of time. The phosphorus strategy addresses the need for a reduction in phosphorus loadings to surface waters from POTW discharges by prioritizing watersheds on a statewide basis and setting load reduction goals while implementing narrative water quality criteria. The Connecticut DEEP permits include phosphorus effluent limitations that are clearly defined and described. In addition, the Connecticut DEEP supports POTW technology advancement and plant improvements through administration of an innovative grant program for POTWs, providing for plant improvements.

III. CORE REVIEW FINDINGS

A. Basic Facility Information and Permit Application

1. Facility Information

Background

Basic facility information is necessary to properly establish permit conditions. For example, information regarding facility type, location, processes and other factors is required by NPDES permit application regulations (40 CFR 122.21) (updates to application procedures became effective on June 12, 2019; see 84 Fed. Reg. 3324 (Feb. 12, 2019)). This information is essential for developing technically sound, complete, clear, and enforceable permits. Similarly, fact sheets must include a description of the type of facility or activity subject to a draft permit.

Program Strengths

The ten Connecticut DEEP permits and fact sheets reviewed during the core review include permit issuance and expiration dates, authorized signatures, and specific authorization-to-discharge information. The permits indicate that they are effective upon issuance unless otherwise specified. These permits and fact sheets identify the location of the facility, identify the receiving waterbody by name and basin code, generally include a very brief description of the types of activities and treatment, and identify outfalls, typically in the effluent limitations tables. Outfall locations and other facility information are also included in the permit applications.

Areas for Improvement

While applications and fact sheets identify the physical location of outfalls, permits would be strengthened by clearly identifying the physical location of outfalls (e.g., latitude and longitude coordinates).

Action Items

- | | |
|-------------|---|
| Essential | <ul style="list-style-type: none"> •The PQR team did not identify any essential action items for this PQR component. |
| Recommended | <ul style="list-style-type: none"> •The Connecticut DEEP should consider including clear identification of the physical location of outfalls in permits. |

2. Permit Application Requirements

Background and Process

Federal regulations at 40 CFR 122.21 and 122.22 specify application requirements for permittees seeking NPDES permits. Although federal forms are available, authorized states are also permitted to use their own forms provided they include all information required by the federal regulations. This portion of the review assesses whether appropriate, complete, and timely application information was received by the state and used in permit development.

The Connecticut DEEP has a well-executed pre-application process that involves early contact with the permittees. CT DEEP contacts permittees via a reminder letter six months prior to the deadline for the applicant to submit its NPDES permit renewal application. If necessary, the permit writer will conduct a pre-application meeting with the applicant several months before the application is due. Permittees submit applications to CT DEEP's Central Permit Processing Unit (CPPU) where the application is assigned an application number and is then forwarded to the Water Permitting and Enforcement Division for processing and review. Permit engineers review applications for administrative completeness and following the review, issue a Notice of Sufficiency or Insufficiency. Permit engineers then review the applications for technical completeness. If the technical completeness review indicates that there are deficiencies in the application, the applicant will receive a letter ("Technical Review Letter") requesting that it submit the CT DEEP information to provide a complete application.

The Connecticut DEEP uses state permit application forms. The application consists of an eight-page main form plus supplemental attachments which are included in the submittal, as required. Application forms were last updated in 2013.

Program Strengths

The Connecticut DEEP implements a strong, proactive, and thorough pre-application process with early engagement with permittees. Overall, permit records for non-municipal facilities contain current, appropriate, and complete permit applications.

Areas for Improvement

The PQR Team observed that expanded effluent testing (i.e., priority pollutants) required by 40 CFR 122.21(j)(4)(iv) is lacking from three major municipal applications. Further, effluent monitoring data for specific parameters required by 40 CFR 122.21(j)(4)(ii) is lacking from one municipal application. *(During the onsite PQR, the CT DEEP indicated they are implementing corrective actions immediately to require complete priority pollutant testing by major POTWs. They also indicated that they will be moving to the EPA application format with added requirements related to CT issues.)* In addition, it was not always clear if the applicant referenced data previously submitted as part of routine permit monitoring requirements, to fulfill the application data requirements. In some cases, it was difficult to identify if the applicant submitted monitoring data using sufficiently sensitive analytical methods. The review revealed that municipal application forms do not require the identification of significant industrial users as required by 40 CFR 122.21(j)(6). The PQR Team urged the Connecticut DEEP

to revise the municipal application form to require applicants to identify significant industrial users.

Action Items

Essential	<ul style="list-style-type: none"> •The Connecticut DEEP must ensure that application submittals include complete monitoring data collected in accordance with 40 CFR 122.21(j)(4). <i>(The Connecticut DEEP indicated during the onsite PQR that they are immediately implementing corrective actions to require complete priority pollutant testing by major POTWs)</i> •The Connecticut DEEP must ensure that municipal applications require applicants to identify significant industrial users, in accordance with 40 CFR 122.21(j)(6). •The Connecticut DEEP should confirm that application data are collected using sufficiently sensitive analytical methods.
Recommended	<ul style="list-style-type: none"> •The Connecticut DEEP should ensure that the permit record clearly notes whether appropriate data are submitted with the application.

B. Developing Effluent Limitations

1. Technology-based Effluent Limitations

NPDES regulations at 40 CFR 125.3(a) require that permitting authorities develop technology-based requirements where applicable. Permits, fact sheets and other supporting documentation for POTWs and non-POTWs were reviewed to assess whether technology based effluent limitations (TBELs) represent the minimum level of control that must be imposed in a permit.

TBELs for POTWs

Background and Process

POTWs must meet secondary or equivalent to secondary standards (including limits for BOD, TSS, pH, and percent pollutant removal), and must contain numeric limits for all of these parameters (or authorized alternatives) in accordance with the secondary treatment regulations at 40 CFR Part 133. A total of four POTW permits were reviewed as part of the PQR.

Connecticut’s regulations at Section 22a-430-4(r) establish secondary treatment requirements for POTWs, for BOD, TSS, pH, and removal efficiency for BOD and TSS. For BOD and TSS, the state regulations specify monthly average effluent limitations not to exceed 30 mg/L, weekly averages of 45 mg/L, and daily maximums of 50 mg/L, as well as a monthly effluent concentration not to exceed 15 percent of influent concentration (i.e., 85 percent removal) and pH of 6.0 – 9.0. The federal regulations specify monthly and weekly average limitations for BOD

and TSS of 30 mg/L and 45 mg/L, respectively, as well as 85 percent removal and pH of 6.0 – 9.0.

The Connecticut DEEP establishes TBELs for POTWs based on the state secondary treatment standards. During the onsite review, CT DEEP staff indicated their practice is to apply the federal secondary treatment standards for POTW permits. The permits reviewed included monthly average and daily maximum limitations for BOD, TSS, and pH and BOD and TSS percent removal in the effluent limitations table of the permit, and certain permits include a narrative statement below the limitations table that indicate that the average weekly discharge limitations for BOD and TSS shall be 1.5 times the average monthly limitation.

Program Strengths

The permits and fact sheets reviewed for municipal facilities provide a brief description of the wastewater treatment processes. Effluent limitations tables clearly present the applicable effluent limitations and fact sheets clearly indicate the regulatory basis for TBELs. The Connecticut DEEP’s permits appropriately establish monthly average effluent limitations for BOD and TSS, including the removal efficiency requirements for BOD and TSS (monthly average). Permits appropriately include effluent limitations for pH, based on federal secondary treatment standards.

Areas for Improvement

The review of permits and fact sheets for POTWs revealed that the CT DEEP’s permits do not consistently establish weekly average effluent limitations for BOD and TSS; certain permits establish only a monthly average and a daily maximum limitation for these parameters as a numeric limit directly in the limits table. It was unclear if permits consistently include the weekly average effluent limitations as a narrative statement below the limits table, but CT DEEP has indicated that the POTW permits will include weekly limits in the future.

Action Items

- Essential

- The Connecticut DEEP must ensure that permits consistently include effluent limitations for POTWs consistent with federal secondary treatment standards established at 40 CFR 133.102, including average weekly effluent limitations.
- Recommended

- The Connecticut DEEP should consider including all numeric effluent limitations in the limits table, rather than as footnotes or narrative statements below the table.

TBELs for Non-POTW Dischargers

Background and Process

Permits issued to non-POTWs must require compliance with a level of treatment performance equivalent to Best Available Technology Economically Achievable (BAT) or Best Conventional Pollutant Control Technology (BCT) for existing sources, and consistent with New Source Performance Standards (NSPS) for new sources. Where federal effluent limitations guidelines (ELGs) have been developed for a category of dischargers, the TBELs in a permit must be based on the application of these guidelines. If ELGs are not available, a permit must include requirements at least as stringent as BAT/BCT developed on a case-by-case using best professional judgment (BPJ) in accordance with the criteria outlined at 40 CFR 125.3(d).

The Connecticut DEEP determines TBELs in NPDES permits for non-municipal facilities by implementing either national ELGs established by EPA, Connecticut regulations at Section 22a-430-4(s) of the Regulations of Connecticut State Agencies which establish treatment standards for several industrial discharge categories, and case-by-case analyses based on BPJ. Connecticut DEEP indicated that the state industrial treatment standards are typically more stringent than federal ELGs. Under Connecticut's regulations, TBELs need to be at least as stringent as required under the national effluent guideline regulations.

