

Oregon Department of Environmental Quality NPDES Permit Program Enhancement Report

August 31, 2018

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EPA Contract No. EP-C-14-003

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1 INTRODUCTION

The Oregon Department of Environmental Quality (DEQ) is authorized to implement the National Pollutant Discharge Elimination System (NPDES) program in Oregon. Like many states, Oregon faces numerous challenges implementing their NPDES program, including addressing a backlog of administratively extended NPDES permits.

DEQ's goal is to build a sustainable NPDES permit program that can issue or renew 20 percent (70 to 75) of NPDES individual permits each year and a program in which at least 90 percent of such permits are current. To achieve their program goals, DEQ is focusing on improving processes and developing tools that will allow permit writers to issue permits and renewals more quickly, and to ensure those permits have consistent standards and are protective of human health and the environment.

The purpose of this NPDES Permit Program Enhancement Report is to 1) provide an evaluation of DEQ's organization, permitting procedures, permitting resources, and training and 2) identify and prioritize potential enhancements that will maximize DEQ's potential to achieve their permit issuance goals.

To develop this report, PG Environmental (PG) developed a working knowledge and appreciation of DEQ's NPDES program through:

- review of DEQ's NPDES permitting regulations, policies, procedures, guidance documents, tools (e.g., checklists, RPA spreadsheets), templates (e.g., permit and fact sheet templates), and permit writer training materials;
- in-person meetings with DEQ staff on May 16, 2018;
- participation in monthly DEQ Permit Writers Meetings on May 24, 2018; June 28, 2018; July 16, 2018; and August 23, 2018; and
- development of draft NPDES permits for Georgia-Pacific (GP) Toledo, LLC (an industrial discharge to the ocean) and the City of Tillamook Sewage Treatment Plant (a municipal discharge to an inland surface water).

DEQ staff exhibit a strong desire to reduce the permit backlog and has implemented significant program changes since 2016 to do so, including reorganization to provide a clear chain of command and conflict resolution, dedicated permit writers, and specialized support. DEQ conducts permit readiness reviews and gap analyses to make informed planning decisions. DEQ's permit writers are highly experienced and skilled in the NPDES permit development process. DEQ has developed numerous, thorough permitting guidance and tools. DEQ's program structure, highly skilled permit writing team, and permitting resources provide a solid foundation for a successful NPDES program.

Section 2 provides an overview of DEQ's NPDES permit program organization and the roles and responsibilities of key permitting staff. Section 3 provides a summary of DEQ's permitting procedures by major permit task. Section 4 identifies the permitting resources reviewed by PG and discusses their adequacy in meeting the needs of DEQ's permit writers. Section 5 provides a summary of DEQ training program. Section 6 provides PG's observations and assessment of the level of effort necessary for permit development within the State. Section 7 provides a prioritized summary of potential program and permitting resource enhancements.

2 NPDES PERMIT PROGRAM ORGANIZATION

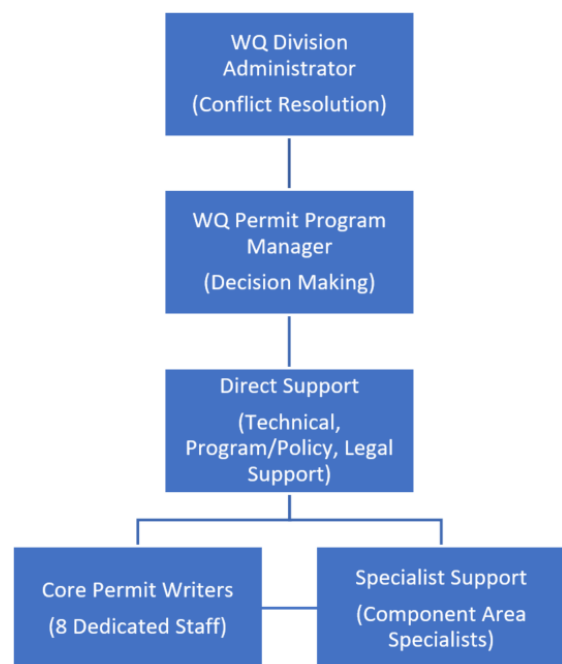
The DEQ NPDES permit program is currently undergoing a significant re-organization to decrease NPDES permit backlog and increase permitting efficiency. After a comprehensive review of Oregon's NPDES program, a previous consultant released a detailed plan titled, *Recommendations and Implementation Plan, NPDES Permitting Program Review*¹, dated November 2016. This plan provides recommendations, actions, and implementation approaches to address the NPDES permit backlog systematically. PG's effort did not seek to evaluate if the findings or recommendations made in the November 2016 Plan were accurate or implemented. However, at the time of PG's review of DEQ's permit program, DEQ had made a number of recent programmatic changes that were being implemented that had a direct impact on DEQ's permitting process.

The report identified two significant factors resulting in the backlog: 1) stakeholders indicated it was difficult to ascertain who in the leadership structure had the final decision authority to resolve various permit related issues, and 2) DEQ permit writers often provide technical support to the permittee, in addition to serving as a regulator.

Additionally, the 2016 report found that DEQ permit writers performed a wide range of duties in addition to those specifically required for preparation of NPDES permit renewal, such as preparing state permits for land discharges, conducting inspections and generating inspection reports, providing technical assistance to permittees, plan reviews, compliant response, enforcement actions, policy development and assistance, and review of monthly discharge monitoring reports (DMRs). The report estimated that out of the 22 NPDES permit specialists, less than six full time equivalents were devoted to NPDES permit renewals.

To address these concerns, DEQ has restructured to provide a dedicated team of NPDES permit writers, with a clear focus on drafting NPDES permits. The reorganization provides support staff with specialized roles within the program, and defined leadership roles. Further, DEQ has developed a Permit Quality Assurance Review Process (Procedure Number: PPD-WQP-PROC-004) that, in addition to establishing quality assurance processes, provides a clear delineation of responsibilities within the NPDES permit development process.

At the core of the program are the team of eight dedicated permit writers, responsible for drafting approximately 360 DEQ-issued individual NPDES permits. Permit writers are expected to meet and discuss permitting procedures with permittees, gather appropriate data and permit information, draft a completed NPDES permit package for public notice, make revisions identified during an internal quality



¹ <https://www.oregon.gov/deq/FilterDocs/wqp-FinalReport.pdf>

assurance (QA) process, make necessary revisions after a permittee review process, respond to public comments, and make necessary revisions after a public comment period.

Overseeing the permit writers and providing technical, program, and legal support are a team of three individuals, referred to in DEQ's work charts as "Direct Support." Direct Support includes a senior permit program consultant, a senior permit program analyst, and a legal analyst. PG observed this small team organize monthly permit writer meetings and trainings, manage permitting tools, provides guidance on technical issues or direct the permit writers to an appropriate specialist, work to identify improved and more efficient methods, and work to ensure consistency among the permitting team. A reoccurring theme noted during PG's interaction with these staff are a desire to implement consistent, standardized, and defensible approaches for dealing with the more ambiguous conditions faced by permit writers.

