Region 7 NPDES
Program and Permit Quality Review
Nebraska Department of
Environmental Quality

Review Date: August 13, 2018
Report Date: November 26, 2019

U.S. Environmental Protection Agency
Region 7
11201 Renner Blvd
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Contents

Executive Summary

EPA Region 7's National Pollutant Discharge Elimination System (NPDES) Program and Permit Quality Review (PQR) for Nebraska Department of Environmental Quality (NDEQ) found that permits issued in the state were generally concise and adhere to federal regulations. However, we found the lack of the complete federal bypass condition consistently omitted from the Terms and Conditions in all permits and no mention of "Identification of the initial recipient for NPDES electronic reporting data" in the Standard Conditions. In NDEQ pretreatment permits it is recommended the design capacity is included in each permit and that NDEQ develop a policy to increase sampling frequency to determine compliance/noncompliance.

The NDEQ permit writers expressed the need for an updated permit writers' manual that will include documented policies and procedures, so they can provide better documentation in the permit. Permit writers conveyed a need for training in the basic permit writers' training module, modeling, concentrated animal feeding operations (CAFOs), and pretreatment. They also suggested that a national directory of permit writers and enforcement officers be developed for informational exchange on permit related specific topics. They suggested an annual permit writers' meeting that would rotate responsibility for setting the meeting, agenda, and meeting minutes. The meeting would be held in Kansas City for two-half day sessions. Region 7 (R7) will address the latter two suggestions during the R7 4-State bi-monthly conference calls.

The PQR recognizes the many state and region-specific challenges faced by the State of Nebraska, including high turnover of experienced permit writers and reduced budgets that impact implementing the NPDES program. NDEQ also continues their work with rural and small communities with the Assessing Wastewater Infrastructure Needs (AWIN) project. NDEQ initiated the AWIN project to assist Nebraska communities with environmental compliance on existing or upcoming regulations. AWIN uses data from the latest census and other available data sources to generate a rating for communities using modeling tools. A few examples of how AWIN is helping communities includes better interest rates on loans, longer compliance schedules and smaller designs for future declining populations to fit the community's predicted population 15 years from now. By designing a smaller facility and using other best management practices, one community is slated to save the 177 residents $160,000 to $200,000. NDEQ has effectively used the Clean Water Revolving Fund Program to provide low interest loans and loan forgiveness to eligible municipalities for construction of wastewater treatment facilities and sanitary sewers collection systems, but not every small and rural community in Nebraska is eligible for the Clean Water Revolving Loan Fund Program or the AWIN project. This leaves NDEQ still in a dilemma on how to assist these small and rural communities.

Nebraska permits 671 facilities. As of August 8, 2018, 9.9 percent of Nebraska's permits are administratively continued, or backlogged. The PQR examined 25 permits for discharges in Nebraska along with 3 General Permits issued by NDEQ. 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
- Confined Animal Feeding Operations (CAFOs).

Although the permits reviewed generally conformed to national requirements, we identified several concerns, including less stringent permit Standard Terms and Conditions than the federal requirements and monitoring frequencies that do not allow the facility to adequately determine compliance/noncompliance. Since many of the deficiencies seem to stem from revising NDEQ regulations, Title 119, we believe they can be best resolved if the NDEQ revise their regulations to include changes in federal requirements. Based on this PQR, EPA is recommending modifications to:

- Update NDEQ NPDES Standard Terms and Conditions to be consistent with 40 CFR 122.41 and 122.42;
- Review state regulations on monitoring frequencies to ensure adequate compliance determinations;
- Revise NPDES permit applications[1] to include requirements of 40 CFR 122.21; and,
- Revise NDEQ/EPA NPDES MOA.

In addition to the items listed above, the report provides an overview of the Nebraska NPDES permitting program and identifies specific areas where EPA and NDEQ can work together to continue to strengthen permit language and documentation in state NPDES permits.

The State of Nebraska reviewed and provided comments on the draft PQR report on August 9, 2019. The State agreed with many of the draft PQR's findings and recommendations and committed to address many of the proposed action items. Several of these actions are already underway.

Note: This PQR was conducted for the NDEQ, in the interim state government has reorganized, combining the NDEQ and the Department of Energy into a single grouping: the Nebraska Department of Environment and Energy (NDEE). Titles for individuals and organizational groupings are updated to the NDEE organizational structure.

[1] Timing of the Final Updates Rule may allow postponing this action item.

I. PQR BACKGROUND

NPDES 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 prior PQR of the Nebraska NPDES permitting program on April 16-19, 2012. The evaluation team proposed various action items to improve the Nebraska NPDES permitting program. As part of the current PQR, EPA requested updates from Nebraska on the progress on those action items. Nebraska has greatly improved in providing documentation of decision making in their factsheets. They have revised their regulations since the last PQR by removing the NPDES permit applications from them. Nebraska still needs to revise its NPDES regulations and permit applications to be consistent with the federal regulations. Also, NDEQ has revised their NPDES Memorandum of Agreement on February 20, 2019. Of the 17 action items identified during the last PQR, 13 have been resolved and the remainder represent actions identified as being Essential[2] tasks that Nebraska is still in the process of completing. In addition, EPA identified Recommended action items to improve Nebraska's program; Nebraska has chosen to implement the Recommended actions. Section VI of this report contains a detailed review of the progress on action items identified during the last PQR.

During this review, the evaluation team proposed action items to improve the NDEQ 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.

EPA's review team, consisting of 3 permit writers (Kimberly Hill, Tanya Nix, and John Dunn), the Stormwater Coordinator (Mark Matthews), the CAFO Coordinator (Donna Porter), and the Pretreatment Coordinator (Paul Marshall) who conducted a review of the Nebraska NPDES permitting program which included an on-site visit to the NDEQ in Lincoln, Nebraska on August 13, 2018.

[2] 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.

The Nebraska PQR included reviews of core permit components and national and regional topic areas, as well as discussions between the PQR review team and Nebraska 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 responsibilities, organization, staffing, and program challenges the state is experiencing.

A total of 25 permits were reviewed as part of the PQR. Of these, 10 permits were reviewed for the core review, 14 permits were reviewed for national topic areas, and 3 permits were reviewed for regional topic areas. Some permits were reviewed for both the core review and one or more topic areas reviews. Permits were selected based on issue date and the review categories.

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[3] to evaluate the Nebraska 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 during this PQR were: Permit Controls for Nutrients in Non-TMDL Waters, Stormwater and Small Municipal Separate Storm Sewer System (MS4) Permit Requirements, and the Effectiveness of POTW NPDES Permits with Food Processor Contributions.

Regional topic area reviews target regionally-specific permit types or particular aspects of permits. The EPA Region 7 selected the CAFO program as the regional topic area. These reviews provide important information to Nebraska, EPA Region 7, EPA HQs and the public on specific program areas.

II. STATE PROGRAM BACKGROUND

A. Program Structure

The NDEQ operates a main office located at 1200 “N” Street, Suite 400, P.O. Box 98922, Lincoln, Nebraska, 68509. The main office receives permit applications and notices of intent, generates draft permits and fact sheets, conducts the internal review of drafts, initiates the draft permit public notice periods, and issues final permits. The Lincoln office also conducts some inspections of permitted facilities.

[3] https://www.epa.gov/npdes/central-tenets-npdes-permitting-program

NDEQ operates four regional field offices in Scottsbluff, North Platte, Omaha, and Norfolk that carry out facility compliance inspections, complaint investigations, and water quality sampling. Compliance inspectors from the four offices also provide technical reviews of draft permits for their respective areas.

The NPDES Permits and Compliance Section (PCS) is supported by two staff assistants, one compliance specialist, one Section Supervisor, a Water Permits Division Administrator, and one Water Deputy Director. NDEQ currently has 4.5 full time positions that write NPDES and Nebraska Pretreatment Program (NPP) permits in the new NPDES Permits and Compliance Unit. Only two of the positions write permits full time. Two writers share NPDES permit writing with compliance, one writer shares permit writing with compliance and enforcement, one writer shares permit writing with stormwater coordination and compliance, and one position shares NPP writing with Industrial Stormwater (ISW) program coordination. NPP permits are issued by NDEQ to the industrial users of POTWs, instead of the traditional Pretreatment Program model of approving POTWs to issue pretreatment permits. NDEQ also has draft permits prepared by an independent EPA contractor. Four permit writers are trained using the steady-state modeling technique, and one permit writer uses CORMIX. Each permit writer is provided training through internal mentoring, EPA Permit Writers' Course, wasteload allocation procedures, and spreadsheets. The more experienced staff mentor newer personnel for a period of six months. Currently NDEQ has 3 staff that need the EPA Permit Writers' Course; however, travel dollars are needed to send them to this training.

NDEQ's Planning Unit has seven staff that develop total maximum daily loads (TMDLs). This unit has up to three individuals that may contribute some of their time to the TMDL process, but one is the primary TMDL coordinator.

The Planning Unit provides TMDL information, prepares the list of impaired waters, data management, develops water quality criteria, and provides technical reviews of draft permits. The Water Quality Assessment Surface Water Unit and the Planning Unit collect, analyze, sort, and interpret surface water data providing information for determining impairments and developing wasteload allocations. The Groundwater Unit provides consultation on potential groundwater impacts. The Technical Assistance Unit provides technical review of draft permits and consultation involving treatment capability.

Permit writers use the current permit as the template for the draft permit. Each draft permit goes through a QA/QC process which includes an internal review by a compliance inspector and Planning Unit. The NPDES supervisor reviews the draft prior to public availability and the Division Administrator conducts a final review. The permit writer and compliance inspectors use a checklist to evaluate the draft permit and fact sheet in the QA/QC process.