The Connecticut DEEP indicated that case-by-case BPJ limits are determined using the following:

- Permit file information including current and previous NPDES application forms and correspondence files, previous NPDES permits and fact sheets, statistical evaluation of effluent performance data from DMRs and compliance inspection reports;
- Information from existing facilities and permits including NPDES individual and general permits issued to other facilities in the same region or state, or that include case-by-case limitations for the same pollutants;
- Toxicity reduction evaluations (TREs) for selected industries, ICIS-NPDES data, literature (e.g., technical journals and books), treatability manuals, and state guidance documents; and
- Effluent guidelines development and planning information including: a) industry experts within EPA or the states, b) the relevant ELG Technical Development Documents, c) responses to CWA section 308 questionnaires and inquiries, d) final regulations, e) EPA guidance manuals, and f) EPA's Technical Support Document (TSD).

Program Strengths

The Connecticut DEEP's fact sheets for non-municipal facilities include a description of facility operations, expected pollutants, and wastewater treatment processes. In addition, the fact sheets indicate the applicable federal ELGs and state technology standards that are considered in the development of TBELs for the facility and describe the applicability of ELGs with

discussions of facility categorization and identification of pollutants of concern. Connecticut’s fact sheets explicitly state if ELGs are not applicable to the discharge and provide the rationale for the determination.

Areas for Improvement

Two fact sheets for non-municipal facilities indicate that certain effluent limitations are based on BPJ; however, the fact sheet does not include clear documentation of the BPJ analysis and determination. In addition, another fact sheet for a non-municipal facility indicates that the permit establishes effluent limitations for TSS, total oil and grease, and pH are based on BPJ, and based on the benchmarks in the general permit for industrial stormwater discharges.

Action Items

Essential	<ul style="list-style-type: none"> •The PQR team did not identify any essential action items for this PQR component.
Recommended	<ul style="list-style-type: none"> •The Connecticut DEEP should ensure that fact sheets and permit records clearly describe the determination and basis for effluent limitations based on BPJ and should be consistent with 40 CFR 124.8.

2. Reasonable Potential and Water Quality-Based Effluent Limitations

Background

The NPDES regulations at 40 CFR 122.44(d) require permits to include any requirements in addition to or more stringent than technology-based requirements where necessary to achieve state water quality standards, including narrative criteria for water quality. To establish such “water quality-based effluent limits” (WQBELs), the permitting authority must evaluate whether any pollutants or pollutant parameters could cause or contribute to an excursion above any applicable water quality standard.

The PQR for Connecticut assessed the processes employed to implement these requirements. Specifically, the PQR reviewed permits, fact sheets, and other documents in the administrative record to evaluate how permit writers and water quality modelers:

- determined the appropriate water quality standards applicable to receiving waters,
- evaluated and characterized the effluent and receiving water including identifying pollutants of concern,
- determined critical conditions,
- incorporated information on ambient pollutant concentrations,

- assessed any dilution considerations,
- determined whether limits were necessary for pollutants of concern and, where necessary,
- calculated such limits or other permit conditions.

For impaired waters, the PQR also assessed whether and how permit writers consulted and developed limits consistent with the assumptions of applicable EPA-approved total maximum daily loads (TMDLs).

Process for Assessing Reasonable Potential

The Connecticut DEEP permit engineers, with support from the Water Quality Group, conduct the reasonable potential analysis (RPA) and develop WQBELs for the discharge. Permit writers identify pollutants of concern as those pollutants with applicable TBELs, applicable WLAs from a TMDL, identified in the permit application as present in the effluent, and otherwise expected to be present in the discharge. The Connecticut DEEP indicated that for municipal facilities, permit writers conduct an RPA for metals and nutrient parameters; a full priority pollutant scan is not generally obtained from a municipal discharger. Industrial discharges are typically evaluated for the full suite of priority pollutants and any other pollutants identified as a pollutant of concern. The Connecticut DEEP considers parameters for which there is a numeric criterion available. The Connecticut DEEP will also examine other criteria that might be available, to implement narrative water quality standards (e.g., emerging pollutants of concern). Permit writers determine the classification of the receiving stream to identify the appropriate water quality criteria established in Connecticut's Water Quality Standard Regulations, Sections 22a-426-1 to 22a-426-9 of the Regulations of Connecticut State Agencies.

The Connecticut DEEP identifies whether a receiving stream is impaired or has an applicable TMDL by first identifying the receiving water's segment identification number on ArcGIS or CT ECO. Receiving waters with TMDLs or impairments are found in CT DEEP's *Integrated Water Quality Report* (CWA Section 305(b) Report) on CT DEEP's website at the following link: <https://www.ct.gov/deep/cwp/view.asp?q=325610>.

The Connecticut DEEP evaluates all effluent monitoring data that are available and determined to be representative of the discharge. Data sources include permit applications, DMR, and toxicity data reports. The Connecticut DEEP does not require a minimum number of data points in order to evaluate RP; all available effluent monitoring data are considered. Ambient data are obtained through review of toxicity monitoring reports, statewide chemistry monitoring programs, USGS monitoring data, and permittees' monitoring data—CT DEEP establishes routine ambient monitoring requirements in permits on a case-by-case basis.

The Connecticut DEEP uses a spreadsheet to evaluate RP and develop WQBELs and applies the procedures established in EPA's Technical Support Document for Water Quality-based Toxics Control (TSD). CT DEEP indicated that the agency currently does not maintain written standard procedures for evaluating RP. The Connecticut DEEP's fact sheets include attachments that address mixing zones and dilution allowances, RP evaluations, and WQBELs development.

Process for Developing WQBELs

The Connecticut DEEP permit writers develop WQBELs following the RPA, using the same spreadsheet as was used for the RPA. Permit writers apply the mixing zone procedures identified in the Connecticut Water Quality Standards. Permit writers establish the Zone of Influence (ZOI) as small as possible. Connecticut sets dilution factors largely based on the initial dilution studies conducted for the facility; CT DEEP noted that they have not seen significant changes in water flows over the years and determined that the initial dilution studies are still appropriate. Staff from the Water Diversion Permit Group also reviews stream flows and conditions and will inform other groups of changes to stream flows (e.g., dam removals, etc.). In addition, the TMDL group may inform mixing zone and dilution assessments. The Connecticut DEEP commented they are considering moving from a 7Q10 stream flow basis to a Q99 flow; however, the revision would need to go through the Water Quality Standards Triennial Review process.

Connecticut's *Integrated Water Quality Report* includes a hyperlink to the TMDL. The Connecticut DEEP identifies known downstream impairments and addresses them either on a case-by-case basis or on a watershed basis. Permit writers determine an appropriate ZOI and allowable loading in impaired (i.e., "pre-TMDL") waters. Where TMDLs are applicable, permit writers establish effluent limitations consistent with the WLA in the TMDL. Connecticut DEEP's fact sheets include discussions addressing whether a water body is impaired or a TMDL exists and describe the development of effluent limitations based on the TMDL.

As stated, the Connecticut DEEP's fact sheets include attachments that address mixing zones and dilution allowances, as well as WQBELs development.

Program Strengths

Reasonable Potential

The Connecticut DEEP's fact sheets clearly and consistently identify receiving water streams, designated uses, and applicable water quality criteria. Certain fact sheets identify the pollutants of concern while discussing the permit application. Fact sheets for non-municipal facilities include attachments that thoroughly discuss mixing zones and dilution allowances, and present RP evaluations. The attachments to the fact sheets for non-municipal facilities also provide a characterization of the discharge and receiving water including ambient data where considered in the RPA, identify applicable water quality criteria, and summarize the RPA. The RPA for non-municipal facilities is presented in a clear and easy-to-follow tabular format.

WQBEL Development

Where there are TMDLs applicable, the Connecticut DEEP's fact sheets contain a discussion of the applicability of TMDLs and how the permit establishes the effluent limitations based on the WLA included in the TMDL. Permits reviewed consistently specify appropriate units of measure for numeric WQBELs.

Areas for Improvement

Reasonable Potential

Three of the fact sheets reviewed for the core review lack discussion of the 303(d) status of the receiving water. Regarding pollutants of concern, the Connecticut DEEP commented that for municipal discharges, they largely review metals and nutrient parameters; therefore, it appears that permit writers are not evaluating RP for all parameters for which water quality standards exist. Three of the four fact sheets reviewed for municipal facilities lack documentation of the RPA. In addition, these three fact sheets lack description of the basis for the mixing zone allowed in the permit. Further, the core review revealed that Connecticut DEEP's fact sheets do not consistently specifically discuss how pollutants of concern are identified. Two fact sheets reviewed do not clearly state whether the discharge demonstrated RP to cause or contribute to an excursion above the applicable water quality criteria for each pollutant of concern at each outfall. While the Connecticut DEEP applies procedures for evaluating RP and calculating WQBELs established in EPA's TSD, Connecticut's NPDES program would be strengthened by the development of state-specific standard operating procedures for evaluating RP.

WQBEL Development

The permit review revealed that at least one fact sheet indicates that RP exists for two pollutants; however, the permit lacks effluent limitations for those pollutants. According to CT DEEP, it is standard practice for industrial NPDES permit writers to calculate limits for all pollutants having RP. Thus, this one fact sheet was most likely an isolated occurrence and does not represent standard practice.