In addition to the managerial, technical, and program support provided by Direct Support, Specialized Support staff provide support for ancillary and more technical components of permit writing. Identified specialist support areas include:

- Biosolids
- Recycled Water
- Pretreatment
- Copper Biotic Ligand Model (BLM) Implementation
- Mixing Zones
- Compliance Schedules
- Temperature Implementation
- RPA/Toxics Implementation
- netDMR
- SPARQ Time Reporting
- Compliance and Enforcement
- Compliance Officers
- Antidegradation
- Facility Design/Engineering

The Specialized Support staff supplement the core permit writers' knowledge in policy decisions or legal and technical components in specialized areas where permit writers may have limited experience. Additionally, PG noted on several occasions that Specialized Support staff would review the applicable program component in a permit, which provides the additional benefit of increasing consistency across DEQ permits for component implementation. Further, PG witnessed during the monthly permit writers' meetings, Specialized Support staff provide formalized training to the core permitting staff in their specialized subject area (i.e., temperature implementation).

The Water Quality Permit Program Manager provides overall direction in policy and technical decisions when necessary and communicates with the Regional Managers. Overseeing the entirety of DEQ's NPDES permit program is the Water Quality Division Administrator who acts in a conflict resolution role, addressing internal and external conflicts with policy and procedures among DEQ staff and permittees. PG participated in two monthly calls in which the current Water Quality Division Administrator was participating. PG's observed during the calls that the Water Quality Division Administrator was supportive of the current reorganization within the permitting program and the permitting staff, indicated a desire to be decisive and implement consistency throughout the permit program, and was committed to reduce the permit backlog.

Overall, PG believes the new organizational structure at DEQ appears consistent with good operating practices, clearly defines roles and responsibilities, assigns pathways for decision making and conflict resolution. However, some potential organizational improvements may improve efficiency and long-term stability within the program.

The current reliance on Specialized Support staff provides significant benefits in supplementing core staff knowledge and promoting consistency in program implementation and is regularly observed by PG at other NPDES permitting authorities. However, the use of Specialized Support staff has a few distinct drawbacks:

- Permit writers are not motivated to learn those specialized skill sets;
- Skill sets are concentrated in a small group, leading to concerns of retaining institutional knowledge during employee turnover; and
- Reliance on specialists resulting in delays due to other work load commitments and prioritization of obligations of the Specialized Support staff.

PG recommends that all permit writers receive specific training on these topics to empower them to address issues on their own and reduce the workload of the Specialized Support staff, allowing them to focus on particularly complex situations and reviewing implementation for consistency. Additionally, DEQ should consider developing redundancy among the Specialized Support staff to ensure the long-term retention of institutional knowledge and flexibility in workload among staff.

3 NPDES PERMITTING PROCEDURES

The NPDES permitting procedures observed at DEQ were generally consistent with those expected of a well operated NPDES permitting program. As discussed previously, DEQ has recently undergone a significant change in permitting procedures to increase efficiency and reduce permit backlog. Specifically, DEQ implemented the NPDES Permit Improvement Implementation Project, which focused on tasks to improve overall program enhancement. PG did not evaluate the implementation of NPDES Permit Improvement Implementation Project. However, PG's experience was directly influenced by the program revisions implemented because of the project. The current permitting procedures are discussed in the following subsections.

As part of the NPDES Permit Improvement Implementation Project, DEQ developed a Permit Readiness Review in which a team of reviewers developed a qualitative method to evaluate the readiness of expired NPDES permits for issuance. This evaluation includes assessments of application readiness, community/facility readiness, and regulatory readiness. These evaluations have been used to generate a Permit Issuance Plan based on the technical and regulatory readiness of the expired permits and identify specific needs for each permit necessary for permit development. Additionally, this review identified common causes of permitting delays, such as a lack of receiving water data, review of environmental management plans (i.e., biosolids management plan, recycled water use plan, land application plan for industrial wastewater), mixing zone study reviews, total maximum daily loads (TMDL) implementation, and review of application materials.

This approach allows DEQ to prioritize permits with low barriers to completion and immediately begin to reduce the backlog and identify data and information gaps to be addressed for permits with complex and time intensive issues or additional data collection needs. DEQ assigned two permits to PG based on the permit readiness reviews and input from regional staff. DEQ plans to use these readiness reviews to inform their 2019 permit issuance plan. PG believes that the use of these reviews is an effective and reasonable approach.

The sections below document PG's experience working through DEQ's NPDES permitting process, including:

- Application and file review.
- Compilation of data.
- Conducting reasonable potential analysis and calculating effluent limitations.
- Developing the permit and fact sheet.
- Implementing TMDLs.
- Undergoing DEQ Internal Review.

Due to time constraints, PG was unable to support two additional components, the applicant review process and the public review process, for the assigned permits prior to the development of this report.

3.1 Application and File Review

DEQ's initial step in the NPDES permitting process is receiving the appropriate NPDES permit application forms from the applicant and reviewing the forms for accuracy and completeness. These

forms contain permittee contact information, describe applicable facility operations and effluents, identify discharge locations and receiving water(s), and provide additional information necessary for permit issuance or renewal.

Additionally, at the time the application is received, DEQ reviews the complete permit file for adequacy and completeness. This review includes reviewing available data, required special studies, permittee correspondence, compliance history, and any other available information. Reviewing the information early in the process minimizes the opportunity for unanticipated delays resulting from additional information requests or clarification.

During the application and file review, permit writers evaluate if significant changes or considerations will be necessary during the permitting effort. Some common indicators that significant changes or considerations will be necessary may include: significant changes to facility operations or treatment, changes to effluent volume, changes in discharge location, changes in receiving water, the submittal of special studies that have the potential to impact permit conditions, compliance issues, or ongoing enforcement.

Based on discussions with DEQ staff, permit writers discuss significant issues with Direct Support staff following the application and file review to agree upon an appropriate permitting approach, identify milestones for permit development and targets for the applicant review, public notice, and issuance. However, there does not appear to be a formal process for this consultation. PG recommends that DEQ add this consultation as a formal step in the NPDES development process to ensure the consultation occurs consistently. In developing a formal consultation process, DEQ should identify the types of issues permit writers should elevate to Direct Support staff during the consultation. Having a formal process for this consultation early in the process improves efficiency by ensuring the identified issues are addressed prior to drafting the permit and fact sheet, reducing the need for significant revisions later in the process. An evaluation of the Central Valley Regional Water Quality Control Board's NPDES program found that early discussion of the issues would reduce over-processing, editing, and re-reviews². This consultation may also help DEQ identify the need for stakeholder involvement earlier in the process.

The NPDES permit renewal applications and permit file materials were initially provided electronically by DEQ to PG for permit development. Consistent with the expectations of the readiness review, the permit files were mostly complete. In general, the files contained NPDES permit renewal applications, special studies and plans, DEQ correspondence with the permittees, and compliance and enforcement actions. Both permits assigned to PG were administratively extended, with applications that were outdated and no longer reflected current operations at the facility. Site visits were conducted to verify information submitted in the applications, and additional documentation was requested from each permittee in order to develop a complete permit file with information that is representative of current operations.