For CAFO operations, similar activities are conducted by the main office and four field offices. Applications for NPDES permit coverage are received and reviewed. The main office coordinates the permit with existing state construction and operating permits, including drafting the permit and fact sheet, completes the public notice process, issues the final

permit or issues coverage under the general permit, and initiates and tracks enforcement activities. Inspectors are designated counties for which they are responsible for compliance inspections and investigations, review annual reports and permit applications, and are usually available for face to face communications with the CAFOs in their areas. Training for CAFO staff is provided by in-house training and mentoring from experienced staff. (In the new NDEE structure, CAFO permitting is conducted under the Agriculture Section.)

NDEQ has 1.5 positions in the main office that draft permits for CAFOs located in the field offices' areas of coverage. In addition, there are five positions in the main office that conduct inspections and draft permits for CAFOs in other areas of the state. The draft permits follow a template permit and are based on conditions and elements of the state construction and operating permit. One position has been responsible for drafting the general permit that cover 403 open-lot feedlots. One full time staff assistant is available for CAFO permitting, including the public noticing process and the data entry.

Nebraska has an excellent statewide Enterprise Content Management (ECM) system that stores all the State's permit development documentation, correspondence, monitoring and reporting documents, and compliance records. This system has been active since 2011 and has improved in scanning quality. This system facilitates implementation of the NPDES program and stores the NPDES permit administrative record.

To assist permittees in submitting timely and complete permit renewal applications, NDEQ sends out a reminder letter nine months (270 days) before permit expiration. NDEQ then uses an in-house spreadsheet to track the arrival of applications.

When the applications are received, NDEQ staff conducts a preliminary review to determine whether the applications are complete. This first review checks for an authorized signature, a complete address, and submission of all pages of the application. In general, these first checks are easier for municipal facilities and more difficult for industrial facilities. NDEQ noted that if a plant operator signs an application, NDEQ will return the application to ensure a signature is obtained from a "cognizant official".

After the preliminary review, applications are assigned to a permit writer for technical review and subsequent permit drafting. Each permit writer is assigned to a set of counties, so the permit writer can become knowledgeable about an area of the state and this knowledge encourages watershed-based decision making. Permit writers review the technical aspects of the application for completeness and work with the permittee to collect any additional pertinent and/or required information. When the application is complete, the permit writer documents the completion date and updates the tracking spreadsheet.

NDEQ prioritizes permit issuance. New dischargers are given priority over re-issued permits and NDEQ indicates it makes every effort to be prompt in permit coverage so that new facilities can begin operations as quickly as possible. Permits for new facilities are tracked on a separate, dedicated spreadsheet.

Backlogged permits are defined as permits that have been administratively extended. When permits expire before a draft is completed, NDEQ tracks the status of the backlogged permits and works to resolve issues. NDEQ also keeps separate tracking lists for EPA priority permits and facilities located on 303(d)-listed streams.

When the permit writer creates a draft permit and fact sheet or statement of basis, the drafts are routed for internal review by specialists in compliance, Water Quality Standards (WQS) in the Planning Unit, and the Groundwater Unit. The permit writer considers the comments from these individuals and updates the draft permit and fact sheet/statement of basis. NDEQ then sends the draft permit and fact sheet/statement of basis to the permittee for review and comment. Once the last set of comments is considered, the NPDES Section Supervisor reviews a final draft. After final corrections, the permit is placed on public notice. EPA's review is concurrent with the 30-day public review period.

After the public notice and response to comments, the permit is reviewed one last time by the PCS Section Supervisor and then by the Wastewater Section Environmental Engineer Section Supervisor or for CAFO the Agricultural Section Supervisor before the final permit is sent to be signed by the Water Permits Division Administrator and issued. (This review process has been streamlined as part of the reorganization.)

B. Universe and Permit Issuance

As of August 8, 2018, NDEQ is responsible for administering approximately 671 individual permits. Within this permitting universe, there are 52 major facilities, 446 minor facilities, 123 NPP facilities, and 50 CAFO facilities. Of the total NPDES universe, 285 of those facilities are POTWs and 331 are industrial facilities. NDEQ currently has twelve general NPDES permits, with 2,715 authorizations. These authorizations are included in Table 1 and are tracked in ECM, Integrated Information System (IIS) AS 400, and spreadsheets.

Table 1

General Permit	Authorizations
Dewatering	99
Dewatering in Omaha	1
Hydrostatic Testing	22
Industrial Pretreatment	0
Construction Stormwater	1307
Industrial Stormwater	796
Discharges from Remediation Sites	45
Discharges from sMS4s in Douglas, Sarpy, Washington	10
Discharges from sMS4s (statewide)	16
CAFO	403
CAFO – expired March 31, 2008	8
General CAFO	403
Concrete Grooving and Grinding Slurry	No NOI[1] Required
Pesticide General Permit	16
Total	**2715**

[1] Notice of Intent

NDEQ continues to make great strides in addressing the State's permit backlog through implementation of its internal prioritization strategy. Its priority is to draft permits for 1) majors; 2) 303(d) listed waters; 3) new or complex facilities; 4) expiring permits, and 5) oldest administratively extended permits. This strategy has been in effect since October 2003 and has effectively reduced the overall backlog from 48 percent to 13 percent and the backlog of major permits from 38 percent to 9 percent.

C. State-Specific Challenges

Nebraska consists of many small communities with aging wastewater infrastructures that are experiencing budget cuts due to declining populations. As these communities decrease in size and municipal budgets, NDEQ continues to struggle with how to address these communities with looming infrastructure needs in a down turned economy. NDEQ developed the AWIN program to address the situation with small and rural communities. They have had much success with this program and now looking to use it for drinking water systems. NDEQ has also seen a decrease in total facilities due to demographics and facilities that convert to non-discharging by land application of all waste.

D. Current State Initiatives

Nebraska is currently including monitoring for total nitrogen and total phosphorus in new and reissued permits to determine if nutrient limits should be included in permitted facilities. It has also included the review of fish advisories and the 303(d) list to include monitoring of legacy pollutants.

Nebraska has adopted the 2013 Ammonia Criteria and those new standards have been approved by EPA. The EPA's 2013 ammonia criteria reflect new data on sensitive freshwater mussels and snails and are more stringent than the 1999 Ammonia Criteria. NDEQ is incorporating the new criteria in their permits. NDEQ anticipates that some facilities (specifically lagoons) may not be able to meet the 2013 criteria in all seasons if discharging to small streams without significant dilution. NDEQ is one of several Region 7 states considering a multiple discharger variance (MDV) for lagoons.

NDEQ is currently applying the LEAN process to NPDES permit issuance. The goals were to move a backlogged permit into the swimlane at a frequency of one per week and identify errors in draft permits and fact sheets. Undergoing this process has allowed them to take some of the reviews out and reduce errors. The NDEQ permits team admits to going through a culture change that has left them smaller in number but able to work well together.

NDEQ has also stated that they have issued the Lincoln MS4 permit and are now current on all the MS4 permit reissuances.

NDEQ NPDES Permits and Compliance Section (left to right – Reuel Anderson, Dan LeMaistre, Ryan Joe, Alissa Brenning, Patrick Ducey, Lisa Giesbrecht and Anne Thompson) engaged in a team huddle.

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). 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.

Region 7 PQR team reviewed eight POTW and four non-POTW facilities.

Program Strengths

All permits reviewed included descriptions of the facility in the fact sheet, descriptions of processes at the facility, identification of outfalls and waste streams, and location information relative to the receiving stream. The permits contained technology-based limits for 5-day carbonaceous biochemical oxygen demand, total suspended solids, and pH. Water quality based effluent limits for ammonia and Fecal Coliform were also included in the permits along with monitoring for total nitrogen and total phosphorus. Priority pollutant scans were found in some of the ECM records, but not all. Acute and Chronic WET limits were included in permits as appropriate. Sludge requirements were cited in the permit when necessary. Descriptions of location, the receiving stream, and facility discharge were all complete.

Areas for Improvement

None Observed.

Action Items

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

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.

NDEQ administrative staff send out renewal reminder letters approximately 9 months (270 days) prior to the application due date and another letter 60 days before the permit expires. NDEQ will notify the permittee by letter or a Notice of Violation (NOV) if the application is late. Rarely are NOVs issued for late applications. NDEQ uses state application forms, none of which were updated since the 2012 NDEQ program review. Permit application forms are required for applicants for municipal treatment plants (NPDES Combined Form 1 & 2A) and applicants for industrial/commercial/institutional facilities (NPDES Combined Form 1 & 2C).

All applications reviewed in the permit file contained appropriate signatures and were received at least 180 days prior to permit expiration.

In the 2012 PQR, it was observed that NDEQ did not require major municipal applicants to provide three full priority pollutant scans, as required by 40 CFR 122.21(j), as part of its state applications; instead, NDEQ required data for only a basic subset of pollutants.

Industrial applicants, by comparison, list pollutants based on their respective industry and effluent guidelines. After receiving this information for new facilities, NDEQ requires permittees to report only those pollutants during the first permit term. The permit writers initially download discharge data from the previous permit term from ECM, for review and analysis. Permit writers will review the application package to identify changes since the last permit, relevant to facility operations or treatment processes. Permit writers appear to have strong familiarity with their permittees and are aware of when facility changes occur or new industries are introduced to a community. Fact sheets reviewed currently include a general discussion of "potential pollutants" based on the industry type and historical knowledge of the facility (in cases when it is an existing discharger). NDEQ has produced a permit attachment requiring pollutant scans for new and reissued POTWs with a design flow greater than 1 million gallons per day (MGD). However, it is not included in the permit application.