Action Items

<p>Essential</p>	<ul style="list-style-type: none"> • <u>Reasonable Potential</u> <ul style="list-style-type: none"> • The PQR team did not identify any essential action items for this PQR component. • <u>WQBEL Development</u> <ul style="list-style-type: none"> • In accordance with 40 CFR 122.44(d)(1)(i), Connecticut DEEP must ensure that permits establish WQBELs for all parameters for which RP exists.
<p>Recommended</p>	<ul style="list-style-type: none"> • <u>Reasonable Potential</u> <ul style="list-style-type: none"> • The Connecticut DEEP should evaluate RP for parameters for which water quality criteria exist, more than just certain subsets of pollutants (e.g., metals and nutrients at POTWs). • The Connecticut DEEP should develop state-specific standard operating procedures for evaluating RP. • The Connecticut DEEP fact sheets should consistently include documentation of the RPA, clear statements regarding how pollutants of concern are chosen, and whether the discharge demonstrates RP. • The Connecticut DEEP fact sheets should consistently discuss the 303(d) status of the receiving water. • <u>WQBEL Development</u> <ul style="list-style-type: none"> • The PQR team did not identify any recommended action items for this PQR component.

3. Final Effluent Limitations and Documentation

Background and Process

Permits must include all applicable statutory and regulatory requirements, including technology and water quality standards, and must include effluent limitations that ensure that all applicable CWA standards are met. The permitting authority must identify the most stringent effluent limitations and establish them as the final effluent limitations in the permit. In addition, for reissued permits, if any of the limitations are less stringent than limitations on the same pollutant in the previous NPDES permit, the permit writer must conduct an anti-backsliding analysis, and if necessary, revise the limitations accordingly. In addition, for new or increased discharges, the permitting authority should conduct an antidegradation review, to ensure the permit is written to maintain existing high quality of surface waters, or if appropriate, allow for some degradation. The NPDES regulations at 40 CFR 131.12 outline the common elements of the antidegradation review process.

In addition, permit records for POTWs and industrial facilities should contain comprehensive documentation of the development of all effluent limitations. Technology-based effluent limits should include assessment of applicable standards, data used in developing effluent limitations, and actual calculations used to develop effluent limitations. The procedures implemented for

determining the need for WQBELs as well as the procedures explaining the basis for establishing, or for not establishing, WQBELs should be clear and straight forward. The permit writer should adequately document changes from the previous permit, ensure draft and final limitations match (unless the basis for a change is documented), and include all supporting documentation in the permit file. The permit writer should sufficiently document determinations regarding anti-backsliding and antidegradation requirements.

The Connecticut DEEP indicated that their fact sheets include a thorough description of facility operations and wastewater treatment processes, expected waste streams and pollutants in the discharge, and identification of applicable treatment standards. In addition, the fact sheets indicate the applicable federal ELGs and state technology standards that are considered in the development of TBELs for the facility and describe the applicability of ELGs with discussions of facility categorization and identification of pollutants of concern. Connecticut's fact sheets explicitly state if ELGs are not applicable to the discharge and provide the rationale for the determination. Further, fact sheets for municipal facilities include a discussion of the basis of TBELs. Connecticut DEEP's fact sheets clearly identify the receiving water body, the designated uses, and the applicable water quality standards. Permit writers discuss the impairment status of the receiving water body and identify whether TMDLs are applicable to the discharge. Further, permit writers briefly discuss the pollutants of concern. Fact sheets include attachments that provide a thorough discussion of the RPA, mixing zone and dilution allowances, and the subsequent development of WQBELs. The Connecticut DEEP's permit writers maintain the RPA and WQBELs calculations in both electronic and hard copy.

The Connecticut DEEP indicated that their fact sheets include an indication of the basis for effluent limitations; whether it is a TBEL or WQBEL, and that permit writers illustrate an evaluation of the most stringent applicable limitation. The Connecticut DEEP's fact sheets and accompanying attachments discuss the basis of TBELs and WQBELs, as well as the analyses for anti-backsliding and antidegradation during the development of final effluent limitations. Fact sheets should consistently include a summary discussing applicable TBELs (including BPJ) and WQBELs and identifying the final effluent limitation.

The Connecticut DEEP indicated that their permit writers evaluate anti-backsliding requirements prior to finalizing all effluent limitations, through a review of proposed effluent limitations in the draft permit as compared to the effluent limitations in the permittee's existing permit. The Connecticut DEEP's permit writers conduct an anti-backsliding analysis if any of the proposed effluent limitations are less stringent than the effluent limitations in the permittee's existing permit. Permit writers review federal exceptions during the analysis and memorialize the anti-backsliding analysis in the permit's fact sheet.

Connecticut's antidegradation implementation policies are contained in the Water Quality Standards at 22a-426-8(b) of the Regulations of Connecticut State Agencies. Implementation of the policy follows a tiered approach (Tiers 1, 2, and 3). Permit writers consider antidegradation with the issuance of any permit or authorization for a discharge or activity, including any existing, new, or increased activity. Connecticut DEEP permit writers include a discussion of antidegradation in fact sheets and accompanying attachments.

Program Strengths

The Connecticut DEEP permits reviewed include effluent limitations that are generally consistent with the rationale presented in the fact sheets. Fact sheets specifically discuss how effluent limitations are expressed as average monthly and maximum daily, or as mass-based limitations and the basis for these expressions (e.g., continuous discharge or consistent with the expression of the WLA in the TMDL). Most fact sheet attachments reviewed for non-municipal facilities clearly discuss the anti-backsliding and antidegradation considerations during establishment of final effluent limitations.

Areas for Improvement

The review revealed that at least one Connecticut permit did not establish effluent limitations that were as stringent as the previous permit. Five of the fact sheets reviewed do not describe the basis (i.e., technology or water quality) for each of the final effluent limitations. In addition, four fact sheets lack demonstration that the permit writer compared TBELs and WQBELs and chose the more stringent effluent limitation. In one non-municipal permit, the effluent limitations are established as instantaneous values, whereas in the previous permit, the effluent limitations are expressed as average monthly and maximum daily limitations. The associated fact sheet lacks discussion of this revision in the effluent limitation expression. CTDEEP has indicated that an analysis was completed and included as an attachment to the fact sheet. For greater clarity, CTDEEP should consider inclusion of such an analysis in the body of the fact sheet. For a permit where the effluent limitations are less stringent than those in the previous permit, the anti-backsliding discussion included in the fact sheet lacks a discussion of regulatory consistency and does not address all pollutants for which previous effluent limitations exist.

Action Items

Essential

- The Connecticut DEEP must ensure that effluent limitations are as stringent as those established in the previous permit, consistent with 40 CFR 122.44(l).
- The Connecticut DEEP should ensure that permit writers conduct and document an anti-backsliding analysis where proposed effluent limitations are less stringent than existing limitations.

Recommended

- The Connecticut DEEP should ensure that fact sheets clearly indicate the basis for each of the final effluent limitations and demonstrate that a comparison of TBELs and WQBELs is conducted and the most stringent effluent limitation is established as the final limitation.
- The Connecticut DEEP should ensure that fact sheets discuss the basis for revision in effluent limitations, including how they are expressed (e.g., instantaneous values vs. average monthly and maximum daily values).

C. Monitoring and Reporting Requirements

Background and Process

NPDES regulations at 40 CFR 122.41(j) require permittees to periodically evaluate compliance with the effluent limitations established in their permits and provide the results to the permitting authority. Monitoring and reporting conditions require the permittee to conduct routine or episodic self-monitoring of permitted discharges and where applicable, internal processes, and report the analytical results to the permitting authority with information necessary to evaluate discharge characteristics and compliance status.

Specifically, 40 CFR 122.44(i) requires NPDES permits to establish, at minimum, annual reporting of monitoring for all limited parameters sufficient to assure compliance with permit limitations, including specific requirements for the types of information to be provided and the methods for the collection and analysis of such samples. In addition, 40 CFR 122.48 requires that permits specify the type, intervals, and frequency of monitoring sufficient to yield data which are representative of the monitored activity. The regulations at 40 CFR 122.44(i) also require reporting of monitoring results with a frequency dependent on the nature and effect of the discharge. 40 CFR Part 127 requires NPDES-regulated entities to submit certain data electronically, including discharge monitoring reports and various program-specific reports, as applicable.

NPDES permits should specify appropriate monitoring locations to ensure compliance with the permit limitations and provide the necessary data to determine the effects of an effluent on the receiving water. A complete fact sheet will include a description and justification for all monitoring locations required by the permit. States may have policy or guidance documents to

support determining appropriate monitoring frequencies; documentation should include an explicit discussion in the fact sheet providing the basis for establishing monitoring frequencies, including identification of the specific state policy or internal guidance referenced. Permits must also specify the sample collection method for all parameters required to be monitored in the permit. The fact sheet should present the rationale for requiring grab or composite samples and discuss the basis of a permit requirement mandating use of a sufficiently sensitive Part 136 analytical method.