The permit applications contained form NPDES-R, EPA Form 2A for City of Tillamook, and EPA Form 2C for GP Toledo. DEQ does not require EPA Form 1 be submitted, and instead provides an equivalent form (NPDES-R) for submittal. However, form NPDES-R is not consistent with the minimum federal requirements from 40 CFR 122.21(f) (i.e., activities conducted by applicant which

² <http://business.ca.gov/Portals/0/Files/Lean%206%20Sigma%202017/Lean6Sigma-RegionalWaterControlBoard-NPDESPermitRenewalTime.pdf?ver=2017-07-31-190418-113>

require it to obtain an NPDES permit, standard industrial classification codes, whether located on Indian lands, identification of other permits or construction approvals, topo map, and brief description of nature of business). PG recommends that DEQ revise form NPDES-R to incorporate the minimum federal requirements specified in 40 CFR 122.21(f).

Although DEQ has established a Statewide File Naming Convention (Procedure Number: 002-PROC-FILENAMING-20180802), it does not appear that DEQ staff follow this convention consistently. The permit file provided to PG contained a substantial number of documents (letters, inspection reports, etc.). The file names assigned to most documents were not descriptive of what information the file contained, increasing the effort to sort through the permit file to locate the correct information for permit development. Efficiency in reviewing appropriate files would be increased if DEQ staff consistently implemented the established naming conventions.

3.2 *Compilation of Data*

As part of the NPDES permitting process, DEQ compiles effluent and receiving water data to characterize the impact of the discharge on the receiving water. DEQ considers effluent and receiving water data collected during the previous permit term and any additional available data submitted as part of a special study or in the application. In the absence of receiving water data not provided by permittees, DEQ may consider receiving water data from United States Geological Survey (USGS) resources, the Ambient Water Quality Monitoring System (AWQMS), or other permittees. DEQ permit writers organize the data from a variety of sources into an electronic format for entry into permitting tools that evaluate reasonable potential to cause or contribute to an exceedance of water quality criteria and calculate applicable water quality-based effluent limitations (WQBELs). The accurate characterization of the effluent and receiving water is critical, as errors or the use of unrepresentative data may result in permit conditions that are either more stringent than necessary to protect water quality or fail to adequately protect water quality. See Section 4.2 for a detailed discussion of DEQ's resources for compiling effluent and ambient data.

3.3 *Reasonable Potential Analysis and Effluent Limit Calculations*

DEQ is required to establish effluent limitations for parameters that have a reasonable potential to cause or contribute to an exceedance of water quality criteria. To evaluate if the potential exists to cause or contribute to an exceedance of water quality, DEQ relies on available effluent and receiving water data to characterize the impact of the effluent on the receiving water, after mixing. This process is referred to as reasonable potential analysis (RPA).

In conversations with DEQ, PG observed that DEQ is often hesitant to proceed with permit development if limited data is available to conduct the RPA. However, the RPA procedures in DEQ's Reasonable Potential Analysis Process for Toxic Pollutants Internal Management Directive³ (RPA IMD) are based on EPA's March 1991 Technical Support Document for Water Quality-based Toxics Control (TSD), which include methods for accounting for limited data sets (e.g., use of an appropriate multiplier to calculate a projected maximum effluent concentration with a prescribed confidence level). DEQ's concern is that the application of higher multipliers may result in the

³ <https://www.oregon.gov/deq/Filtered%20Library/rpaIMD.pdf>

establishment of effluent limits that may not have been necessary if additional effluent data were available.

PG recommends that DEQ utilize the methods specified in the TSD for evaluating reasonable potential with limited data sets to conduct RPAs and establish effluent limitations where reasonable potential is demonstrated. PG acknowledges DEQ's concern regarding the establishment of WQBELs based on limited data; however, if additional monitoring data collected during the permit term demonstrates that the facility does not exhibit reasonable potential to exceed water quality criteria, the regulations provide flexibilities for adjusting or removing effluent limitations based on new data (i.e., anti-backsliding and antidegradation). Furthermore, if the additional monitoring data confirms that the facility exhibits reasonable potential, DEQ's prudent establishment of effluent limitations will avoid delays in implementing the necessary actions to bring the facility into compliance. The statistical procedures for calculating a projected maximum effluent concentration based on limited data may also be used to determine that a compliance schedule is necessary and appropriate as long as compliance with all other state and federal compliance schedule requirements have been demonstrated.

NPDES permitting authorities often automate the RPA process through use of simple spreadsheet tools, such as Microsoft Excel. These tools allow the permit writer to quickly select the applicable water quality criteria, account for available dilution within the receiving water, calculate a reasonable worst-case scenario receiving water concentration after mixing, and compare the resulting receiving water concentration to the applicable water quality criteria. Additionally, many of these tools utilize the information submitted for the RPA process to automate the calculation of applicable WQBELs for parameters with reasonable potential.

DEQ has developed RPA tools for toxic pollutants, pH, temperature, ammonia, bacteria, cyanide, dissolved oxygen, and methylmercury. PG used several of DEQ's RPA tools for permit development. These included spreadsheets for toxics, temperature, ammonia, and pH. PG's evaluation of DEQ's RPA permitting resources is included in Section 4.3.

3.4 Total Daily Maximum Loads (TMDLs)

DEQ permit writers are required to implement wasteload allocations from applicable TMDLs as effluent limitations in NPDES permits. Based on conversations with DEQ staff, TMDL implementation is a common source of permitting delays. DEQ has issued numerous TMDLs for waterbodies in the state for pollutants such as bacteria, mercury, nutrient-related impacts (e.g., nitrogen, phosphorus, dissolved oxygen, chlorophyll *a*, algae), and temperature.

According to DEQ staff, permitting delays associated with TMDL implementation arise from the lack of clear implementation procedures in the TMDLs and because the resulting effluent limitations are often not achievable by permittees. DEQ permit program staff should continue to work with DEQ TMDL program staff to develop straightforward, practicable procedures for TMDLs issued without clear implementation procedures. For TMDLs under development, DEQ permitting staff should work with DEQ TMDL program staff early and often through the TMDL development process to ensure that the implementation procedures contain the necessary information for NPDES permit writers to efficiently incorporate the applicable TMDL requirements in NPDES permits. EPA Region 9 provides additional helpful practices for TMDL and NPDES permit writing staff for NPDES permit-friendly TMDL development and interpreting existing TMDLs in their

June 2015 *Helpful Practices for Addressing Point Sources and Implementing TMDLs in NPDES Permits*⁴. DEQ may benefit from implementing some of the recommended practices therein.

DEQ, like other permitting authorities, faces scrutiny from the regulated community as well as other interested parties regarding TMDL implementation. DEQ may be able to minimize challenges related to TMDL implementation through early and frequent stakeholder involvement and development of clear implementation procedures (preferably prior to TMDL issuance).

3.5 Permit and Fact Sheet Development

DEQ uses permit and fact sheet templates to ensure consistency and increase efficiency among permit writers. Permit writers are expected to use the most current version of all the permit and fact sheet templates available at the time of permit development. The Permit Quality Assurance Review Process dated October 31, 2016 indicates that the permit template will be updated in January and July of each year. PG's evaluation of DEQ's permit and fact sheet templates is provided in Section 4.1.