Program Strengths

For industrial applicants, federal regulations established at 40 CFR 122.21(g)(1) require applicants to provide outfall locations, including latitude/longitude information. NPDES Combined Form 1 & 2C does require submittal of latitude and longitude information. NDEQ NPDES Combined Form 1 & 2C also requires results for certain parameters, analytic data for primary industry categories and indication of WET testing.

Areas for Improvement

The 2012 PQR contained an Action Item to ensure all NPDES permit application forms contain all federal requirements stated in 40 CFR Part 122. To date, NDEQ has revised their state regulations to remove the permit applications from the regulations enabling them to modify/revise/update the applications without going through the regulatory review process. This was completed in FY 2018, but the actual revisions to the permit applications have not occurred. The NDEQ NPDES Combined Form 1 & 2A does not meet the federal requirements in several areas. It does not require latitude and longitude information, but gives the applicant an option to provide it if known; analytical results for certain parameters, WET testing and priority pollutants scans are not required. NDEQ submitted letters to all permitted facilities requiring the submittal of pollutant scans. All scans are submitted with DMR data and none are being submitted with the application. All of the applications reviewed lacked priority pollutant scans required by 40 CFR 122.21.

Although the pollutant scans are currently being submitted with discharge monitoring reports (DMR) data they are not submitted with the applications. Reviewers used the files in the NDEQ database to access the priority pollutant scans. Also, some permittees were not submitting the data consistently as some files had one data set in ECM while others had two or three.

Action Items

Essential	•NDEQ must review NPDES wastewater permit application forms to ensure applicants are in compliance with the following regulations: Industry - 122.21 (g)(7)(iii); Appendix A & D to Part 122 •Industry - 122.21 (g)(7)(iii); Appendix A & D to Part 122 •Dischargers of Non-process wastewater - 122.21(h)(4)(i) through (k) •CAFOs - 122.21(i) •POTWs - Part 122.21 (j); Appendix J to 122 •New sources and new dischargers - 122.21(k)(5)(i) through (iii); Appendix D to Part122 •Facilities with Sewer sludge management - 122.21(q)(7)(ii)through (iv)(A)(B)(C) •Cooling water intake structures - 122.21(r)
Recommended	•Submit last pollutant scan with the application. •Ensure each facility is submitting the correct number of scans.

[Following an initial review of the PQR findings, the Department provided draft applications December 10, 2018 to EPA for review. EPA delayed reviewing the applications pending the finalization of the NPDES Updates Rule. The final NPDES Updates Rule became effective June 12, 2019. NDEQ will need to review these draft applications before resubmission to ensure any changes based on the NPDES Updates Rule are included.

The Department recognizes pollutant scans are an application requirement. The notification letters and the inclusion of the requirements directly in permits have been discontinued. NPDES permits, when applicable, require tracking of pollutant scans and fact sheets refer to the requirements at 40 CFR Part 122.21. Guidance for completing the scans are available on the Department website at http://deq.ne.gov/publica.nsf/Pubs.xsp. In cases where the requirements of the permit include all pollutant scan parameters, submission of the data is redundant, and not requested 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. Thus, permits issued to POTWs, must contain limits for all of these parameters (or authorized alternatives) in accordance with the Secondary Treatment Regulations.

Nebraska's fact sheets contain detailed descriptions of plant location, treatment processes within the plant, and the handling of all waste streams including sludge production. Industrial users are listed.

TBELs for secondary treatment or equivalent to secondary treatment are properly derived in NDEQ permits and include limits for BOD (or CBOD), TSS, pH, and percent removal. Fact sheets state which limits apply.

Permits now include mass limits for BOD and TSS. This is not required by the regulations, but the EPA urges use of both mass and concentration limits in permits when possible. NDEQ uses design flows for mechanical WWTFs to calculate mass limits in permits. NDEQ has established mass limits for secondary standards and water quality-based permits since approximately 2009.

Program Strengths

NDEQ permit writers are doing an excellent job including numeric limits for BOD or CBOD, TSS and pH. All files reviewed contained limits expressed in appropriate units of measure and in monthly and weekly averages and contained the 85% removal requirement. POTWs also required influent monitoring for BOD or CBOD and TSS.

Areas for Improvement

None Observed.

Action Items

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

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 basis using best professional judgment (BPJ) in accordance with the criteria outlined at 40 CFR 125.3(d).

Program Strengths

Nebraska's fact sheets for non-POTW dischargers contain detailed descriptions of plant location, treatment processes, and waste streams. The SIC code(s) for the facility are identified and permit limits are derived based on the applicable ELG. Where an ELG does not apply, the state derives permit limit using BPJ.

The files reviewed provided documentation on the calculations used to develop the ELG-based effluent limits. The final limits were as stringent as the required ELG and were expressed in the appropriate units of measure and include both maximum daily and monthly average limits. The non-POTW dischargers reviewed for technology-based effluent limits were based on production and not facility design.

Areas for Improvement

None Observed.

Action Items

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

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 will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including for narrative criteria for water quality.

Process for Assessing Reasonable Potential and Developing WQBELs

The PQR assessed the processes employed by permit writers and water quality modelers 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 WQS applicable to receiving waters, evaluated and characterized the effluent and receiving water including identifying pollutants of concern, determining critical conditions, incorporating information on ambient pollutant concentrations, assessing dilution considerations, determined if limits were necessary for pollutants of concern and, where necessary, calculated such limits or other permit conditions. For impaired waters with EPA-approved TMDLs, the PQR also assessed whether and how permit writers consulted and developed limits consistent with the assumptions of those TMDLs.

For POTWs, NDEQ assumes reasonable potential for criteria for ammonia, E. coli, WET, and pollutants limited in past permit cycles. For those pollutants, wasteload allocations are calculated and permit limits are derived using the methods in EPA's Technical Support Document for Water Quality-based Toxics Control (TSD). For all other pollutants (WQBELs

and industrial facilities), it is not clear how a Reasonable Potential Analysis (RPA) is conducted. The fact sheets reviewed state that RPAs had been conducted but lacked detail and clarity in the specifics of the RPA process (e.g., pollutant selection for evaluation). In reissued permits, RP is typically calculated on the basis of effluent limits in the current permit. Permit writers are familiar with permitted facilities. Unless processes or industrial users (e.g., pretreatment permits) have changed significantly, the permit writer will not propose additional pollutant-specific effluent limits. All permits and associated fact sheets reviewed lack a detailed discussion of pollutants of concern. The fact sheets include brief statements identifying potential pollutants in the discharge according to the activity, but they do not discuss data available from the permit application forms or other effluent characterization data. Reviewing pollutant scans required during the permit application process would be useful in identifying pollutants of concern to alert permit writers of changes in effluent quality.

NDEQ's RPA procedure follows that described in the TSD, as are its procedures for calculating WQBELs. A review of the permits, fact sheets, and permit files on-site indicated that WQBEL calculations followed the TSD procedures. However, after a review of the state's files, the procedure for conducting the RPA was not always clear. NDEQ lacks state guidance on how to conduct an RPA, but have assigned staff to begin to develop one.

The receiving waterbody and designated uses are carefully identified in the fact sheet. Impaired waters are identified in the fact sheet, and permit writers assess whether the pollutant or pollutants causing the impairment will be present in the discharge.

WQBELs tend to be data driven with calculations for seasonal low flows and data sets used to set seasonal background levels for ammonia.

Program Strengths

Reasonable Potential

All records reviewed contained documentation that considered all available data in identifying pollutants of concern for limit development. The records contained documentation on the decision if the discharge caused or contributed to an excursion and indicated that a reasonable potential analysis was conducted.

WQBEL Development

The records described the designated uses of the receiving stream and the fact sheet contained the 303(d) status of the stream segment. These designated uses and the 303(d) status were used to apply appropriate state water quality criteria. Standardized procedures were then used and develop WQBELs.

Areas for Improvement

Reasonable Potential

Although a reasonable potential analysis was documented in the fact sheet it is unclear how the analysis was conducted.

WQBEL Development

None Observed.

Action Items

Essential	•<u>Reasonable Potential</u> •The PQR team did not identify any essential action items for this PQR component. •<u>WQBEL Development</u> •The PQR team did not identify any essential action items for this PQR component.
Recommended	•<u>Reasonable Potential</u> •It is recommended that NDEQ develop a state policy document on how to conduct a RPA. This will assist permit writers in providing better documentation in the fact sheet and fulfill a need expressed by NDEQ permit writers. •<u>WQBEL Development</u> •The PQR team did not identify any recommended action items for this PQR component.

[Following an initial review of the PQR findings, the Department indicated that they conduct reasonable potential using a dedicated spreadsheet.

In addition, the Department indicated that they include the following statement as standard language in fact sheets to provide further clarification:

"Reasonable potential, in accordance with Title 119, Chapter 17, is the likelihood a pollutant could lead to an excursion above an applicable water quality standard. A reasonable potential calculation is applied to determine whether there is a reasonable potential for the effluent from the facility to cause an exceedance of in-stream criteria. If the results of this calculation indicate there is no reasonable potential to exceed in-stream criteria, report only monitoring may be included in the permit for that pollutant. If the results of this calculation indicate a reasonable potential to exceed in-stream criteria, a limit is included in the permit."]

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.

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.