The Connecticut DEEP establishes monitoring frequencies based on the Monitoring Schedule referenced in Section 22a-430-3(j)(2) and 22a-403-3 of the Regulations of Connecticut State Agencies. Frequency is based on the discharge category. Where the regulations do not specify a monitoring frequency, permit writers use engineering judgment to determine an appropriate frequency. Permit writers consider waste stream and process variability, pollutants discharged, effluent limitations, discharge frequency, and receiving water characteristics. Permit writers determine sample collection methods based on the discharge and parameter being monitored. Permit writers establish monitoring locations so that the sample collected is representative of the discharge. Permit writers establish monitoring frequencies, sample collection methods, and monitoring locations in the monitoring table of the permit. In addition, permits include a special condition that requires the use of sufficiently sensitive 40 CFR 136 analytical methods. Further, fact sheets include a specific discussion regarding the requirement to use sufficiently sensitive analytical methods. Permit writers establish reporting requirements based on monitoring frequencies and allow electronic or hard copy reporting of monitoring results. In addition, certain permittees are required to submit certifications at periodic intervals (e.g., certification that a Solvent Management Plan is being implemented). Further, permittees with compliance issues may necessitate additional reporting (e.g., reporting pollutant removals on a poorly operated treatment system).

Program Strengths

The permits reviewed include appropriate monitoring requirements based on the facility type, type of discharge, and corresponding limit basis. Influent monitoring is required for BOD and TSS for POTWs. The Connecticut DEEP's permits specify monitoring frequencies and locations, including a description of monitoring locations and waste streams, in the limitations tables. The permits contained a general requirement that monitoring must be conducted according to test procedures approved under Part 136. Permits reviewed consistently require permittees to use sufficiently sensitive 40 CFR Part 136 methods capable of quantifying pollutants at concentrations equal to or less than the effluent limitations. All of the permits reviewed require monitoring for whole effluent toxicity. Certain non-municipal permits reviewed include specific minimum levels for select pollutants in the limitations tables. Permits specify reporting requirements clearly.

Areas for Improvement

The Connecticut DEEP should consider updating application requirements to specify that applicants must use sufficiently sensitive 40 CFR Part 136 methods. The Connecticut DEEP indicated during the onsite PQR that they review application data specifically to verify that

appropriate methods are used, including the use of sufficiently sensitive methods, and will not accept data that were collected with inappropriate analytical methods. However, application instructions specifying the use of sufficiently sensitive analytical methods would strengthen the Connecticut DEEP program.

Action Items

Essential	<ul style="list-style-type: none"> •The Connecticut DEEP should consider updating permit application requirements to specify that applicants must use sufficiently sensitive 40 CFR 136 methods.
Recommended	<ul style="list-style-type: none"> •The PQR team did not identify any recommended action items for this PQR component.

D. Standard and Special Conditions

Background and Process

Federal regulations at 40 CFR 122.41 require that all NPDES permits, including NPDES general permits, contain certain “standard” permit conditions. Further, the regulations at 40 CFR 122.42 require that NPDES permits for certain categories of dischargers must contain additional standard conditions. Permitting authorities must include these conditions in NPDES permits and may not alter or omit any standard condition, unless such alteration or omission results in a requirement more stringent than those in the federal regulations.

Permits may also contain additional requirements that are unique to a particular discharger. These case-specific requirements are generally referred to as “special conditions.” Special conditions might include requirements such as: additional monitoring or special studies such as a mercury minimization plan; best management practices [see 40 CFR 122.44(k)]; or permit compliance schedules [see 40 CFR 122.47]. Where a permit contains special conditions, such conditions must be consistent with applicable regulations.

The Connecticut DEEP’s permits incorporate standard conditions established at 40 CFR 122.41 and 122.42 under Section 1: General Provisions. This section lists and incorporates by reference specific sub-sections of state regulations at 22a-430-3 (General Conditions) and 22a-430-4 (Procedures and Criteria) of the Regulations of Connecticut State Agencies. These required conditions have not been adopted by Connecticut verbatim from the federal regulations. In general, these state conditions were found to be more extensive than, but not inconsistent with, federal requirements. The Connecticut DEEP uses boilerplate language for standard provisions and last updated the boilerplate language in March 2014.

The Connecticut DEEP uses special conditions where additional sampling is required or if a special study is necessary, such as a metals translator study. Other special conditions may

address whole effluent toxicity and TIE/TRE requirements for toxicity, sludge and biosolids requirements, stormwater conditions, and CWA section 316(b) requirements. In addition, as previously stated, CT DEEP's permits include a special condition that requires the use of sufficiently sensitive 40 CFR 136 analytical methods.

Section 22a-430-4(l) of the Regulations of Connecticut State Agencies includes provisions for compliance schedules in NPDES permits. The Connecticut DEEP uses compliance schedules in permits and incorporates them as special conditions. Six permits reviewed include compliance schedules. During the onsite PQR, the Connecticut DEEP indicated that permits establish the final compliance date as "as soon as possible, not to exceed 4.5 years from the permit effective date."

Program Strengths

The Connecticut DEEP's permits include the federal standard conditions in a specific section (Section 1: General Conditions) which makes it straightforward to locate specific permit conditions. Further, in certain cases, the language in the state regulations corresponding to the federal standard conditions is more extensive than the federal standard conditions. Generally, the special conditions included in the Connecticut DEEP's permits are appropriate for the permitted discharge. In addition, the Connecticut DEEP's practice of including the requirement for use of sufficiently sensitive analytical methods as a special condition is a clear and straightforward approach to including the requirement in permits.

Areas for Improvement

For certain standard conditions, it was difficult to identify language comparable to the federal requirements. The PQR team was unable to identify standard provisions for upset (40 CFR 122.41(n)), compliance schedules (40 CFR 122.41(l)(5)), and other noncompliance (40 CFR 122.41(l)(7)). Further, three of the four municipal permits reviewed lack the additional standard condition contained in 40 CFR 122.42(b)(1)-(3) requiring notification of the new introduction of pollutants and new industrial users. In addition, two non-municipal permits that include compliance schedules lack clear identification of a final compliance date. Further, some fact sheets for permits that establish compliance schedules lack discussion of the reasonableness of the compliance schedule and whether the final compliance date is "as soon as possible".

Action Items

Essential	<ul style="list-style-type: none"> •The Connecticut DEEP must ensure that permits clearly identify federal standard provisions established in 40 CFR 122.41 and 122.42, including 122.42(b)(1)-(3) regarding notification of the new introduction of pollutants or new industrial users to the POTW. •The Connecticut DEEP must ensure that permits that allow a compliance schedule consistent with 40 CFR 122.47 which requires compliance as soon as possible along with interim dates for compliance, also include an enforceable final effluent limitation.
Recommended	<ul style="list-style-type: none"> •The Connecticut DEEP should ensure that fact sheets fully describe the basis for compliance schedules and associated compliance dates, and demonstrate that the compliance schedule achieves compliance with the final effluent limitation "as soon as possible".

E. Administrative Process

Background and Process

The administrative process includes documenting the basis of all permit decisions (40 CFR 124.5 and 40 CFR 124.6); coordinating EPA and state review of the draft (or proposed) permit (40 CFR 123.44); providing public notice (40 CFR 124.10); conducting hearings if appropriate (40 CFR 124.11 and 40 CFR 124.12); responding to public comments (40 CFR 124.17); and, modifying a permit (if necessary) after issuance (40 CFR 124.5). EPA discussed each element of the administrative process with Connecticut, and reviewed materials from the administrative process as they related to the core permit review.

The Connecticut DEEP provides public notice through a Notice of Tentative Decision, which summaries the Commissioner’s decision to issue, renew, modify, deny, or revoke a permit. This notice includes procedures for reaching a final permit decision, including public comment period (i.e., 30 days from the date of the Notice of Tentative Decision), procedures for requesting a hearing, and other procedures for public participation. Public notices are published in the local newspaper and on CT DEEP’s website (https://www.ct.gov/deep/cwp/browse.asp?a=2586&deepNav_GID=1511) and those posted on the website are organized into three categories: Proposed Individual Permits, Proposed General Permits, and Miscellaneous Proposed Actions. The Connecticut DEEP provides a minimum of 30 days for the public comment period and accepts written comments. The Connecticut DEEP provides written responses to all timely and untimely significant comments received. The permit may be modified based on public comments and based on the revisions, the draft permit may require another public notice period. Connecticut DEEP maintains responses to comments in the permit record. The Connecticut DEEP prepares a Notice of Final Determination which identifies the public comment period and includes statements indicating whether public comments have been received, in addition to a recommendation for adopting the tentative permit. The Connecticut DEEP indicated that the applicant or any other aggrieved party can request a hearing. The Connecticut DEEP’s Notice of Tentative Decision includes instructions for

requesting a hearing. The Connecticut DEEP’s Office of Adjudications handles permit hearings. None of the permits reviewed received a request for a public hearing.

Program Strengths

Permit records reviewed appeared to include complete documentation demonstrating that public notice procedures are implemented appropriately and contain complete public notice documents, including affidavits of publication. In addition, permit records reviewed include comments received as well as CT DEEP’s response to comments. Further, the Connecticut DEEP prepares a Notice of Final Determination which includes clear statements indicating whether public comments have been received.

Areas for Improvement

One permit record reviewed included an incomplete version of the public notice document; the Connecticut DEEP should ensure that permit records contain complete documentation of the public notice process.