3.6 Internal Review

After completion of the initial draft permits, DEQ initiates their internal review process. DEQ has four individuals available to conduct permit quality assurance (QA) reviews and relies upon Specialized Support staff to review applicable sections of the permit to ensure adequate implementation and consistency.

The internal review process is detailed in the Permit Quality Assurance Review Process dated October 31, 2016. After developing a draft permit and fact sheet, the permit writer uploads the permit package and supporting records onto the Permit Development SharePoint worksite. The permit writer notifies the Water Permitting Policy Analyst that files have been uploaded and are ready for internal review.

The Water Permitting Policy Analyst assigns one of four permit QA reviewers to the permit for internal review. The internal review is expected to be completed within 2 weeks of being notified the permit is ready for review. Delays in meeting this timeframe must be communicated to the permit writer and his/her manager.

A single file is maintained during the internal review process, with all changes from the permit QA reviewer and Specialized Support staff using the "tracked changes" and comment features of Microsoft Word to provide a clear and transparent record of changes to the documents. The internal review is documented using a standardized review document/checklist.

For minor revisions, the permit writer reviews the revisions and accepts changes and readies the permit package for applicant review. Note that the Permit Quality Assurance Review Process does not provide procedures for the permit writer if the permit writer disagrees with suggested revisions from the QA staff. In PG's experience, the permit QA reviewer provided an opportunity to discuss the suggested revisions and implement alternative revisions.

⁴ https://www.epa.gov/sites/production/files/2018-04/documents/tmdls-npdes_permits_helpful_practices_final_6_30_15.pdf

If major changes are needed, the reviewer communicates concerns and necessary revisions to the permit writer. Examples of a major change may include addressing the lack of outfall locations, attachments, documentation, equations, justifications, etc. If major changes are necessary, changes are made using “tracked changes” by the permit writer. After revision to address the comments, the permit is resubmitted for internal review.

According to the Permit Quality Assurance Review Process, if the permit is known to contain topics that are likely to be of significant interest to EPA or other outside entities, the DEQ reviewer is expected to coordinate with DEQ’s Senior Legal Policy Analyst prior to any communication with EPA to address these issues and provide additional comments to the permit writer. Topics likely to be of significant interest to EPA or other outside entities include: waters impaired for temperature, copper and nutrients; copper BLM; and significant changes from traditional discharge methods. PG recommends that DEQ consider elevating these issues to the Senior Legal Policy Analyst earlier in the process, as discussed in Section 3.1.

3.7 Applicant and EPA Review

Concurrent with DEQ’s internal review process, a copy of the draft permit is provided to EPA for preliminary review. EPA does not conduct a preliminary review of each permit submitted, and the level of review is dependent upon EPA’s discretion. EPA comments are received by the permit writer and the Water Quality Permit Program Manager and addressed as necessary by DEQ prior to the public notice review process.

After the internal review process is complete, the permit writer prepares the applicant review version of the permit and fact sheet, in which tracked changes are finalized and accepted. The applicant review permit package is distributed directly to the permittee by the permit writer. Approximately 14 days are provided to the applicant to review the applicant review drafts per OAR 340-045-0035(5).

After review by the permittee, the applicant may submit comments in writing or request to meet with DEQ to discuss the permit conditions. If changes are agreed upon by DEQ, the permit writer, QA reviewer, and management will discuss the revisions prior to making changes to the applicant review copy of the permit and fact sheet. Any changes that were accepted or denied are discussed with the applicant by the permit writer, QA reviewer, and management. The permit writer will then make the changes to the permit package using “tracked changes”.

3.8 Public Review

After the applicant and EPA review process has concluded, and all revisions have been incorporated into the permit package, the permit writer initiates the public notice process. Public notice regulations for NPDES permits are specified in Oregon Administrative Rules 340-45-0027. DEQ categorizes public notice requirements based on perceived environmental and public health significance. The majority of NPDES permit issuances or renewals require a minimum of 35 days for the public to submit written comments.

Public hearings may be requested by the public during the permit development process; however, public hearings must be provided for new permits for a major facility, or for an increased discharge load for a major facility.

During and following the public notice period, the permit writer is responsible for reviewing and responding to public comments. Revisions to the permit package are completed using “tracked changes”. The QA reviewer provides technical assistance and reviews comments and changes to the permit package as necessary.

According to the Permit Quality Assurance Review Process, the QA reviewers maintain a database, in coordination with the Senior Legal Policy Analyst of all responses to public comments. However, DEQ staff indicated that such a database has not maintained and DEQ has not consistently coordinated with the Senior Legal Policy Analyst. DEQ is in the process of developing a Microsoft Excel spreadsheet to track responses. PG recommends that DEQ continue to develop and maintain the spreadsheet and consistently coordinate with the Senior Legal Policy Analyst to ensure uniform and defensible responses.

When finalizing the documents for permit issuance, the permit writer ensures all comments have been addressed, clean versions of the permit and fact sheet are maintained with all tracked changes addressed (accepted or deleted), and a complete administrative record is available.

4 NPDES PERMITTING RESOURCES

4.1 Templates

DEQ maintains two templates for NPDES permit development—the NPDES Permit Template – Major Domestic Facilities⁵ and the NPDES Permit Template – Minor Domestic Facilities⁶. DEQ does not maintain a permit template for industrial facilities, but instead adapts the domestic templates for these facilities. DEQ maintains two templates for fact sheets—the NPDES Fact Sheet Template – Domestic Facilities⁷ and the NPDES Fact Sheet Template – Industrial Facilities⁸. DEQ also maintains two templates for NPDES general conditions—the NPDES General Conditions – Domestic Facilities⁹ and NPDES General Conditions – Industrial Facilities¹⁰ (note that the versions provided on DEQ’s NPDES Permit Development Tools website¹¹ specify Revision 2015, but general conditions included in recent draft permits reviewed by PG were identified as being revised in July 2016).

Based on PG’s direct permit development support to other states and assistance with EPA’s Permit Quality Reviews (PQRs), PG has observed that some states maintain standalone permit and fact sheet templates, such as those used by DEQ, whereas others simply update the existing permit or most recently issued permit for a similar-type facility. Although up-front development and ongoing maintenance of a standalone template can be resource-intensive, PG has generally observed them to provide for more efficient permit development and consistency among permits statewide, reducing the level of effort necessary for permit and fact sheet development over the long-term. PG finds the use of standalone templates to be a “best practice” and recommends that DEQ continue to utilize standalone templates for permit and fact sheet development.

PG conducted a side-by-side comparison of the major and minor domestic facility permit templates. Many of the differences were minor wording differences (e.g., the minor permit template includes the following underlined language that is not included in the major permit template: “No chlorine or chlorine compounds may be used for disinfection purposes and no chlorine residual resulting from chlorine or chlorine-containing chemicals...”). Substantive differences included the expression of effluent limitations in Schedule A, Condition 1: Outfall 001 – Permit Limits; numerous Schedule B requirements; and requirements for industrial user surveys in Schedule D, Condition 16: Industrial User Survey and Schedule E, Condition 3. Of these, the only ones that appear to be necessary to distinguish between facilities based on major/minor status are certain Schedule B requirements (e.g., monitoring requirements for toxic pollutants for facilities with design flows greater than 0.1 MGD).