NDEQ's antidegradation policy is contained in their Continuing Planning Process (CPP) which is implemented by the Planning Unit. The Planning Unit also reviews draft permits which are assumed to be written in accordance with the type of resource water of the receiving stream.

If calculated limits are higher than the old limits, NDEQ always places the older limits, or the most stringent limits, in the permit in accordance with the CWA.

NDEQ produces an Integrated Report that lists all stream segments and impairments. If the receiving stream is impaired or has a TMDL, the TMDL is implemented in the permit. If the specific pollutant contained in the TMDL pollutant is not limited in the permit, then monitoring is included in the permit. A majority of Nebraska's TMDLs are E. coli and are based on water quality criteria.

Program Strengths

The permits reviewed contain TBELs for CBOD, total suspended solids, and pH. Permits also include WQBELs for ammonia and fecal coliform, along with monitoring for total nitrogen and total phosphorus.

NDEQ's fact sheets contain documentation of limit development, calculations, information on dilution and mixing zones, background data for the receiving water, numeric WQBELs or BMP WQBELs for all pollutants that had a reasonable potential to cause or contribute to an excursion of applicable water quality standards. The final WQBELs contained both long and short-term effluent limits and were consistent with the justification and documentation

provided in the record. WQBELs contained units of measure and where a compliance schedule was required, it was consistent with the requirements of 40 CFR 122.47.

The State provides documentation in the fact sheet of the facility and treatment process of the facility. The waste streams and pollutants of concern are clearly identified. Permit writers include the consideration of stream impairments and applicable TMDLs.

Areas for Improvement

None Observed.

Action Items

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

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.

Nebraska uses EPA's TSD, Permit Writer's Manual, and state regulations to develop monitoring requirements. Monitoring frequency may be case-specific, compliance-based, or to maintain consistency with previous permits. The monitoring location is identified by the treatment process while the pollutant of concern identifies the sample type. This information is provided in Appendix A of the NPDES permit and can be found in Title 114 of the state regulations.

Pollutants of concern are listed in the permit in tables, narratives, or compliance schedules and receive reporting requirements. Additional reporting requirements are included in the permit if there are impacts to groundwater or land application to a non-POTW.

Program Strengths

In reviewing the fact sheets, Nebraska permits writers are providing justification and documentation for monitoring and reporting requirements. All fact sheets referenced 40 CFR Part 136 for sampling consistency and included WET monitoring and recordkeeping.

Areas for Improvement

None observed.

Action Items

The PQR team did not identify any 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.

Nebraska has a standard set of narrative conditions used for special conditions, compliance schedules, e-Reporting, land applications, BMPs, Operator Certification Requirements,

toxicity, groundwater monitoring plan approvals by the Groundwater Section, BOD removal and stormwater. Pretreatment permits include standard narrative conditions for BMPs, slug loads, and local limits. Permits include requirements for e-Reporting of Biosolids reports unless it's an industry, then a biosolid report is required. Nebraska uses boilerplate language for their standard conditions that was updated one year ago. The updated boilerplate language does not include e-Reporting.

Program Strengths

Based on the permits reviewed, Nebraska permits explain the relevance and purpose of special conditions; identify measurable milestones in compliance schedules; explain the necessity of special studies; and explain the need for additional monitoring requirements. In addition,

Areas for Improvement

Review of permit standard conditions revealed missing information in 24-hour reporting and the omission of the e-Reporting requirement. Under 24-hr reporting, NDEQ permits lack the following information: "For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (*e.g.,* manhole, combine sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather." and "**(9)** ***Identification of the initial recipient for NPDES electronic reporting data.*** The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in appendix A to 40 CFR part 127) to the appropriate initial recipient, as determined by EPA, and as defined in § 127.2(b) of this chapter. EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group [see § 127.2(c) of this chapter]. EPA will update and maintain this listing."

Action Items

Essential	•NDEQ should revise their standard conditions to include the complete information under 24-hour Reporting in accordance with 40 CFR 122.41 (l)(6) and e-Reporting.
Recommended	•The PQR team did not identify any recommended action items for this PQR component.

[Following an initial review of the PQR findings, the Department updated the standard conditions in Appendix A of the NPDES permit to meet the requirements of 40 CFR 122.41 (l)(6) as well as e-Reporting.]

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 Nebraska, and reviewed materials from the administrative process as they related to the core permit review.

NDEQ permit writers use the current permit as a template for drafting the reissued permit. A fact sheet is prepared for all permits and is drafted simultaneously. CWA Section 401 Certifications are conducted by the Planning Unit. Nebraska intends to revise the current regulations for certifications.

The public notice follows the drafting, review and informal review. It is placed in the local paper where the facility is located. The public notice, permit, and fact sheet are all available on ECM. The staff assistant receives comments, either in writing or electronically, which are addressed before the permit is issued. If an appeal is required, the Director assigns a Hearing Officer. The Hearing Officer is the official decision-maker during the appeal process.

Program Strengths

Based on the permit reviews, the ECM database stores all documents related to the permitted facility. The database houses EPA comments, as well as public comments and NDEQ's responses to those comments. Permit revisions and modifications with their justifications are documented in the database. NDEQ and EPA R7 successfully revised the NDEQ NPDES MOA on February 20, 2019.

Areas for Improvement

None observed.

Action Items

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

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 final permits. Authorized states are required to follow 40 CFR 123.25 and should have equally strong documentation. The record allows personnel from the permitting agency to reconstruct the justification for a given permit and defend the permit during any legal proceedings regarding the permit. The administrative record for a draft permit consists, at a minimum, of the permit application and supporting data, draft permit, fact sheet or statement of basis, all items cited in the statement of basis[4] or fact sheet, including calculations used to derive the permit limitations, meeting reports, correspondence with the applicant and regulatory personnel, all other items supporting the file 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.

NDEQ has written procedures outlining wasteload allocation, permit limit generation and NPDES permitting procedures. NPDES permits and fact sheets are generated using Microsoft Word. Formatting of the Word documents is shared among the permit writers.

NDEQ has implemented ECM, a document and file scanning/imaging system, to allow for easier accessibility of permit documents by permit staff, EPA, and the general public. NDEQ has always had well organized and maintained files. Files are complete and now electronic. Electronic files are organized by facility and the files for a facility may cover several programs (NPDES, RCRA, LUST, etc.). Each of those programs can have multiple components. For instance, NPDES could be broken down into discharge permits, construction storm water, MS4, etc.

NDEQ has switched completely to electronic record keeping. NDEQ used the index methodology from the historical records systems, but added other fields to further define the documents such as sender and recipient.

The new database is an IIS AS 400. Incoming paper documents are scanned on a table top scanner and the processing person enters a fairly lengthy list of indexing information. This detailed indexing is the key time investment in the filing procedure, and is essential to the organizational structure and routing of the files.

[4] 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.

The indexing is done through ECM software. The ECM software is an umbrella for all the programs that might keep records on a facility, and it has been used successfully in other branches of state government.

In the ECM system, no paper copies are produced and no paper records are kept. Incoming documents are scanned on table top scanners (or a large format scanner for maps, plans, or other large documents), indexed, and then routed by electronic means. For convenience, documents over 100 pages are scanned, but routed in hard copy form. Most documents are scanned in black and white, and colors scans (much slower and more data intensive) are only used when needed.

Scanned documents are not filed per se, but collected into boxes based on the date received and the processor. Boxes are stored, but not further indexed. NDEQ is working on a retention schedule for the boxed records.

Routing is built into the indexing, so a given employee gets a daily email listing the documents routed to them. This routing has been one of the difficult aspects of the system: if a manager is out of the office, information may not be forwarded, in the same way that a paper document can become delayed. Some employees have struggled with the email load.

A notable potential success is in the streamlined response to public requests for information. All responsive records are easily accessible electronically.

NDEQ has adjusted to the new system. One of the main difficulties has been covering the full breadth of subject matter that can be covered by correspondence. This can include information from those covered by general permits, individual correspondence, or records on a general subject such as storm water, general policy, etc.

NDEQ is operating the entire record keeping system with a manager, five full time employees, and two temporary employees.

1. Fact Sheet or Statement of Basis

Under 40 CFR 123.25 (a)(27) and (a)(32), 40 CFR 124.8 and 124.56, fact sheets are required for major NPDES permits, general permits, permits that incorporate a variance or warrant an explanation of certain conditions, and permits subject to widespread public interest. Current regulations require that fact sheets include:

- General facility information
    - Description of the facility or activity
    - Sketches or a detailed description of the discharge location
    - Type and quantity of waste/ pollutants discharged
- Summary rationale of permit conditions
    - Summary of the basis for draft permit conditions
    - References to the applicable statutory or regulatory provisions

    - References to the administrative record
- Detailed rationale of permit conditions
    - Explanation and calculations of effluent limitations and conditions
    - Specific explanations of:
        - Toxic pollutant limitations
        - Limitations on internal waste streams
        - Limitations on indicator pollutants
        - Case-by-case requirements
        - Decisions to regulate non-publicly owned treatment works under a separate permit
    - For EPA-issued permits, the requirements for any state certification
    - For permits with a sewage sludge land application plan, a description of how all required elements of the land application plan are addressed in the permit
    - Reasons why any requested variances do not appear justified, if applicable
- Administrative requirements
    - A description of the procedures for reaching a final decision on the draft permit, including:
        - Public comment period beginning and ending dates
        - Procedures for requesting a hearing
        - Other procedures for public participation
    - Name and telephone number of the person to contact for additional information.