Action Items

Essential	<ul style="list-style-type: none"> •The PQR team did not identify any essential action items for this PQR component.
Recommended	<ul style="list-style-type: none"> •The Connecticut DEEP should ensure that permit records contain complete documentation of the public notice process.

F. Administrative Record and Fact Sheet

Background and Process

The administrative record is the foundation that supports the NPDES permit. If EPA issues the permit, 40 CFR 124.9 identifies the required content of the administrative record for a draft permit and 40 CFR 124.18 identifies the requirements for a final permit. Authorized state programs should have equivalent documentation. The record should contain the necessary documentation to justify permit conditions. At a minimum, the administrative record for a permit should contain the permit application and supporting data; draft permit; fact sheet or statement of basis;³ all items cited in the statement of basis or fact sheet including calculations used to derive the permit limitations; meeting reports; correspondence between the applicant

³ Per 40 CFR 124.8(a), every EPA and state-issued permit must be accompanied by a fact sheet if the permit: Incorporates a variance or requires an explanation under 124.56(b); is an NPDES general permit; is subject to widespread public interest; is a Class I sludge management facility; or includes a sewage sludge land application plan.

and regulatory personnel; all other items supporting the file; final response to comments; and, for new sources where EPA issues the permit, any environmental assessment, environmental impact statement, or finding of no significant impact.

Current regulations require that fact sheets include information regarding the type of facility or activity permitted, the type and quantity of pollutants discharged, the technical, statutory, and regulatory basis for permit conditions, the basis and calculations for effluent limits and conditions, the reasons for application of certain specific limits, rationales for variances or alternatives, contact information, and procedures for issuing the final permit. Generally, the administrative record includes the permit application, the draft permit, any fact sheet or statement of basis, documents cited in the fact sheet or statement of basis, and other documents contained in the supporting file for the permit.

The Connecticut DEEP's administrative records for the draft permit include the permit application and supporting data; draft permit; fact sheet; all items cited in the fact sheet, including calculations used to derive the effluent limitations; meeting reports; correspondence with the applicant and the Connecticut DEEP regulatory personnel; and all other items that have supported permit development. In addition, CT DEEP maintains the public comments and responses in the permit's administrative record. The Connecticut DEEP maintains these records in two locations: for permit projects under review (i.e., not yet adopted), administrative records are with the assigned permit engineer and for permits that have been issued, files are moved to the records room in the basement of the CT DEEP headquarters.

The Connecticut DEEP's permit writers draft fact sheets prior to drafting the NPDES permit. Connecticut develops fact sheets for all NPDES permits, regardless of its major/non-major status. The Connecticut DEEP's permit writers use a template stored on Connecticut DEEP's Intranet site to develop the fact sheet. While Connecticut DEEP's fact sheets do not include a discussion of the public notice, public comment, and public hearing process, the accompanying Notice of Tentative Decision which is the public notice document for the tentative permit, does address these procedures.

Program Strengths

The Connecticut DEEP's administrative record and fact sheets contain the required elements, and both are well organized. Administrative records include clear statements indicating whether public comments were received. Fact sheets and accompanying attachments, for non-municipal permits, are well developed and provide thorough discussions of the discharge and water quality assessment (i.e., RPA), as well as the development of effluent limitations. In addition, Connecticut DEEP's fact sheets include a table identifying the various applicable effluent limitations and their basis (e.g., TBELs, WQBELs, or BPJ)—this is helpful in clearly identifying the basis for the effluent limitation and illustrating that a comparison of TBELs and WQBELs is conducted.

Areas for Improvement

The Connecticut DEEP’s fact sheet quality is generally consistent; however, there are certain fact sheets that lack discussion of the receiving stream’s 303(d) status and certain fact sheets for municipal facilities do not include a full discussion of the development of WQBELs.

Action Items

Essential	<ul style="list-style-type: none"> •The PQR team did not identify any essential action items for this PQR component.
Recommended	<ul style="list-style-type: none"> •The Connecticut DEEP should ensure that fact sheets are consistent in the level of detail discussed regarding receiving stream quality and development of WQBELs.

IV. NATIONAL TOPIC AREA FINDINGS

National topic areas are aspects of the NPDES permit program that warrant review based on the specific requirements applicable to the selected topic areas. These topic areas have been determined to be important on a national scale. National topic areas are reviewed for all state PQRs. The national topics areas are: Permit Controls for Nutrients in Non-TMDL Waters, Effectiveness of POTW NPDES Permits with Food Processor Contributions, and Small Municipal Separate Storm Sewer System (MS4) Permit Requirements.

A. Permit Controls for Nutrients in Non-TMDL Waters

Background

Nutrient pollution is an ongoing environmental challenge. For this section, waters that were not protected by a TMDL were considered. These waters may already be impaired by nutrient pollution or may be vulnerable to nutrient pollution due to their hydrology and environmental conditions.

Federal regulations at 40 CFR 122.44(d)(vii)(A) require permit limits to be developed for any pollutant with the reasonable potential to cause or contribute to an impairment of water quality standards, whether those standards are narrative or numeric.

To assess how nutrients are addressed in the Connecticut NPDES program, EPA Region 1 reviewed two major POTWs and one major industrial permit.

Program Strengths

Since our last PQR review in 2012, we note the progress Connecticut has made in addressing nutrient pollution through a successful statewide phosphorus reduction strategy that imposes

phosphorus limits that are well-defined and clearly described within permits. Connecticut has a robust grant program to support POTW upgrades through a state-wide grant program.

Since all the waters of Connecticut are tributary to Long Island Sound, there are no total nitrogen discharges in non-TMDL waters in Connecticut. To implement the nitrogen loading reductions from point sources required by the 2000 Long Island Sound TMDL, Connecticut issues a General Permit for Nitrogen Discharges from POTWs throughout the state.

Areas for Improvement

One of the permits reviewed included a schedule of compliance for meeting a total phosphorus limit without at least annual milestone actions. The Connecticut DEEP must ensure that permits that allow a compliance schedule include annual milestone actions that are achievable in accordance with 40 CFR 122.47, and an enforceable final effluent limitation, with a compliance due date for each milestone and final permit limit.

Action Items

Essential	<ul style="list-style-type: none"> •The Connecticut DEEP must ensure that permits that allow a compliance schedule include annual milestone actions that are achievable in accordance with 40 CFR 122.47, and an enforceable final effluent limitation, with a compliance due date for each milestone and final permit limit.
Recommended	<ul style="list-style-type: none"> •The PQR team did not identify any recommended action items for this PQR component.

B. Effectiveness of POTW NPDES Permits with Food Processor Contributions

The general pretreatment regulations (40 CFR 403) establish responsibilities of federal, state, and local government, industry and the public to implement pretreatment standards to control pollutants from industrial users which may cause pass through or interfere with POTW treatment processes or which may contaminate sewage sludge.

Background

Indirect discharges of food processors can be a significant contributor to noncompliance at recipient POTWs. Food processing discharges contribute to nutrient pollution (e.g., nitrogen, phosphorus, ammonia) to the nation’s waterways. Focusing specifically on the Food Processing Industrial Sector will synchronize PQRs with the Office of Enforcement Compliance and Assurance (OECA)’s Significant Non-compliance (SNC)/National Compliance Initiative (NCI).

The goal of the PQR was to identify successful and unique practices with respect to the control of food processor discharges by evaluating whether appropriate controls are included in the receiving POTW NPDES Permit and documented in the associated fact sheet or Statement of

Basis; as well as by compiling information to develop or improve permit writers' tools to be used to improve both POTW and industrial user compliance.

The Connecticut DEEP received approval of its Pretreatment Program in 1981. Under 40 CFR 403.10(e), any State with an approved Pretreatment Program may assume responsibility for implementing the requirements set forth in 40 CFR 403.8(f) in lieu of requiring each POTW to develop a pretreatment program. Connecticut DEEP has elected to develop and implement such a pretreatment program and has assumed primary responsibility for implementing the pretreatment program requirements set forth in 403.8(f) in lieu of requiring POTWs to develop local pretreatment programs to control the wastewater discharges to the sewer systems from industrial users. As such, Connecticut DEEP is required to implement the program in accordance with the General Pretreatment Regulations (40 CFR Part 403); the NPDES Memorandum of Agreement between EPA Region 1 and the DEP, signed on June 3, 1981, and modified to define State and EPA responsibilities and enforcement of National Pretreatment Standards; and subsequent Memoranda of Understanding (MOU).

For this round of the PQR evaluation, the Pretreatment Program review was focused on industrial users within the food processing industry. Facilities within this category have gained national attention in recent years because of the deleterious effects their discharges can have on POTW operations. This can be particularly significant when the domestic-only wastewater sources to the receiving POTW are relatively small compared to the food processor's discharge. In instances where the food processor is greater than 50% of the average daily hydraulic flow or mass load into the plant, the characteristics of that single source can dominate the ability of the POTW to treat to required levels in order to achieve and maintain compliance with its own discharge permit.

Four permits and fact sheets (if available) from food processors within the state were chosen for evaluation as well as the permits and fact sheets of the respective receiving POTWs.

The following Significant Industrial User (SIU) and receiving POTW permits were reviewed:

- Frito-Lay discharging to the Town of Killingly (POTW),
- HP Hood discharging to the Town of Suffield (POTW),
- Kohler Mix discharging to Hartford Metropolitan District Commission (POTW), and
- Natural Country Farms discharging to Town of Vernon (POTW).