PG also compared the domestic and industrial fact sheet templates and noted many differences in the organization, as shown in the table below, and boilerplate language. Certain sections are necessarily different based on facility type (e.g., rationales for technology-based effluent limitation;

⁵ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDES-PERTMajor.docx>

⁶ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDES-PERTMinor.docx>

⁷ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDES-PERTdomestic.docx>

⁸ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDES-PERTindustrial.docx>

⁹ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDESGenConDomestic.pdf>

¹⁰ <https://www.oregon.gov/deq/FilterPermitsDocs/WPCFGenCondInd.pdf>

¹¹ <https://www.oregon.gov/deq/wq/wqpermits/Pages/NPDES-Individual-Permit-Templates.aspx>

monitoring requirements; and permit conditions such as biosolids, recycling, and pretreatment requirements for publicly owned treatment works). However, many of the fact sheet sections should follow the same development process, and include similar rationale, regardless of facility type (e.g., WQBELs).

NPDES Fact Sheet Template – Domestic Facilities		NPDES Fact Sheet Template – Industrial Facilities	
Section	Section Title	Section	Section Title
1.0	Introduction	1.0	Introduction
2.0	Permit History	2.0	Facility Description
2.1	Issuance, Renewal and Modifications	2.1	General
2.2	Compliance History	2.2	Wastewater Treatment
		2.3	Wastewater Characteristics
		2.4	Groundwater Issues
		2.5	Storm Water
		2.6	Outfalls
		2.7	Sludge Management
3.0	Proposed Revisions to Permit	3.0	Permit History
		3.1	Permit History
		3.2	Compliance History
4.0	Facility Description	4.0	Receiving Water
4.1	Wastewater Facilities Description	4.1	Receiving Stream Water Quality
4.2	Outfalls	4.2	Mixing Zone Analysis
4.3	Sewage Collection System		
4.4	Recycled Water		
4.5	Wastewater Solids		
4.6	Storm Water		
4.7	Groundwater		
4.8	Industrial Pretreatment		
5.0	Receiving Water	5.0	Permit Limits
5.1	Flows	5.1	Existing Permit Limits
5.2	Designated Uses	5.2	Technology-Based Effluent Limits
5.3	Receiving Stream Water Quality	5.3	Water Quality-Based Effluent Limits
5.4	Mixing Zone Analysis	5.4	Whole Effluent Toxicity
		5.5	Trading
		5.6	Antidegradation
6.0	Overview of Permit Development	6.0	Permit Draft Discussion
6.1	Types of Permit Limits	6.1	Face Page
6.2	Existing Permit Limits	6.2	Schedule A, Waste Discharge Limitations
6.3	Overview of WET Analysis	6.3	Schedule B, Minimum Monitoring and Reporting Requirements
6.4	Trading	6.4	Schedule C, Compliance Schedules and Conditions
6.5	Recycled Water	6.5	Schedule D, Special Conditions
6.6	Biosolids	6.6	Schedule F, NPDES General Conditions
6.7	Antidegradation		
7.0	Permit Draft Discussion	7.0	Next Steps
7.1	Face Page	7.1	Public Comment Period
7.2	Permit Limit Derivation	7.2	Response to Comments
7.3	Schedule A, Waste Discharge Limitations	7.3	Modifications to Fact Sheet and Permit Evaluation Report
7.4	Schedule B, Minimum Monitoring and Reporting Requirements	7.4	Issuance
7.5	Schedule C, Compliance Schedules and Conditions		
7.6	Schedule D, Special Conditions		
7.7	Schedule E, Pretreatment		
7.8	Schedule F, NPDES General Conditions		

NPDES Fact Sheet Template – Domestic Facilities		NPDES Fact Sheet Template – Industrial Facilities	
Section	Section Title	Section	Section Title
8.0	Next Steps		
8.1	Public Comment Period		
8.2	Response to Comments		
8.3	Modifications to Permit Evaluation Report and Fact Sheet		
8.4	Issuance		

In developing the draft permit for GP Toledo, PG utilized the major domestic facility permit template and the industrial fact sheet template and referenced recent draft permits for the City of Troutdale Water Pollution Control Facility (WPCF), GMA Garnet, and Boise Cascade Wood Products, LLC. The discrepancies in organization in the templates and example permits made it difficult and time-consuming to locate example requirements and rationale since these were not in a consistent location between the documents. The discrepancies in boilerplate language also made it difficult and time-consuming to discern DEQ's preferred permit requirements and fact sheet rationale for common items.

For example, the fact sheet template for domestic facilities includes an overview of the types of limits and the existing limits in Section 6, Overview of Permit Development, but the substantive rationale for TBELs and WQBELs is not found until Section 7.2, Permit Limit Derivation. In the fact sheet template for industrial facilities, the substantive rationale for TBELs and WQBELs is found in Section 5, Permit Limits. The format for discussing the RPA and WQBELs within these sections of the domestic and industrial fact sheet templates are inconsistent. Further, the industrial fact sheet template provides two formats for providing the WQBEL rationale, in narrative and table formats. The narrative format could be much improved to include example rationale, such as provided in Section 7.2, Permit Limit Derivation of the domestic facility fact sheet template.

To avoid discrepancies between the permit and fact sheet templates, ensure consistency between all permits statewide, and provide for more efficient template maintenance and permit development, PG recommends that DEQ consolidate these templates into a single permit template and a single fact sheet template that provide example language, where appropriate, for major and minor domestic and industrial facilities and instructions to permit writers for when that language should be used. Alternatively, if DEQ prefers to maintain separate templates, PG recommends that DEQ update the templates to have the same organizational structure so that permit writers tasked with development of major and minor domestic and industrial permits and fact sheets know where to reliably find permit requirements and rationale when referencing the templates and other example permits, regardless of facility type.

The permit, fact sheet, and general conditions templates have not been updated in 2 years (July 2016), 4 years (July 2015), and 2 years (July 2016), respectively. Consequently, certain information in the templates are outdated (e.g., website links) that are proliferated in permits and fact sheets developed using those templates. Ideally, templates should be living documents and updated regularly in response to updated regulations, policy, guidance, legal outcomes, and changes made during the individual permitting process that have the potential to affect permits statewide. Additionally, DEQ staff discussed past instances in which DEQ permit writing staff made updates to the template that were not properly vetted and indicated that the template is maintained in area of their shared files where anyone can make changes. Since boilerplate language in permit templates forms the basis of all permits, it is imperative that all updates are reviewed for consistency with federal and state statutes, regulations, policies, and guidance prior to incorporation in the template.

PG recommends that DEQ develop standard operating procedures for updating the template that identify the staff person(s) responsible for template maintenance, when and how often updates should occur, approval process for template updates (e.g., review by management and legal staff), and a tracking process to ensure template updates are incorporated into draft permits under development at the time of the updates.