The fact sheet and supporting documentation were reviewed with the administrative record of the permit file as part of the PQR to assess whether the basis or rationale for limitations and other permit decisions were documented in the development of the final permit. These documents were reviewed on ECM by the PQR team.

The fact sheets reviewed all contained the requirements of 40 CFR 124.8 and 124.56. ECM also houses all documents pertaining to the permitted facility such as DMR reports, correspondence, previous permit, comments to the draft permit and supporting documentation, etc. The public notice documentation met the requirements at 40 CFR 124.10. The permit record was complete.

Program Strengths

The creation of ECM has made electronic files accessible to EPA and the public. Files are readily available although require the state IIS facility number to gain access to facility data.

Areas for Improvement

None observed.

Action Items

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

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

A. Permit Controls for Nutrients in Non-TMDL Waters

Background

NDEQ has adopted numeric nutrient criteria for the Lakes of the State in Title 117, Chapter 4, Section 00305. The criteria are based on Chlorophyll a, Total Nitrogen (TN), and Total Phosphorus (TP) in the water column. The emphasis of the criteria is in Chlorophyll a: if levels of TN and TP are not exceeded, then the water quality standard is not violated. The Lakes criteria do not involve point source discharges, because state rules do not allow point source discharges to Lakes in Nebraska. There are some upstream discharges into the larger lakes of the state.

NDEQ does not have numeric nutrient criteria for flowing water. "Free from" narrative criteria apply in all Waters of the State. NDEQ does not conduct a Reasonable Potential analysis for narrative criteria to assess nutrient impacts from Nitrogen and Phosphorus. NDEQ does not use numeric translators to set nutrient limits in permits. The permits reviewed by EPA contain monitoring for TN and TP.

Like most Mid-Western agricultural states, Nebraska has streams that are listed on the 303(d) list as impaired by nutrients. The TMDL program is working on TMDLs for individual watersheds, and most of these streams are dominated by non-point sources of nutrients.

Nebraska is unique nationally by having many meat processors as industrial users of POTWs. While the permits meet applicable technology and numeric water quality-based standards for ammonia as a toxin, the amounts of TN and TP discharged are large compared to cities with only domestic sources of wastewater. Permit reviews showed a large range of discharge levels of TN and TP between similar POTWs with the meat industry as significant industrial users.

EPA found several permits where treated wastewater is being stored in lagoons and then applied to land through center pivot irrigation. Application is limited at agronomic rates for nitrogen. This provides for beneficial use of water and nutrients and prevents discharge to waterways. Permit fact sheets contained information on the land base used with field by field mapping of the land application sites. All application sites must be approved by NDEQ. To assess how nutrients are addressed in the Nebraska NPDES

program the PQT team reviewed 7 permits. None of these discharges are to impaired or vulnerable Waters of the State.

Facility H[5], Industrial

The Facility H is a complex slaughterhouse and is categorized as an NPDES major. Permit limits for ammonia are based on the combination of ELG-based TBELS and WQBELs with Monthly Averages of 4 mg/L or less based on seasonal calculations.

Nitrate limits for the facility are based on the Meat and Poultry Products ELGs, 40 CFR Part 432, (134 mg/L Monthly Average TN and 194 mg/L Daily Maximum TN), but the permit includes a compliance schedule for Outfall 001 to meet 10 mg/L nitrate, a limit based on water quality criteria to protect groundwater near the current discharge location. As a result, Facility H will be moving the discharge location to Outfall 004 on the nearby Platte River. Outfall 004 permit limits for ammonia are similar to the Outfall 001 limits, and nitrate limits are based on the ELGs at 40 CFR Part 432.

A significant portion of the treated water from the facility is being stored in a lagoon and is land applied at an agronomic rate for nitrogen. This discharge point is regulated as Outfall 003. The fact sheet provides information on the land base for the practice with field by field mapping.

Facility C, POTW

Facility C is a major POTW, serving a population of 48,000 people, with a design flow of 13.1 MGD. Facility C has large industrial users including a beef packing facility contributing 2.47 MGD of flow and a prepared food company contributing 0.175 MGD.

The Facility C permit includes WQBELs for ammonia, and weekly monitoring of TN and TP. Review of data revealed ammonia at levels nearing the detection limit. Nutrients data showed TN at about 15 mg/L and TP greater than 10 mg/L.

While not yet in the permit cycle, there are significant changes on the way. The beef packer is constructing a treatment plant and intends to become a direct discharger instead of an industrial user. The discharge levels of ammonia would remain low, but TN discharged would be limited by the Meat and Poultry Products ELGs at 163 mg/L Monthly Average and 194 mg/L Daily Maximum. This change in discharge configuration and resulting permitting option could allow an increase nitrogen loading by over a ton each day and must be considered in the NDEQ anti-degradation analysis.

Facility G, POTW

Facility G is a minor POTW serving a population of 2,900, with a design flow of 0.5 MGD. The city has a large industrial user, an egg processor, providing about 0.119 MGD of flow.

[5] This summary report uses generic facility identifiers to discuss specific findings.

The Facility G permit establishes WQBELs for ammonia and monthly monitoring of TN and TP. Review of data indicated ammonia at levels nearing the lower detection limit on occasion. Review of data revealed ammonia at levels about 1 mg/L, but with significant periods of non-compliance with permit limits. Nutrients data showed TN at less than 10 mg/L and TP at about 2 mg/L.

A portion of the treated wastewater is used to water a golf course.

Facility L, POTW

Facility L is a major facility serving a population of 1,800 with an average flow of 1.33 MGD. The city has two large industrial users including a beef packer providing about 1.086 MGD flow and a turkey processing facility with much smaller flows.

The Facility L permit has WQBELs for ammonia, and monthly monitoring of TN and TP. Review of data indicated ammonia at levels nearing the detection limit. Review of data showed ammonia at levels about 1 mg/L. Nutrients data showed TN at about 125 mg/L and TP at about 15 mg/L.

Land Application Facilities

EPA found several permits for facilities with land application of treated wastewater. These included two meat packers with land application of all process water, a meat packer with partial land application, and a POTW with partial land application.

Program Strengths

NDEQ is fully and accurately including TBELs and WQBELs in permits following numeric criteria. Permits consistently include monitoring for TN and TP. NDEQ is encouraging land application of wastewater as fertilizer, preventing discharge of nutrients to water.

Areas for Improvement

NDEQ should consider how to implement state narrative standards for nutrients to achieve full water quality protection of state waters. NDEQ should develop methodologies for conducting Reasonable Potential Analysis for nutrient discharges.

In Nebraska, meat processing facilities exist as indirect dischargers (industrial users) and as direct dischargers. TN and TP discharge values from POTWs with large industrial users indicate that nutrient capture is quite different between different facilities. Facility optimization or retrofitting for denitrification and phosphorus capture could greatly reduce the point source discharge of nutrients to state waters.

The adjoining states of Kansas and Iowa have developed nutrient strategies to reduce the point source contributions of large dischargers of nitrogen and phosphorus. The Kansas plan has annual average goals of 8 mg/L TN and 1.5 mg/L TP. Iowa has set goals at 10 mg/L TN and 1 mg/L TP. Both states have used a technology-based treatment approach

and achieved progress in a gradual, phased manner. This has resulted in significant reductions in nutrients discharged. Using newer Biological Nutrient Removal process retrofits has made these upgrades affordable and energy efficient.

Action Items

Essential	•40 CFR 122.44(d)(vii)(A) requires NPDES permits include limits that derive from and comply with all applicable water quality standards. NDEQ should consider how to implement narrative standards for nutrients for water quality protection.
Recommended	•It is recommended that NDEQ consider methods to improve their nutrient reduction program such as encouraging facilities to optimize or retrofit for denitrification and phosphorus capture.

[Following an initial review of the PQR findings, the Department indicated that NPDES permits issued in the State of Nebraska meet the requirements of 40 CFR 122.44(d)(vii)(A) without a narrative standard applicable to nutrients. POTWs and facilities with secondary treatment currently monitor for total nitrogen and total phosphorus. These discharges are prohibited under Title 117 from discharging to lakes and reservoirs where existing nutrient criteria apply.

The Department currently encourages facilities upgrading or replacing treatment to consider nutrient removal capability as part of the process or as future capability.]

B. Effectiveness of POTW NPDES Permits with Food Processor Contributions

Background

For this round of the PQR evaluation, the focus for Pretreatment was on indirect discharging food processing industries. In recent years, and on a national level, the deleterious effects indirect dischargers of compatible wastes can have on POTWs has been gaining attention. This can be particularly pronounced when the domestic wastewater sources' discharge volume to the receiving POTW is relatively small compared to the food processor's discharge. In instances where the food processor is greater than 50% of the average daily flow or load into the plant, the characteristics of that single source dominate the ability of the POTW to achieve and maintain compliance.

Four food processors were chosen for evaluation and all four are dominant contributors, as a percentage of load, to their receiving POTWs. The evaluation included review of the food processors' Nebraska Pretreatment Program (NPP) permits and fact sheets, the NPDES permits and fact sheets of the receiving POTWs, and inspection reports and other documentation for both the food processors and their receiving POTWs. Following is a description of each facility, an evaluation of the NPP permit's contents and the method for permit limit derivation, which determines the ability of the permit to control interference and pass through at the receiving POTW.

Facility R, Industrial User

Industrial User R (IU-R) is an egg processing facility that discharges to the NPDES minor municipal plant that consists of a 2-cell Sequencing Batch Reactor (SBR) followed by a 5-cell controlled discharge lagoon system. The City is capable of discharging directly following the SBR or by using the SBR as a pretreatment operation to the lagoon system. IU-R's permit went into effect in 2013 and expired in 2018. During the period, the permit was modified twice for administrative reasons.