The Frito-Lay Fact Sheet is quite in depth and provides a historical overview of compliance issues, violations, monitoring frequencies and locations, sample type, etc. of the SIU. Regarding the basis for development of the permit local limitations, it appears that in November 2001, the SIU submitted an evaluation report which summarized the company's assessment of its wastewater and the wastewater's impact on the Killingly POTW. The SIU was also required to propose local limitations for BOD and TSS to be protective of the POTW. EPA did not review that report; however, Connecticut DEEP approved the report on May 9, 2008. The state should not allow an SIU to propose or develop its own limits. The fact sheet should provide the

documentation and basis of exactly how the SIU permit limits were developed by Connecticut DEEP.

The Hartford MDC permit only contains limits for CBOD and TSS; however, it does require monitoring for Total Nitrogen, Ammonia, TKN, pH, and phosphorus.

The Kohler Permit expired on October 8, 2017. There are no permit limits in the SIU permit other than flow; however, there are TKN, ammonia, nitrogen and phosphorus monitoring requirements.

The HP Hood Permit expired on October 5, 2015. There are permit limits for BOD of 4,300 lbs/day monthly average, 8500 lbs/day daily maximum, TSS of 1900 mg/L monthly average, and 5,000 mg/l of daily maximum. In addition to these limits, there are monitoring-only requirements for phosphorus and oil and grease.

Program Strengths

EPA is encouraged by the incoming support (via newly hired staff) directed to the industrial pretreatment program and we are optimistic that any action items identified in the report will be addressed to strengthen the program. EPA is also encouraged by Connecticut DEEP's proposed approach to revise its general permits for discharges of SIUs and miscellaneous sewer compatible wastewater from industrial users. EPA applauds Connecticut DEEP's efforts to refocus its resources while also maintaining oversight of its industrial users.

Areas of Improvement

Two of the four permits reviewed were expired. Connecticut DEEP should continue to address the permit backlog so that no more than 10% (PPA Agreement language) of its SIU permit universe is expired.

Action Items

Essential

- Connecticut DEEP must include all 40 CFR 122.42 notification requirements in its pretreatment permits.
- Connecticut DEEP should continue to work on reducing the permit backlog to less than 10% as outlined in the EPA/CT DEEP Performance Partnership Agreement (PPA).
- Where local limits have been developed for receiving POTWs, Connecticut DEEP must include applicable limits in industrial user pretreatment permits per 40 CFR 403.8(f)(1)(iii).

Recommended

- Connecticut DEEP should require all POTWs to complete the NPDES Permit Application Form that requires identification of Industrial User Dischargers consistent with 40 CFR 122.21 (j)(6)(i). POTWs have an obligation to conduct an industrial waste survey in order to identify SIUs discharging into the collection system.
- EPA recommends that Connecticut DEEP municipal and industrial staff share any information received from the permit application forms so that a comprehensive list of SIUs is continuously maintained.
- Connecticut DEEP should incorporate all SIU information (e.g., categorical status, pollutant loadings, flow, etc.) into its POTW fact sheets.
- Connecticut DEEP should develop a section in the POTW permit specific to Industrial Pretreatment. That section would outline any state or federal pretreatment requirements associated with the program. Further, it would identify actions to implement best practices.
- Some of the SIU permits reviewed contained specific local discharge limits while others were monitor only. For those permits with limits, the SIU Fact Sheet should explain how the permit limits were derived.

C. Small Municipal Separate Storm Sewer System (MS4) Permit Requirements

Background

As part of this PQR, EPA reviewed the state's small MS4 general permit for consistency with the Phase II stormwater permit regulations. EPA recently updated the small MS4 permitting regulations to clarify: (1) the procedures to be used when using general permits (see 40 CFR 122.28(d)); (2) the requirement that the permit establish the terms and conditions necessary to meet the MS4 permit standard (i.e., "to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act"), including conditions to address the minimum control measures, reporting, and, as appropriate, water quality requirements (see 40 CFR 122.34(a) and (b)); and (3) the requirement that permit terms must be established in a "clear, specific, and measurable" manner (see 40 CFR 122.34(a)).

Program Strengths

The state has a comprehensive permit that includes the six minimum control measures, requirements to address approved TMDLs, and monitoring requirements. The permit terms are

expressed in clear, specific, and measurable terms and the permit was written in accordance with the remand rule.

Areas for Improvement

The permit should provide clearer direction for permittees to meet the terms of an approved TMDL. The permit should include all appropriate stormwater related TMDLs such as the impervious cover TMDLs.

Action Items

Essential

- The PQR team did not identify any essential action items for this PQR component.

Recommended

- The MS4 permit, should provide clearer direction for permittees to meet the terms of an approved TMDL.
- The MS4 permit should include all appropriate stormwater related TMDLs (such as the impervious cover TMDLs).

V. REGIONAL TOPIC AREA FINDINGS

A. Clean Water Act Section 316(b)

With any NPDES permit issuance or reissuance, the NPDES permitting authority (in this case, Connecticut DEEP) must evaluate or re-evaluate compliance with applicable standards, including those stated in § 316(b) of the CWA regarding cooling water intake structures (CWISs). Section 316(b) applies if the permit applicant seeks to withdraw cooling water from waters of the U.S. and requires that location, design, construction, and capacity of the facility's CWIS(s) reflect the best technology available (BTA) for minimizing adverse environmental impacts. These impacts include death or injury to aquatic organisms by impingement (being pinned against screens or other parts of a CWIS) or entrainment (being drawn into the cooling water system and subjected to thermal, physical, or chemical stresses).

The focus of the Section 316(b) review is to verify that, where applicable, permits include requirements to operate CWISs consistent with the BTA and fact sheets explain the determination of the BTA for each facility. Nationally, EPA has taken the following regulatory actions to provide standards for determining the best technology available:

- In December 2001, EPA promulgated new, final Section 316(b) regulations that establish technology-based requirements for new facilities with CWISs with a design intake flow greater than 2 million gallons per day (MGD) (the "Phase I Rule"). See 66 Fed. Reg. 65,255. The Phase I regulations for new facilities are currently in effect and are codified at 40 C.F.R. Part 125, Subpart I.

- In June 2006, EPA promulgated Section 316(b) regulations that establish categorical requirements for new offshore oil and gas extraction facilities that have a CWIS with a design intake flow greater than 2 MGD (the “Phase III Rule”). See 71 Fed. Reg. 35,006. The Phase III regulations applicable to new offshore oil and gas extraction facilities are currently in effect and are codified at 40 C.F.R. Part 125, Subpart N. The Phase III Rule also dictated that the BTA for existing facilities with a CWIS with a design intake flow less than 50 MGD would be determined on a case-by-case, best professional judgment basis. In 2009, EPA sought a voluntary remand of the portions of the Phase III Rule addressing existing facilities.
- In August 2014, EPA promulgated Section 316(b) regulations that establish requirements for existing power generating and manufacturing and industrial facilities with a CWIS withdrawing from a water of the U.S. that have a design intake flow greater than 2 MGD and which uses at least 25 percent of the water withdrawn exclusively for cooling purposes. The 2014 Final Rule regulations for new facilities became effective in October 2014 and are codified at 40 C.F.R. Part 125, Subpart J.

In the absence of applicable standards (i.e., for new or existing facilities with a design intake flow less than 2 MGD), requirements to comply with Section 316(b) continue to be made on a case-by-case, BPJ basis. See 40 C.F.R. Section 125.80(c) and Section 125.90(b).

Since the Region conducted the last PQR, EPA has promulgated new regulations establishing requirements for cooling water intakes at existing facilities. These regulations imposed, among other things, significant new information collection requirements for permittees. In some cases, permitting for facilities subject to the 2014 Final Rule may have been delayed in order to allow permittees to fulfill the new information collection requirements, including biological monitoring. There were an insufficient number of final permits that included draft, final, or interim determinations of best technology available (BTA) under Section 316(b) issued in the past three years and available for review. EPA reviewed one 2014 final permit and 2016 modification (with associated fact sheets) for Pfizer Inc. (CT0000957). The 2014 BTA determination for Pfizer, Inc. was made based on a case-by-case, BPJ basis as it was prior to the 2014 Final Rule. EPA’s review highlights how this permit addressed the requirements of Section 316(b) consistent with a BPJ-based determination in the absence of national standards.

Program Strengths

In advance of the 2014 permit, Connecticut DEEP required Pfizer to complete an impingement monitoring study and entrainment monitoring study. The facility was also required to evaluate technologies and operational measures to minimize adverse environmental impacts from operation of its CWIS. The fact sheet correctly indicates that the BTA for minimizing adverse impacts is case-by-case based on BPJ as the final permit was issued prior to the effective date of the 2014 Final Rule.