To ensure consistency between permits, maintain efficiency, and ensure that permits are legally defensible, PG recommends that permit writing staff rely on the boilerplate language in the templates, deviating only in those site-specific scenarios that are not accounted for in the templates. Deviations from the templates should be identified and discussed with management during the internal QA process.

4.2 Data Compilation

4.2.1 Effluent Data

Sources of effluent monitoring data typically include effluent data reported in DMRs, NPDES application forms, and other monitoring reports required by the permit. NPDES permit writers must compile this data to conduct the RPA, which comprises a significant level of effort for DEQ's permit writers.

Permittees in Oregon have historically submitted DMR data using DEQ's Discharge Monitoring System (major facilities only) and paper forms. Data submitted on paper forms required manual data entry by DEQ permit writers for utilization in the RPA. Per EPA's 2015 NPDES Electronic Reporting Rule (e-Reporting Rule), individual permittees were required to submit DMRs electronically using EPA's netDMR system starting in December 21, 2016. The availability of electronic data is anticipated to significantly reduce the level of effort associated with data compilation for RPA purposes; however, this reduction in effort will not be fully realized until permittees have submitted their DMRs electronically for a period of at least 5 years (i.e., 2021).

DEQ undertook a data bridging project in 2017 to develop a process that would allow permit writers access to essential data needed to write or renew an individual permit in a timely fashion. DEQ's project team provided the following recommendations in the August 2017 NPDES Data Bridging Project Recommendation Report¹²:

- Requiring effluent daily data be submitted in a Microsoft Excel template into netDMR;
- A permit data management process for NPDES permit writing and renewal;
- Qualifications and essential competencies for compliance and data management tasks, technical tasks, and permit development tasks;
- Default assumptions to be used when a data set is incomplete; and
- Development of an implementation plan.

DEQ staff tasked with netDMR setup is currently working with the permit writers and compliance and enforcement staff to ensure the permit template includes information on the necessary monitoring frequencies, units, and summary statistics to be specified in NPDES permits to ensure

¹² <https://www.oregon.gov/deq/FilterDocs/wqpDataBridgingReport.pdf>

that electronic data submitted through netDMR is useful. DEQ staff is developing a matrix to assist permit writers with decision-making. As permits are renewed with the proper information requirements, the usefulness of electronic data is expected to improve over the life of the permits.

Permittees are important resources for data and other information during the permit writing process, as they are the most knowledgeable about their facility and often maintain their own electronic databases. However, DEQ staff expressed that obtaining data and other information from permittees is often difficult. In the near-term, PG recommends that DEQ permit writers communicate in writing at the onset of permit development the specific data and information needs, reasons why the information is necessary, and deadlines for submitting such information. The written request should remind permittees of their duty to provide information within a reasonable time under 40 CFR 122.41 and identify the consequences of not providing the requisite information (e.g., monetary penalties, denial of a permit). In the long-term, DEQ might consider adding a regulatory requirement clarifying DEQ's authority to request information from permittees, similar to the authorities provided in California Water Code section 13267¹³, Idaho Administrative Code section 58.01.25.105.05¹⁴, and Florida Administrative Code section 62-4.055¹⁵.

NPDES permit application requirements at 40 CFR 122.21 and monitoring requirements specified in individual NPDES permits require submission of effluent monitoring data for more than 100 toxic pollutants. To streamline the receipt and analysis of this data, DEQ developed an Electronic Data Delivery (EDD) system, which provides a standard format for reporting of monitoring results (i.e., the EDD format) and standard analyte list. DEQ developed the September 2015 Electronic Data Delivery (EDD) for Toxics Data: What Permit Holders Need to Know¹⁶ (EDD Fact Sheet) to communicate the process for data submission to permittees and has added the requirement to submit effluent characterization monitoring results using the EDD system in the NPDES permit templates. The EDD system has the potential to significantly reduce the level of effort associated with compilation of effluent data for toxic pollutants. However, the EDD format and explanation of column headers in the EDD Fact Sheet do not directly align with those in the "Eff Raw Data" tab of the RPA for Toxic Pollutants Calculation Workbooks, as shown in Figures 4-1 and 4-2, below. PG recommends that DEQ aligning the EDD format provided to permittees with the format in the RPA spreadsheets (or vice versa) to alleviate the need for permit writers to further organize the data for use in the RPA.

¹³ http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT§ionNum=13267.

¹⁴ <https://adminrules.idaho.gov/rules/current/58/580125.pdf>

¹⁵ <https://www.flrules.org/gateway/RuleNo.asp?title=PERMITS&ID=62-4.055>

¹⁶ <https://www.oregon.gov/deq/FilterDocs/EDDguide.pdf>

Figure 4-1. EDD Format from EDD Fact Sheet

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	LabName	LabNumber	Analysis	Analyte	Prepared	Analyzed	Result	DL	QL	Units	Dilution	CAS	Qualifier
2	ABC Laboratory	1303032-01	EPA 200.8	Arsenic, Total	3/11/2014	3/12/2014	0.714	0.165	0.5	µg/L	1	7440382	
3	ABC Laboratory	1303032-01	EPA 200.8	Copper, Dissolved	3/10/2014	3/11/2014	0.233	0.156	10	µg/L	1	7440508	J
4	ABC Laboratory	1303032-01	EPA 625	Benzidine	3/13/2014	3/16/2014	ND	3.14	10	µg/L	1	92875	
5	ABC Laboratory	1303032-02	EPA 624	Benzene	3/21/2014	3/21/2014	0.261	0.0526	0.5	µg/L	1	71432	J,H
6	ABC Laboratory	1303032-02	EPA 624	Ethylbenzene	3/9/2014	3/9/2014	ND	0.0524	0.5	µg/L	1	100414	
7	ABC Laboratory	1303032-02	EPA 200.8	Cyanide, Free	3/8/2014	3/8/2014	ND	0.01	10	mg/L	1	57125	
8													

Figure 4-2. EDD Format from RPA for Toxic Pollutants Calculation Workbooks

This sheet is designed to allow a user to cut and past data into the white space below. Please ensure that you are using the specified Electronic Data Delivery format. The spreadsheet will query the data and pull the necessary information into the following pages. Ensure that numeric values (cas #s, reports, QIs, DLs) are in "number" format or use "Text to Column" feature to convert from "text" format. Please contact Spencer Bohaboy (503-229-5415) (Bohaboy.Spencer@deq.state.or.us) for any technical assistance issues or to provide comments or notify of problems/errors.