The fact sheet supporting IU-R's 2013 permit identifies two outfalls discharging to the City. The previous permit did not contain any limits for BOD, TSS, or any nutrients; the 2013 permit established limits for BOD and TSS based on the City's plant capacity. The fact sheet presented how the limits were derived: an allowance was made on a lbs/day per capita basis for the known population, a 12 percent population expansion factor applied, and the remainder allocated to IU-R as the total that could be discharged on any given day from both IU-R outfalls added together. The result of this calculation stated that IU-R could discharge 2781 kg/d BOD and 609 kg/d TSS. Neither the fact sheet for IU-R, the fact sheet for the City, nor the permit application for the City shows the City's plant capacity for BOD and TSS. Consequently, it is impossible to verify if the permit limits were calculated correctly. Moreover, the population allowances were discussed in terms of lbs/day while the derived limits for IU-R were stated in kilograms per day. Without the plant capacity identified, it was impossible to know if the proper conversion from pounds to kilograms was employed. While NDEQ's approach for determining the available plant capacity was correct, the fact sheet lacked sufficient information to verify whether the limits were calculated correctly.

An NDEQ inspection report of the City conducted in 2015 shows that the city's plant capacity for BOD as 3,400 lbs/day. Observations made during the inspection were that the SBR system appeared to be overloaded "with a thick floating foamy sludge," the SBRs appeared to have Nocardia Bacterium needing chlorination, and that the City had been having recent permit violations. All the symptoms described in the 2015 inspection are consistent with wastewater treatment plant organic overload from a food processing facility. At the time, IU-R was in compliance with its permit limit of 2,781 kg/d, which converts to 6,118 lbs/day, 80 percent greater than the city's rated capacity of 3,400 lbs/day. The likely reason for the city's problems was IU-R. The EPA Region 7 inspected both IU-R and the City in 2016 and found IU-R to be causing interference and pass through even though they were in compliance with their (erroneously calculated) permit limits. In January 2017, NDEQ modified IU-R's permit to correct the mass units from kilograms per day to pounds per day. ECHO, however, still shows their limit to be in kilograms per day, which inaccurately portrays them to be mostly in compliance.

IU-R discharges upwards of 80 percent of the City's BOD loading. It is also the source of the majority of both TSS and nitrogenous material. The sampling frequency for IU-R is monthly, which matches the sampling frequency for the City's effluent. The influent sampling frequency for the City is annually for BOD and TSS. Average percent removal for BOD and

TSS (per 40 CFR 133.102(a)(3) and (b)(3)) is not properly calculated with the effluent dataset monthly and the influent dataset annually. There is no influent sampling requirement for TKN or any other form of nitrogen. For a city whose influent load is dominated by an industrial source, these frequencies are inadequate for characterizing both the industry's discharge and the receiving POTW plant performance and compliance.

Facility S, Industrial User

Industrial User S (IU-S) discharges to an NPDES minor POTW with a population of roughly 1,800 people. IU-S's discharge is roughly 90 percent of the City's design capacity for BOD. As such, the City's ability to achieve and maintain compliance is dependent on IU-S meeting permit limits based on the City's ability to treat their waste.

IU-S's current permit was issued in 2014 and expires in 2019. It regulates three outfalls, one of which is a stormwater outfall subject to NPDES requirements, and two that discharge to the City and are subject to the Pretreatment program. This analysis covers only the limits subject to Pretreatment requirements.

The IU-S fact sheet from October 2014 clearly states that the BOD, TSS, TKN, and Oil & Grease limits are based on the City's plant capacity, all of which are identified. A table is presented that shows the derivation of limits for the pollutants and the amount remaining for allocation to IU-S once domestic loading and other known sources are subtracted from the design capacity. This is the correct way to determine the Maximum Allowable Industrial Load (MAIL) and with the table present in the fact sheet, the calculations could be confirmed. NDEQ should apply this approach for developing limits for food processing dischargers in other cities.

Both the permit for the City and IU-S require weekly sampling for BOD, TSS, and ammonia. In addition, IU-S is required to sample weekly its two Pretreatment outfalls for TKN and O&G.

Facility T, Industrial User

Industrial User T (IU-T), a poultry slaughtering operation, discharges roughly 0.650 MGD (2018 IU fact sheet) into the City's activated sludge plant whose average discharge is 0.758 MGD. In addition, IU-T discharges on average 3,098 lbs/day BOD (according to the 2018 IU fact sheet); the city average influent is calculated to be 4,630 lbs/day BOD (ECHO influent data 2017 and 2018. Assumes CBOD is 80 percent of BOD). Consequently, IU-T constitutes roughly 86% of the influent flow and 67 percent of BOD loading. The City POTW is dominated by the effluent from IU-T.

The 2013 fact sheet for IU-T describes how the permit limits for BOD were derived: the upgraded plant "with a design BOD treatment capacity of 6,432 lbs/day assigned to an industrial user which is IU-T". In addition, the fact sheet states that the limits are to restrict the IU-T discharge to the "City to less than design loadings." The language in the 2018 fact sheet is identical. However, neither fact sheet identifies the BOD design capacity for the

POTW. In addition, the City's plant capacity is not identified in the City's permit fact sheet or permit application. Hence, it is impossible to evaluate whether the limits for IU-T are calculated correctly. (Language for the TSS limits is similar). IU-T's discharge is not limited for ammonia or TKN.

The City's permit regulates three pollutants that are also found in large quantities in IU-T's discharge: CBOD, TSS, and ammonia. The City's 2017 permit had its allowable ammonia discharges reduced for two of the three seasonal periods. Recent values in ECHO indicate the City to be in significant noncompliance for ammonia violations. Because there is no discussion in the City's fact sheet of the plant's ammonia (or TKN) treatment capacity, it can't be determined if the City is being overloaded.

Sampling frequencies for the City are biweekly for CBOD, TSS, and NH_3. For IU-T, BOD, TSS, and NH_3 are sampled monthly (as is TKN and O&G). The City samples its influent semiannually for CBOD and TSS. Average percent removal for CBOD and TSS (40 CFR 133.102(a)(3) and (b)(3)) is not properly calculated with the effluent dataset biweekly and the influent dataset semi-annually.

Facility W, Industrial User

Industrial User W (IU-W) processes and packages chickens slaughtered at its Nebraska facility. IU-W's current permit became effective in October 2013 and will expire in 2018. The only pollutant for which numerical limits are established is Oil & Grease. The most recent data for IU-W shows they discharge on average roughly 325 lbs BOD per day. The City received, based on 2016 and 2017 influent sample results, an average of 658 lbs/day BOD (assumes CBOD is 80 percent of BOD). Consequently, IU-W discharges roughly 49 percent of the City's BOD load.

The IU-W fact sheet does not discuss determining permit limitations based on the City's plant capacity. Rather it makes the following statement: "Limits for BOD were not included in the permit at this time because there is insufficient long-term data from the discharge from IU-W." The fact that little data exists for the IU-W discharge is irrelevant to whether limits are needed. The only time numeric limits are not needed is if IU-W is an insignificant source of BOD loading. The City's plant capacity should have been stated, the domestic (uncontrollable) level subtracted from it along with any other known sources, and the remaining mass used to determine permit limits for BOD, as was done for IU-S (discussed above). If anything, a lack of knowledge of what's being discharged from IU-W warrants having a discharge limit, not relief from one.

The fact sheet treated TSS in the same manner as BOD.

When discussing why a limit was not set for BOD (and TSS), the fact sheet further states that the next permit or this permit may be reopened if the "monitoring data shows that the wastewater from IU-W is contributing to operational problems at the wastewater treatment facility." This would seem to speak to setting a reasonably informative sampling frequency to collect the data that is admittedly insufficient; however, the frequency was

only one composite sample per month. (Various forms on nitrogen are sampled quarterly). In addition, the City's effluent sampling is monthly (CBOD, TSS, total nitrogen, total phosphorus, and ammonia) while its influent sampling is annually (CBOD, TSS). These are insufficient sampling frequencies for characterizing the load discharged by IU-W and for identifying the effect had on the City's POTW. In addition, average percent removal for CBOD and TSS (per 40 CFR 133.102(a)(3) and (b)(3)) is not properly calculated with the effluent dataset monthly and the influent dataset annually.

The three recent inspection reports for the City have noted foaming caused by filamentous bacteria. This is consistent with heavy oil and grease loads from a food processing industry. Given the sampling frequency for O&G for IU-W is monthly and because O&G must be measured by grab sample, the City is afforded a very limited understanding of IU-W's O&G loading. Further, the City's permit does not require influent sampling for O&G.

The NDEQ inspection of IU-W from 2017 contained a table of 10 unanticipated bypasses that occurred in the seven months between November 2016 and June 2017. These discharges would all consist of high strength untreated wastewater that has the potential of causing operational upset and/or overload of the receiving POTW's wastewater treatment plant. None of the bypasses were sampled to determine the load discharged to the City, and only one of the bypasses occurred close to the time the City was performing its monthly effluent sampling. That month the City violated its monthly average ammonia limit. The industry's permit at Part II, Paragraph I, requires immediate notification to the City of all discharges that could cause problems to the POTW. The industry fulfills this obligation by telephoning the City during bypass events. However, the standard conditions of IU-W's permit do not require sampling during bypass events, nor does the City's NPDES permit require sampling at the City's plant when an upset is reported.