As documented in the 2014 final permit and fact sheet, Connecticut DEEP selected closed-cycle cooling as the BTA for entrainment at this facility. Connecticut DEEP clearly explains that the determination is case-by-case based on BPJ. Connecticut DEEP also identifies that at the time of issuance, EPA's 2011 proposed regulations for establishing national standards at existing facilities had not been finalized and that this is a BPJ determination considering site-specific factors. Information for this determination was provided by the permittee in compliance with a modification of its previous permit to evaluate its CWIS. Connecticut DEEP presents a thorough summary of the factors in the 2014 fact sheet, including a description of the site, source water, CWIS design and operation, and changes at the site since the last permit issuance. The 2014 fact sheet also appropriately summarizes the results of the impingement and entrainment studies provided by the permittee. The 2014 fact sheet provides a summary of the permittee's BTA evaluation, including an estimated entrainment reduction attributed to each of the potential entrainment technologies. The 2014 fact sheet clearly explains that the selected BTA is closed-cycle cooling and provides an explanation of how the permittee will complete the necessary upgrades for compliance. The 2014 final permit includes a compliance schedule for the upgrades necessary to meet the BTA under Section 316(b). The 2016 permit modification and fact sheet modify the permit changes resulting from these upgrades, namely, elimination of the cooling water intake and traveling screen backwash.

Overall, the 2014 permit identifies that the CWIS reflects the BTA (Section 3(A)(1)) and includes a compliance schedule for the permittee to undertake the necessary upgrades to come into compliance with the selected BTA under Section 316(b) (Section 10). Section 10 of the permit identifies that the BTA is closed-cycle cooling and explains that this technology will eliminate the withdrawals of cooling water at its cooling water intake structure. The fact sheet provides a detailed justification for the BPJ-based requirements.

Areas for Improvement

As explained above, there was only one permit issued in the previous three years that included a determination of BTA under Section 316(b) of the CWA. Since the 2014 Final Rule has been effective for several years now, sufficient time has passed for facilities subject to the Rule to comply with the application requirements. As a result, there should be an increase in the number of permits issued with BTA determinations over the next several years. In addition, there may be additional facilities that operate CWIS which are not subject to the 2014 Final Rule. For example, facilities with a design flow less than 2 MGD or which use less than 25% of the flow exclusively for cooling are not subject to the 2014 Final Rule but are, however, still subject to Section 316(b). Future permits should include conditions consistent with BPJ-based determinations of the BTA for minimizing adverse environmental impact and the determination should be explained in the fact sheet. Some facilities (e.g., CT0030201, CT0000086, CT0003751) discharge low volumes of cooling water, but the fact sheet was unclear whether Section 316(b) applies. During the on-site review the available permit file for CT0030201 (United Aluminium Corp), EPA confirmed that the source was city water, thus Section 316(b) does not apply. One recommended improvement for the program is to consistently identify in the fact sheet the source for all facilities discharging cooling water. This recommendation extends to facilities

using cooling towers with or without city water as make-up cooling water (e.g., CT0026522 Capitol District Energy Center).

For the Pfizer permit (CT0000957), Section 3(A)(1) of the permit should more clearly state that closed-cycle cooling is the BTA and that, as a result of this technology, there will be no withdrawal of cooling water from Intake 01H once the technology is installed and operational. The compliance schedule at 10(A) should authorize withdrawals of cooling water from Intake 01H only until such time that the cooling tower is operational. The 2016 permit modification removed Tables A (01H Intake) and C (009 Intake screen backwash), which were no longer necessary following installation of the cooling tower. Section 3(A)(1) of the modified permit should have been modified to clarify that Intake 01H is no longer authorized under the modified permit and that the BTA (closed-cycle cooling) eliminated the need to withdraw water via the cooling water intake structure.

As mentioned above, the 2014 fact sheet adequately justifies the selection of closed-cycle cooling as the BTA. The fact sheet should have more clearly explained that Pfizer was not required to implement additional technology for impingement because the low through-screen velocity and/or closed-cycle cooling is the BTA for impingement. In addition, the summary of the entrainment study results should clearly state that the entrainment of eggs and larvae represents an adverse environmental impact that must be minimized under Section 316(b) and that the selected BTA will minimize this adverse environmental impact. The summary of proposed technologies and operational measures provides sufficient information to compare the available technologies, but it was not clear how the projected reductions in entrainment were derived and whether there is any uncertainty associated with these projections. For example, it is not clear how the reductions for fine-mesh wedgewire or traveling screens were calculated and it should be stated more clearly whether these reductions represent a reduction in overall mortality of eggs and larvae. In future BTA determinations, Connecticut DEEP should ensure that the BTA for both impingement and entrainment is clearly stated in the permit. In addition, fact sheets should summarize biological data, include a conclusion on whether there is adverse environmental impact from the CWIS, and explain how projected reductions in impingement and/or entrainment are calculated for each available technology.

Action Items

Essential

- Fact Sheet must clearly identify the Best Technology Available for both impingement mortality and entrainment. 40 C.F.R.125.94(c) and 125.98(f)(1).
- Permits for all facilities that operate cooling water intake structures, including those with design intake volumes less than 2 million gallons per day, must include requirements to operate the best technology available. 40 C.F.R. 125.94(c).

Recommended

- Work with EPA Regional Staff to ensure consistent implementation of the 2014 Final Rule.
- Fact Sheet should identify impingement and/or entrainment as adverse environmental impact.
- Fact Sheet should explain the basis for proposed reductions in impingement and/or entrainment for all technologies evaluated.
- Fact Sheet should consistently identify the source of cooling water (e.g., city water or via an intake).

VI. REVIEW OF PROGRESS ON ESSENTIAL ACTION ITEMS FROM LAST PQR

This section provides a summary of the main findings from the last PQR and provides a review of the status of the State’s efforts in addressing the action items identified during the last PQR, conducted on July 11-12, 2012. As discussed previously, during the 2012-2017 PQR cycle, EPA referred to action items that address deficiencies or noncompliance with respect to federal regulations as “Category 1”. EPA is now referring to these action items going forward, as Essential. In addition, previous PQR reports identified recommendations to strengthen the state’s program as either “Category 2” or “Category 3” action items. EPA is consolidating these two categories of action items into a single category: Recommended.

Table 1. Essential Action Items Identified During Last PQR 2012

Program Area	Action Item Title	Status Update
Technology-Based Effluent Limitations	<i>Include weekly BOD₅ and TSS</i>	(Resolved) <i>Ensure that secondary treatment weekly average BOD₅ and TSS requirements are included in all POTW permits. Including these requirements in the remarks at the end of the limits table is sufficient.</i>
Nutrients	CAFO and MS4 nutrient discharges	(In progress) <i>When CAFOs and MS4 permittees discharge to receiving waters with approved nutrient TMDLs, CT should include provisions in these permits consistent with the assumptions and requirements of the TMDL’s wasteload allocations.</i>
Pretreatment	CMS Goals	(In progress) <i>CT needs to ensure that it is attaining all CMS goals for conducting inspections of SIUs and perform annual monitoring of each of its SIUs. CMS goals are addressed on an annual basis through performance partnership agreements.</i>
	Evaluation of local limits	Not started) <i>For its authorized Pretreatment Program, on a continuing basis CT needs to evaluate local limits for each POTW in accordance with 40 CFR 403.5(c) or demonstrate that this is not necessary as provided in EPA’s 2004 Local Limit Guidance Manual.</i>
	40 CFR Notification Requirements	(In progress) <i>CT should include all 40 CFR 122.42(b) notification requirements in its POTW permits as well as the industrial waste survey requirements in accordance with 40 CFR 122.44(j)(1).</i>
Municipal Stormwater	Modify/Reissue Small MS4 General Permit	Resolved <i>CT should modify or reissue its small MS4 General Permit with revised and updated requirements that include requirements to meet the assumptions and requirements of approved TMDL, include new MS4 communities based on</i>

NPDES Program and Permit Quality Review

Program Area	Action Item Title	Status Update
		<i>the 2010 census include non-traditional MS4s, and include the state department of transportation.</i>
Industrial Stormwater	Eliminate permit eligibility	(Resolved) <i>In the next permit re-issuance, eliminate the permit eligibility distinction between stormwater and non-stormwater based on the size or recurrence interval of the associated rainfall event so that such stormwater discharges beyond the 100-yr, 24-hour rainfall event are eligible and therefore not discharging without a permit.</i>
	Eliminate non-pressure washing	(In progress) <i>In the next permit re-issuance, eliminate language that identifies discharges from non-pressure washing bilge water, ballast water and cooling water originating from recreational vessels up to eighty (80) feet in length may be discharged as they are considered to be incidental to the normal operation of a recreational vessel. These discharges will be eligible under EPA’s 2013 Vessel General Permit upon issuance.</i>
	Incorporate Airport Deicing ELG	(In progress) <i>In the next permit re-issuance, incorporate the requirements from the May 16, 2012 Airport Deicing ELG that are appropriate to the kinds of discharges the permit authorizes (40 CFR Part 449).</i>
Construction Stormwater	Eliminate eligibility distinction	(In progress) <i>In the next permit re-issuance, eliminate the permit eligibility distinction between stormwater and non-stormwater based on the size or recurrence interval of the associated rainfall event</i>
	Any final ELGs that are not included in the current permit	(Resolved) <i>In the next permit re-issuance the permit should incorporate any relevant final ELGs or standards that are not included in the current permit such as the construction and development ELGs at 40 CFR Part 450.</i>
Concentrated Animal Feeding Operations	Issue permits with CAFO-related discharges	(In progress) <i>CT should move expeditiously to issue permits to CT facilities with CAFO-related discharges. CT should proceed with its plans to public notice the draft state CAFO general permit and update EPA on its progress toward attaining permit coverage for all regulated CAFO discharges.</i>
Facilities Subject to 316(a) and 316 (b)	Include 316(b) cooling water intake structure permit conditions in permits	(In progress) <i>CT should include section 316(b) permit conditions consistent with the Best Technology Available in permits for any facility that operates a cooling water intake structure the basis for the Best Technology Available determination should be explained in the accompanying fact sheet or elsewhere in the administrative record supporting the permit.</i>

VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

As discussed previously, during the 2012-2017 PQR cycle, EPA referred to action items that are recommendations to strengthen the state's program as either "Category 2" or "Category 3" action items. EPA is consolidating these two categories of action items into a single category: Recommended.