CASNumber	Project	LabNumber	SampleRegID	SampleAlias	sampletype	SpecificMethod	Analyte	ClientMatrix	Sampled Date	tResult	tMRL	tMDL	Units	Laboratory	DQL

DEQ's current practice is to utilize all effluent data collected during the permit term for the RPA unless older data is not representative of current operations (e.g., due to treatment system upgrades occurring during the permit term). Since many of the permits to be renewed have been administratively continued for long periods of time (e.g., the GP Toledo and City of Tillamook permits have been administratively continued since July 2010 and October 2014, respectively), the effluent data sets for pollutants monitored on a routine basis (e.g., weekly, monthly, quarterly) can be extensive. To reduce the burden of compiling and analyzing such extensive datasets, DEQ could consider utilizing only the most recent effluent data collected (e.g., from the last 3 to 5 years) for pollutants for which a significant amount of data is available. In addition to reducing the burden to permit writers for data compilation, the use of more recent data may improve the validity of the RPA since more recent data is likely to be more representative of current discharge conditions and because data quality assurance/quality control (QA/QC) is expected to improve over time. If DEQ chooses to make changes to the selection of effluent data sets for RPA purposes, PG recommends that those decisions be documented in the RPA IMD, as well as the factors to be considered by permit writers when selecting the data set (e.g., timing of treatment process upgrades or other major changes, need for more extensive data for seasonal parameters, instances where limited data is available).

4.2.2 Ambient Data

Sources of ambient data typically include the Ambient Water Quality Monitoring System (AWQMS) (replaces the former LASAR system) and other monitoring reports required by the permit.

AWQMS is a useful resource that houses DEQ and partner data for rivers and streams, lakes, estuaries, beaches and groundwater resources in Oregon collected since January 2013. DEQ has developed instructions and tutorials for searching and exporting data from AWQMS, available on DEQ's Water Quality Monitoring Data webpage¹⁷. DEQ has indicated that effluent data for toxic pollutants will also be reported through AWQMS in the future. PG utilized AWQMS to retrieve data on the Trask River for the City of Tillamook RPA and from the Yaquina River for the GP Toledo RPA and found the available data to be useful for RPA purposes. However, PG did note

¹⁷ <https://www.oregon.gov/deq/wq/Pages/WQdata.aspx>

that ambient data was missing for toxic pollutants in the Trask River. The sampling point in the Trask River utilized for the City of Tillamook RPA was located 9 miles upstream of the facility.

Except for beach monitoring data (i.e., for bacterial indicators), AWQMS does not contain ambient data for the Pacific Ocean. DEQ staff indicated that ambient monitoring for ocean waters is not typically required in NPDES permits. For the GP Toledo RPA, the permittee had reported ambient data for toxic and other pollutants in and near the mixing zone and at reference sites as part of a characterization study in 2004 and aquatic surveys in 2010, which required a considerable level of effort for manual data entry. Ambient data was not available for several pollutants that exceeded the applicable criteria at the end-of-pipe (i.e., antimony, inorganic arsenic, thallium, and bis (2-ethylhexyl) phthalate). DEQ's RPA IMD does not include guidance for addressing such situations. Per direction from DEQ staff, PG conducted a search of National Oceanic and Atmospheric Administration (NOAA) National Data Buoy Center database for ambient data and contacted a nearby permittee, the City of Newport, to inquire whether they had collected ambient data in the vicinity of the discharge. In the absence of ambient data for these pollutants, the RPA for those pollutants was inconclusive and PG included ambient monitoring requirements (quarterly for 1 year) in the draft permit.

To address the ambient data needs for ocean discharges, DEQ could consider requiring periodic monitoring (e.g., once per permit term) or participation in regional monitoring programs within the permits for pollutants expected to be present in ocean waters. Upon collection of sufficient data, DEQ may be able to assign default ambient pollutant concentrations (e.g., 0 µg/L for man-made pollutants and specific concentrations for naturally-occurring pollutants, such as metals) for use in RPAs for ocean discharges, alleviating the need for permittees to collect additional ambient data and for permit writers to compile and analyze ambient data for every permit renewal. This approach is similar to the approach utilized in the Water Quality Control Plan, Ocean Waters of California¹⁸, which specifies that a default ambient concentration of 0 µg/L be used for the RPA for all pollutants, except arsenic, copper, mercury, silver, and zinc, for which default concentrations are specified.

4.3 Reasonable Potential Analysis and WQBEL Calculation Tools and Guidance

4.3.1 Toxic Pollutants

As part of every permit renewal, permit writers must conduct an RPA on very large data sets, typically considering more than 100 toxic pollutants. RPA spreadsheets are powerful tools that enable permit writers to conduct these analyses efficiently and consistently. PG has observed many RPA spreadsheet tools developed by states that vary in levels of sophistication, from basic spreadsheets requiring a significant level of manual entry to more automated spreadsheets containing complex formulas and macros. Automated spreadsheets have the potential to maximize efficiency; however, they can often be difficult to adapt by permit writer, if necessary, to address site-specific needs (e.g., to evaluate a pollutant not already included in the spreadsheet).

¹⁸ https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf

DEQ has developed two spreadsheets for conducting RPAs and calculating WQBELs—RPA for Toxic Pollutants Calculation Workbook, Industrial¹⁹ and RPA for Toxic Pollutants Calculation Workbook, Domestic²⁰. DEQ also developed a comprehensive RPA IMD to accompany the spreadsheets and provide step-by-step guidance for identifying pollutants of concern, conducting the RPA, and calculating WQBELs.

DEQ's RPA spreadsheets are designed to automate the RPA and WQBEL calculation for toxics based on raw effluent data provided in the EDD format (see Section 4.2.1) and input of facility and receiving water information. The spreadsheets are sophisticated and have the potential to be powerful tools for permit writers. However, DEQ staff expressed that many permit writers do not enter data using the format in the spreadsheet and tend to perform the calculation of summary statistics manually instead of using the pre-populated formulas in the spreadsheet.

PG recommends that DEQ update the tools to make the automated calculations more user-friendly. Prior to making updates, staff permit writers should be consulted to determine changes that would enable them to more effectively and efficiently use this functionality in the spreadsheets. Once the updates have been made, permit writing staff should be strongly encouraged to maximize use of the automated calculations and minimize manual data entry and calculation of summary statistics. Changes to improve the functionality of the spreadsheets could include:

- Adding a crosswalk of Chemical Abstract Service (CAS) numbers, preferred analyte names, and common synonyms to enable more efficient entry in the CASNumber column (Column A) and Analyte column (Column H) of the Eff Raw Data tab.
- Adding “=VLOOKUP” formulas that reference the crosswalk in the CAS Number column (Column A) of the Eff Raw Data tab to enable automatic population of CAS numbers.
- Clarify how CAS numbers should be assigned in the Eff Raw Data tab for those that include letters, particularly metals for which CAS numbers in other tabs include “D” and “T” suffixes (e.g., the Monitoring Req'd tab identifies 7440508T as the CAS number for total recoverable copper and 7440508D for dissolved copper). The instructions at the top of the Eff Raw Data tab specify that only numeric values should be entered for CAS numbers, and Cell R2 directs the permit writer to “Use this section for CAS #s with no letters (i.e. “D” or “T”).” However, if the letters are removed, the spreadsheet does not distinguish between the dissolved or total forms of the metal. PG hard-entered the CAS numbers with the “D” and “T” suffixes in Column R of the Eff Raw Data tab, which did not appear to have an impact on the functionality of the spreadsheet for these parameters.
- Align the EDD format provided to permittees with the format in the RPA spreadsheets (or vice versa) to alleviate the need for permit writers to further organize the data in the Eff Raw Data tab for use in the RPA (see Section 4.2.1).
- Revise the Summary Eff Data tab to automatically populate data from the Eff. Raw Data tab without requiring the permit writer to manually select the Sample Date from the drop-down menu in Row 20 for each analysis.