Program Strengths

For all four paired City/industries reviewed, both the permit for the City receiving the industrial discharge and the permit for the industry both had fact sheets on file. All industrial fact sheets recognized the need for the SIU permit to be based on the receiving POTW's plant capacity.

All permits are well organized and presented. Permit limits and sampling requirements are contained in tables that are clear and unequivocal.

The State's files, which are accessible on-line, contain all of the draft documents supporting permit development and issuance. Final issued permits and any permit modifications are also readily available.

Areas for Improvement

NDEQ has a policy based on discharge flow volume that establishes the effluent sampling frequency for POTWs. In the case of two of the four cities reviewed, the effluent sampling was set at monthly; for a third, it was set at biweekly. While these may be adequate frequencies for a well-run small plant receiving only domestic wastewater, for a POTW receiving high-strength waste from an industry whose flow dominates the system, they

appear to be inadequate for proper characterization of plant performance. NDEQ should consider increasing these monitoring frequencies to weekly, at a minimum. In addition, the industrial sources, the discharges of which are far more variable than the aggregate of domestic sources, should also be sampling at an increased frequency, preferably weekly at a minimum.

The limits for BOD, TSS, and NH_3 (or TKN) for food processors must be based on the available treatment capacity of the receiving POTW. Of the four industries reviewed, the correct approach was applied in three, but only one provided the information needed to verify that the limits were calculated properly. The other three did not provide plant design values although the fact sheets referred to them. The design values for all pollutants should always appear in the fact sheets, if known.

One industry had a history of discharges bypassing its treatment system. The permit's Standard Conditions state: "The permittee may allow any bypass to occur which does not cause effluent limits to be exceeded, but only if it is for essential maintenance to assure efficient operation." The only way to know if this type of bypass does not cause effluent limits to be exceeded would be for samples to be taken during the bypass. Yet the provision does not state that sampling should occur. In addition, for unanticipated bypasses, there is no requirement for the bypass to be sampled. To understand the loading placed on the receiving POTW, it is recommended that a requirement be established that all bypasses be sampled, and the results reported. In addition, to get an understanding of the effect on the receiving POTW, it is recommended that the POTW's permit requires both influent and effluent sampling during the industrial user's bypass events.

Action Items

Essential	•NDEQ's Standard Condition for Bypasses should be revised to include language consistent with the federal regulations at 40 CFR 122.41(l)(6) and 122.41(m).
Recommended	•It is recommended that Cities and SIU should sample at least weekly. •Fact sheets for the SIU should state the City's design capacity and how the SIU limits were derived.

[Following an initial review of the PQR findings, the Department indicated they disagree with the recommendation to monitor a bypass as an outfall. The bypasses described in the review are prohibited outright in Title 119. The recommendation above assumes a bypass meets the definition of one not exceeding the limitations exception but ignores the provision that it is essential maintenance to assure efficient operation. The burden of proof is on the permittee to show this exception is being met, not the State. Requiring sampling would legitimize the bypass as an outfall, negating the operation and maintenance requirements of Titles 119 and 123.

The Department has updated the standard conditions in Appendix A of the NPDES permit to meet the requirements of 40 CFR 122.41 (l)(6) and (m).]

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

Background

The Clean Water Act specifies that certain kinds of stormwater discharges be regulated; NPDES regulations require permitting for stormwater discharges from construction sites over one acre, as well as certain industrial activities and municipal separate storm sewer systems (MS4s). Any state which is authorized to implement the NPDES program also has responsibility for implementing the stormwater regulatory program.

NDEQ is implementing all aspects of the federally mandated stormwater program. Most stormwater discharges in Nebraska are permitted through general permits which are issued out the NDEQ central office. Each general permit was reviewed and is discussed below. In addition, an EPA permit checklist was filled out for each general permit. Instructions and forms for coverage under the general permits are on NDEQ websites to assist the regulated community.

Industrial General Stormwater

Most all industrial stormwater discharges are covered by NDEQ's general permit for industrial stormwater discharges NER910000, issued in 2016. The general permit is based on EPA's Multi-Sector General Permit (MSGP) issued in 2008, and as such it meets all the requirements of the federal NPDES regulations. While there have been no substantive changes to the federal industrial stormwater regulations since 2008, EPA believes that the EPA-issued MSGP of 2015 represents an improvement over its 2008 MSGP and would encourage NDEQ to base its next general industrial stormwater permit (presumably issued in 2021) on EPA's 2015 MSGP, unless EPA issues a revised permit in 2020, in which case the 2020 EPA permit should be used.

Some industrial facilities have federal ELGs that apply to their stormwater, and some ELGs require that the facilities obtain an individual permit for their stormwater rather than allowing for coverage under a general permit. Table 1-1 of the NDEQ general permit lists those types of facilities for which individual industrial stormwater permits are required. Other stormwater discharges may be required to get individual permits, at NDEQ's discretion, because of water quality concerns or individual facility complexities. Also, permittees can request to be covered by an individual permit rather than seeking coverage under a general permit.

In one of the permits reviewed, the facility has pollutants from current and historical operations which can become entrained in the facility's stormwater. A review of the permit revealed TSD-derived WQBELs for several metals and other pollutants of concern as well as monitoring requirements for stormwater that is land applied. The permit required the development of a rigorous Stormwater Pollution Prevention Plan (SWPPP) as well. The

permit meets all federal requirements for an NPDES permit. NDEQ is commended for applying TDS effluent limit procedures to this facility.

Construction Stormwater Permit (CSP)
There are currently about 1,300 construction sites covered by NER160000, which was issued Sep 30, 2016. NOI forms for coverage under the general construction stormwater permit are required to be submitted to the central office before construction begins. Permittees are required to be implementing a SWPPP at the time construction begins. The general permit does not require the permittee to submit the SWPPP unless the department requests it. At the conclusion of the construction project a Notice of Termination (NOT) is required to be submitted to NDEQ.

NER160000 appears to use EPA's 2003 Construction General Permit as a base template, but modifications of this template have been made each time the permit has been reissued. The permit includes the new federal construction stormwater ELG requirements which brings it up to date with current federal regulations. EPA believes that the EPA-issued CGP of 2017 represents an improvement over its 2003 CGP and would encourage NDEQ to consider using EPA's 2017 CGP as a base template when the CGP is reissued.

General Small MS4 permits
As part of this PQR, EPA reviewed the State's two small MS4 general permits 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)).

NDEQ issues two general MS4 permits, one to cover the regulated MS4s in Douglas and Sarpy Counties, and the other one which covers the rest of the regulated MS4s in the State. The reason for the issuance of two general permits instead of one is based in historical geographical permitting decisions—the two permits are virtually identical. The permits were issued in 2017 and represent significant improvements over the permits they replaced, especially in the post-construction provisions. NDEQ will be required to comply with the updated requirements of the Phase II stormwater permitting regulations at 40 CFR 122.28(d) and 122.34 during reissuance of these permits. EPA Region 7 will work with the State to provide technical assistance and guidance on suggested ways to modify the permit to comply with these requirements, for instance by including additional "clear, specific, and measurable" permit requirements. NDEQ should also consult EPA's series of MS4 permit compendia, which include examples from EPA and state permits of provisions exhibiting clear, specific, and measurable requirements. The compendia may be found at https://www.epa.gov/npdes/municipal-sources-resources.

Program Strengths

Overall the NDEQ stormwater program appears to function well, maintaining current permits to cover all activities needing permit coverage. Those permits meet all the requirements of the federal Clean Water Act and associated regulations and are based on EPA-issued permits which have received input from many stakeholders. The post-construction requirements of general MS4 permits promote the latest in stormwater control methods including green infrastructure.

Areas for Improvement

While NDEQ has used EPA-issued permits as templates, it should consider using the most recent EPA issued general permits as templates. The latest issues have benefitted from input from stakeholders on a national scale.

Action Items

Essential	• The PQR team did not identify any essential action items for this PQR component.
Recommended	• When general stormwater permits are due for reissuance, consider using the most recently issued EPA general permit as a template.

[Following an initial review of the PQR findings, the Department indicated they do use EPA general permits as guidance; however, using those as a direct template is problematic. The EPA permits are issued with considerations to areas not applicable to Nebraska, such as marine and estuary discharges. In addition, nationwide stakeholder involvement does not necessarily represent conditions applicable to Nebraska.]

V. REGIONAL TOPIC AREA FINDINGS

A. Confined Animal Feeding Operations

The Agriculture Section provides oversight and direction of the Livestock Waste Management Act, which includes the NPDES program for CAFOs along with inspections for all aspects of construction and operation, application reviews, and state and federal permit issuance. The Agriculture Section is divided into two units; an engineering services unit (four FTEs) and compliance and permits unit (seven FTEs). There are five field offices that handle CAFOs, staffed with two FTEs and four that are essentially half-time.

As of August 15, 2018, 1,186 CAFO facilities were defined as CAFOs with 398 open-lot facilities covered under a General NPDES permit and 41 covered under individual permits.

With a few exceptions, NDEQ does not require NPDES permits for confinement facilities. All operations utilizing livestock waste control facilities are required to have a state construction and operating permit.

Since EPA reviews all four draft General Permits prior to issuance, EPA chose to review three individual CAFO permits to determine if the facilities and their recently submitted NMPs complied with the applicable requirements of 40 CFR 122 and 412.

CAFO X is a CAFO that is permitted for 4,000 beef. It has one large debris basin and a vegetative treatment area. The annual reports do not report any application of solid manure as required by 122.42(e)(4)(viii), nor are any analytical results of solid manure included in the reports even though approximately 15,000 tons of solids were generated each year. Follow-up with NDEQ indicated the solid manure was sampled, but the results not submitted. Wastewater analytical results and application records are included in the annual reports.