Connecticut DEEP has made significant progress in some important areas such as their phosphorus reduction strategy and their use of charts and tables to document their decisions and effluent limitations since our review in 2012. While many additional recommended action items were identified in the 2012 report, (see pages 49-58 of the 2012 report⁴), no formal tracking process was established for these items. Connecticut DEEP, in its report-out to EPA during the on-site visit, generally addressed some of these items as complete or underway. Any remaining concerns that EPA currently has about areas in need of further action are addressed in the action items identified for this PQR cycle (see Section VIII, below).

VIII. ACTION ITEMS FROM FY 2018-2022 PQR CYCLE

This section provides a summary of the main findings of the PQR and provides proposed action items to improve CT DEEP NPDES permit programs, as discussed throughout sections III, IV, and V of this report.

The proposed action items are divided into two categories to identify the priority that should be placed on each Item and facilitate discussions between Regions and states.

- **Essential Actions** - Proposed "Essential" action items address noncompliance with respect to a federal regulation. The permitting authority is expected to address these action items in order to come into compliance with federal regulations. As discussed earlier in the report, prior PQR reports identified these action items as Category 1. Essential Actions are listed in Table 2 below.
- **Recommended Actions** - Proposed "Recommended" action items are recommendations to increase the effectiveness of the state's or Region's NPDES permit program. Prior reports identified these action items as Category 2 and 3. Recommended Actions are listed in Table 3 below.

The following tables summarize only those action items that were identified in Sections III, IV, and V of the report.

⁴ https://www.epa.gov/sites/production/files/2015-09/documents/pqr_connecticut_report.pdf

Table 2. Essential Action Items from FY 2018-2022 PQR Cycle

Topic	Action(s)
Permit Application Requirements	<ul style="list-style-type: none"> • Connecticut DEEP must ensure that application submittals include complete monitoring data collected in accordance with 40 CFR 122.21(j)(4). <i>(Connecticut DEEP indicated during the onsite PQR that they are immediately implementing corrective actions to require complete priority pollutant testing by major POTWs)</i> • Connecticut DEEP must ensure that municipal applications require applicants to identify significant industrial users, in accordance with 40 CFR 122.21(j)(6). • Connecticut DEEP should confirm that application data are collected using sufficiently sensitive analytical methods.
TBELs for POTWs	Connecticut DEEP must ensure that permits consistently include effluent limitations for POTWs consistent with federal secondary treatment standards established at 40 CFR 133.102, including average weekly effluent limitations.
WQBELs Development	In accordance with 40 CFR 122.44(d)(1)(i), Connecticut DEEP must ensure that permits establish WQBELs for all parameters for which RP exists.
Final Effluent Limitations	Connecticut DEEP must ensure that effluent limitations are as stringent as those established in the previous permit, consistent with 40 CFR 122.44(l).
Documentation of Effluent Limitations Development	Connecticut DEEP should ensure that permit writers conduct and document an anti-backsliding analysis where proposed effluent limitations are less stringent than existing limitations.
Monitoring and Reporting Requirements	Connecticut DEEP should consider updating permit application requirements to specify that applicants must use sufficiently sensitive 40 CFR 136 methods.
Standard and Special Conditions	<ul style="list-style-type: none"> • Connecticut DEEP must ensure that permits clearly identify federal standard provisions established in 40 CFR 122.41 and 122.42, including 122.42(b)(1)-(3) regarding notification of the new introduction of pollutants or new industrial users to the POTW. • Connecticut DEEP must ensure that permits that allow a compliance schedule include an enforceable final effluent limitation and a date for its achievement.
Permit Controls for Nutrients in non-TMDL Waters	<ul style="list-style-type: none"> • The Connecticut DEEP must ensure that permits that allow a compliance schedule include annual milestone actions that are achievable in accordance with 40 CFR 122.47, and an enforceable final effluent limitation, with a compliance due date for each milestone and final permit limit.

NPDES Program and Permit Quality Review

Pretreatment: Food Processing Sector	<ul style="list-style-type: none">• Connecticut DEEP must include all 40 CFR 122.42 notification requirements in its POTW NPDES permits.• Connecticut DEEP should continue to work on reducing the permit backlog to less than 10% as outlined in the EPA/ Connecticut DEEP Performance Partnership Agreement (PPA).• Where local limits have been developed for receiving POTWs, Connecticut DEEP must include applicable limits in industrial user pretreatment permits per 40 CFR 403.8(f)(1)(iii).
Clean Water Act 316(b)	<ul style="list-style-type: none">• Fact Sheet must clearly identify the Best Technology Available for both impingement mortality and entrainment.• Permits for all facilities that operate cooling water intake structures, including those with design intake volumes less than 2 million gallons per day, must include requirements to operate the best technology available.• Fact Sheets must consistently identify the source of cooling water (e.g., city water or via an intake) per 40 CFR 122.21 (r)(2).

Table 3. Recommended Action Items from FY 2018-2022 PQR Cycle

Topic	Action(s)
Facility Information	Connecticut DEEP should consider including clear identification of the physical location of outfalls in permits.
Permit Application Requirements	Connecticut DEEP should ensure that the permit record clearly notes whether appropriate data are submitted with the application.
TBELs for POTWs	Connecticut DEEP should consider including all numeric effluent limitations in the limits table, rather than as footnotes or narrative statements below the table.
TBELs for Non-POTW Dischargers	Connecticut DEEP should ensure that fact sheets and permit records clearly describe the determination and basis for effluent limitations based on BPJ.
Reasonable Potential	<ul style="list-style-type: none"> • Connecticut DEEP should evaluate RP for parameters for which water quality criteria exist, more than just certain subsets of pollutants (e.g., metals and nutrients at POTWs). • Connecticut DEEP should develop state-specific standard operating procedures for evaluating RP. • Connecticut DEEP fact sheets should consistently include documentation of the RPA, clear statements regarding how pollutants of concern are chosen, and whether the discharge demonstrates RP. • Connecticut DEEP fact sheets should consistently discuss the 303(d) status of the receiving water.
Documentation of Effluent Limitations Development	<ul style="list-style-type: none"> • Connecticut DEEP should ensure that fact sheets clearly indicate the basis for each of the final effluent limitations and demonstrate that a comparison of TBELs and WQBELs is conducted and the most stringent effluent limitation is established as the final limitation. • Connecticut DEEP should ensure that fact sheets discuss the basis for revision in effluent limitations, including how they are expressed (e.g., instantaneous values vs. average monthly and maximum daily values).
Standard and Special Conditions	Connecticut DEEP should ensure that fact sheets fully describe the basis for compliance schedules and associated compliance dates and demonstrate that the compliance schedule achieves compliance with the final effluent limitation "as soon as possible".
Administrative Process	Connecticut DEEP should ensure that permit records contain complete documentation of the public notice process.

NPDES Program and Permit Quality Review

Topic	Action(s)
Administrative Record and Fact Sheet	Connecticut DEEP should ensure that fact sheets are consistent in the level of detail discussed regarding receiving stream quality and development of WQBELs.
Pretreatment: Food Processing Sector	<ul style="list-style-type: none"> • Connecticut DEEP should require all POTWs to complete the NPDES Permit Application Form that requires identification of Industrial User Dischargers consistent with 40 CFR 122.21 (j)(6)(i). POTWs have an obligation to conduct an industrial waste survey in order to identify SIUs discharging into the collection system. • EPA recommends that Connecticut DEEP municipal and industrial staff share any information received from the permit application forms so that a comprehensive list of SIUs is continuously maintained. • Connecticut DEEP should incorporate all SIU information (categorical status, pollutant loadings, flow, etc.) into its POTW fact sheets. • Connecticut DEEP should develop a section in the POTW permit specific to Industrial Pretreatment. That section would outline any state or federal pretreatment requirements associated with the program. Identify actions to implement best practice • Some of the SIU permits reviewed contained specific local discharge limits while others were monitor only. For those permits with limits, the SIU Fact Sheet should explain how the permit limits were derived.
Municipal Separate Storm Sewer Systems (MS4s)	<ul style="list-style-type: none"> • The MS4 permit should provide clearer direction for permittees to meet the terms of an approved TMDL. • The MS4 permit should include all appropriate stormwater related TMDLs (such as the impervious cover TMDLs).
Clean Water Act 316(b)	<ul style="list-style-type: none"> • Work with EPA Regional Staff to ensure consistent implementation of the 2014 Final Rule • Fact Sheet should identify impingement and/or entrainment as adverse environmental impact • Fact Sheet should explain the basis for proposed reductions in impingement and/or entrainment for all technologies evaluated.