CAFO Y is a 30,000 cattle feedlot that has four holding ponds and 19 debris basins. No discrepancies were noted.

CAFO Z a CAFO that is permitted for 3,000 beef and 600 swine. The 2012 NMP included manure application calculations for both cattle and swine. In 2013, due to a change in swine capacity, NDEQ requested that CAFO Z recalculate the swine slurry application rate. These calculations were submitted in Addendum No. 1 to the NMP and indicated that 18 loads at 5,000 gallons/load would be applied per year. The subsequent annual reports (from 2013 to 2017) never reported any swine manure application or annual sampling. Swine head numbers were only reported on the 2016 annual report. It is not apparent whether there was swine at the facility between 2013 and 2017 (except 2016).

In the 2017 Annual Report, one of the soil samples detected 361 ppm P. This field was rated as high risk for P runoff (P-index). Although this field is high risk, the Nebraska P-Index allows application of manure on a site rated “high” if the total amount of P applied does not exceed the amount of harvested P biomass in a crop rotation not to exceed 5 years. The P2O5 levels in the lagoon effluent analysis came back at less than .01% and were negligible in the budget that was used.

Program Strengths

To review all the NMPs and other required information, NDEQ divided their open-lot CAFO facilities into four General NPDES Permits. There are approximately 80 to 95 facilities that apply to be covered under one of the General Permits per year (approximately 421 permits total). The year they must apply depends on their state ID number. Since separating the facilities, permit applications and NMP are now submitted in a timelier fashion. This also helps consultants, as there are a limited number that can write or revise NMP’s. NDEQ has also made significant progress in dealing with NMP deficiencies discussed in the 2012 NDEQ program review.

Areas for Improvement

While the NMP consists of projected land applications, the Annual Report is a record of the actual manure/wastewater land applications for a given year. NDEQ needs to check to ensure they are filled out completely and that the manure generated balances with the manure transferred/land applied or just stockpiled.

Action Items

Essential	• The PQR team did not identify any essential action items for this PQR component.
Recommended	• It is recommended that NDEQ review submitted Annual Reports to ensure they accurately report manure generated balances with manure transferred, land applied or stockpiled.

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 April 16–19, 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
Monitoring	NE-10-6 - Revise the Nebraska's Pretreatment Program permit (NPP) application to ensure it meets the requirements of the baseline monitoring report. See response above in Part 2. *Permit Application Requirements*	**(In progress)** Historical status: NDEQ revised the regulations to remove the NPDES permit applications from their regulations. This was effective July 2, 2018. Current situation: NDEQ has plans to revise the NPDES permit applications to include baseline monitoring. Next Step: Develop draft language to revise the NPP permit application; Language, along with numerous regulation changes to be presented to the EQC in November 2018.
Pretreatment	653 – An area of concern is the lack of local limits analysis for MOU Cities. The state has committed to work with Region 7 to evaluate for local limits for these Cities., but outside a few Cities that have conventional pollutant limits based on plant capacity, metals local limits have not been addressed. For the most part, initial data collection for metals has not yet been implemented. The Department has current pretreatment permits that limit	**(In progress)** Historical status: NDEQ is collecting information from MOU Cities to determine what data is currently available and can be utilized before field sampling is planned. Some communities have conventional pollutants limited for those SIUs based on POTW plant design. Influent metal sampling will be the data least likely to be readily available. Next step: NDEQ will get the data to Paul Marshall to provide technical assistance and conduct a preliminary assessment.

Program Area	Action Item Title	Status Update
	different pollutants based on local ordinance and POTW design.	
Applications	NDEQ should ensure that all NPDES permit application forms contain all federal requirements stated in 40 CFR Part 122. See response above in Part 2. Permit Application Requirements	**(In progress)** Historical status: NDEQ revised the regulations to remove the NPDES permit applications from their regulations. This was effective July 2, 2018. Current situation: NDEQ has plans to revise the NPDES permit applications to include federal requirements. Next step: Develop draft language to revise the NPDES permit applications; Language, along with numerous regulation changes to be presented to the EQC in November 2018.
	MOA Revision	**(Resolved)** Historical status: EPA provided a draft for review in 2012; NDEQ responded with a draft in 2014; EPA provide a recent draft consistent with approved guidelines in 2016. Signed by both agencies on February 20, 2019.

VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

This section provides a summary of the recommendations from the last PQR, conducted April 16–19, 2012, and notes any State efforts to act on those recommendations. 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.

Table 2. Recommended Action Items Identified During 2012 PQR

Program Area	Action Item Title	Status
Technology-Based Effluent Limitations	Include section 316(b) cooling water intake structure permit conditions and a determination of BAT for existing facilities on a BPJ basis. The basis for the determination of BAT should be documented in the fact sheet. The Final 316(b) rule will be published by July 25, 2013. Until that time BPJ should be used to determine BAT. (Category 2) – Milestone: Complete. NDEQ does use Best Professional Judgement (BPJ) currently and will wait until EPA actually implements the final rule before we make any changes. No further action required until EPA releases the federal rule. EPA will re-evaluate this action at that time.	(Resolved)
	Permits do not include mass limits for BOD and TSS. This is not required by the regulations, but EPA encourages use of both mass and concentration limits in permits. (Category 3). – Complete; NDEQ does use mass and concentration limits in their permits. EPA is satisfied that NDEQ's action has addressed the underlying finding and considers this action is complete.	(Resolved)
Water Quality-Based Effluent Limitations	Include ambient monitoring to assess overall nutrient-related effects on receiving waterbody quality. (Category 3)- EPA is satisfied that NDEQ's action has addressed the underlying finding and considers this action is complete.	(Resolved)
	Ensure that adequate documentation is provided in the fact sheet when a limit that implements an ELG is included. (Category 3)- NDEQ will work to ensure that permits consistently implement this language (Appendix F, PQR-C4). EPA will re-evaluate for evidence of consistent implementation in 6 months	(Resolved)
	Ensure that permits include the requirement to monitor more frequently than annually, to capture toxicity, consistent with the free from toxics WQS. (Category 3) – EPA is satisfied that NDEQ's action has addressed the underlying finding and considers this action is complete.	(Resolved)

Program Area	Action Item Title	Status
	It would be helpful to Nebraska constituents and for efficient exchange of information between the EPA and state if NDEQ permits were accessible online. (Category 3)- Complete; NDEQ's website has a location with the last two years of information available and future information will be available as well. EPA is satisfied that NDEQ's action has addressed the underlying finding and considers this action complete.	**(**Resolved**)**
Administrative Process	Improve the approach to identifying pollutants of concern and ensure the evaluation of reasonable potential is current to the facility's operations and discharge. Provide a through discussion in the fact sheets and supporting documentation. (Category2) – NDEQ is requesting pollutants of concern be sampled and submitted with the applications. We have strengthened our reasonable potential analysis discussions. EPA will re-evaluate for evidence of consistent implementation in 6 months.	**(**Resolved**)**
	Nebraska has done an exceptional job in implementing the Pesticide General Permit. It has collaborated with other states agencies in providing outreach and garnered assistance from other state agencies to control pesticide discharges to waters of the state. Nebraska should consider implementing an electronic NOI system for the Pesticide General Permit and other general permit NOI tracking. (Category 3)	**(**Resolved**)**

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 Nebraska's 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 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 3 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 4 below.

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

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

Topic	Action(s)
Permit Application Requirements	Revise NPDES applications to include requirements at: • Industry - 122.21 (g)(7)(iii); Appendix A & D to Part 122 • Dischargers of Non-process wastewater - 122.21(h)(4)(i) through (k) • CAFOs - 122.21(i) • POTWs - Part 122.21 (j); Appendix J to 122 • New sources and new dischargers - 122.21(k)(5)(i) through (iii); Appendix D to Part122 • Facilities with Sewer sludge management - 122.21(q)(7)(ii) through (iv)(A)(B)(C) (NDEQ has included this to help facilities be aware of federal requirements.) • Cooling water intake structures - 122.21(r)
Standard and Special Conditions	Update standard conditions to include complete language of 24-hr Reporting 40 CFR 122.41 (l)(6), Bypasses at 40 CFR 122.41(m), and e-Reporting requirement at 40 CFR 127.
Nutrients	NDEQ should consider how to implement narrative standards for nutrients for water quality protection.
Pretreatment: Food Processing Sector	NDEQ's Standard Condition for Bypasses should be revised to include language consistent with the federal regulations at 40 CFR 122.41(l)(6) and 122.41(m).

Table 4. Recommended Action Items from FY 2018-2022 PQR Cycle

Topic	Action(s)
Permit Application Requirements	• Submit last pollutant scan with the application. • Ensure each facility is submitting the correct number of scans.
Reasonable Potential	Develop a policy for conducting a Reasonable Potential Analysis.
Documentation of Effluent Limitations Development	The fact sheet should state how SIU limits are derived.

Establishing Monitoring and Reporting Requirements	
Nutrients	NDEQ should consider methods to improve their nutrient reduction program such as encouraging facilities to optimize or retrofit for denitrification and phosphorus capture.
Pretreatment: Food Processing Sector	• Cities and SIUs should sample at least monthly. • Fact sheets should include a city's design capacity.
Municipal Separate Storm Sewer Systems (MS4s)	Use EPA's most recently issued permit as a template for reissuances.
CAFOs	Review Annual Reports for accuracy and completeness.