¹⁹ <https://www.oregon.gov/deq/Filtered%20Library/RPAspreadsheetInd.xlsx>

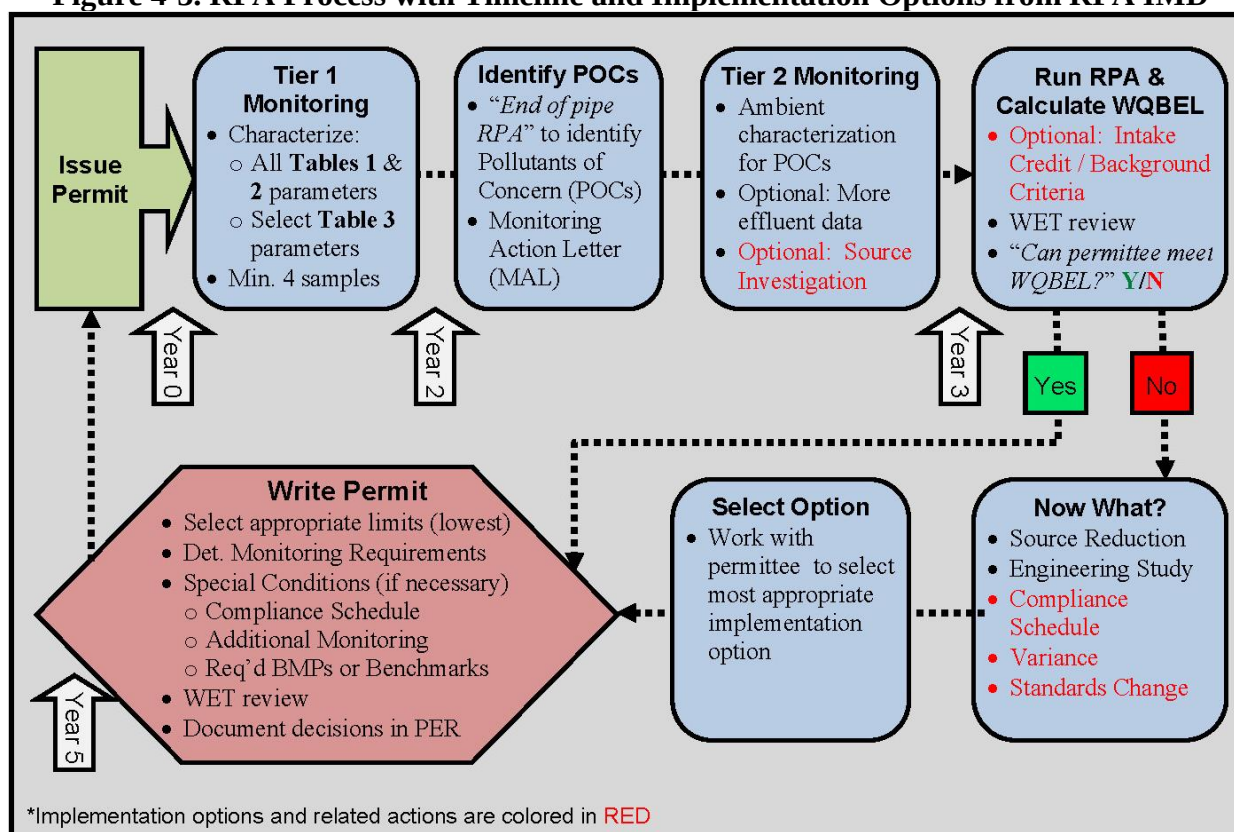
²⁰ <https://www.oregon.gov/deq/Filtered%20Library/RPAdomR36.xlsx>

- Revise the Summary Eff Data tab to allow for calculation of summary statistics using more than 12 analyses.
- Revise the Amb. Data tab to allow for calculation of summary statistics for more than four pollutants.
- Clarify instructions for entry of non-detect (ND) and detected but not quantified (DNQ or j-flag) results in the Amb. Data tab. The instructions in the tab state, “Only numeric values (#’s), “<” and “NDs” are recognized...Estimated values should be hand entered as values with out text and colored red.” The comment in cell W12 states, “Average is calculated using the values divided by # of reports. For "ND", 0 is used. For "<", the detection limit value below is used.” The RPA IMD does not include guidance for handling ND and DNQ data. Per discussions with DEQ staff, PG used 0 µg/L for ND results and ½ the method detection limit (MDL) for DNQ results.
- Revise the Ambient Conc. column (Column H of the Aquatic Toxicity RP tab and Column I of the Human Health RP tab) to automatically link to the Amb. Data tab.
- Unhide criteria columns (Columns X to AO in the Aquatic Toxicity RP tab and Columns X to AC of the Human Health RP tabs) to enable permit writers to verify that the appropriate water quality criteria are utilized (e.g., for ocean discharges, the permit writer needs to remove the Water + Organism criteria listed in Column X of the Human Health RP tab).
- Revisions to better accommodate ocean discharges (e.g., in the Human Health RP tab, revise input values Facility Information, Item 3 [dilution @ RMZ: harmonic mean flow and dilution @ RMZ: 30Q5 flow] and add a reminder to the permit writer to clear the water and fish criteria in columns K and X).

The RPA IMD sets forth an RPA process spanning the permit term, as shown in Figure 4-3. The RPA process assumes the permit writer will conduct analyses in Year 2 (evaluate Tier 1 effluent monitoring data) and Year 3 (run the RPA and calculate WQBELs), with the remainder of the permit term to work with the permittee to select the most appropriate implementation option and write the permit. This RPA process described in the RPA IMD is thoughtful and proactive, and it would be ideal to implement in a state that maintains a small backlog and has adequate resources to devote staff time for these analyses outside the typical permit development timeframe (i.e., after receipt of application). However, DEQ staff have indicated they do not currently follow this process due to limited resources and, given that DEQ’s permit writers will be dedicated to reducing the current backlog for at least the next few years, the evaluation of Tier 1 and 2 monitoring data earlier in the permit term is probably unrealistic for DEQ’s current program. Furthermore, as indicated in the figure, the RPA IMD assigns up to 2 years for DEQ to work with the permittee to select the most appropriate implementation option when a permittee cannot meet a WQBEL. DEQ permit writers have historically expended significant amounts of time working with permittees to develop options for permit compliance and, in some cases, may have delayed permit issuance due to anticipated compliance issues.

PG recommends that DEQ update the RPA IMD to reflect their actual permitting procedures and direct permit writers to make permitting decisions based on information available at the time of permit development and maximize use of tools for flexibility (e.g., compliance schedules, backsliding).

Figure 4-3. RPA Process with Timeline and Implementation Options from RPA IMD



4.3.2 Copper Biotic Ligand Model (BLM)

To derive site-specific copper criteria, DEQ follows EPA’s recommendations for using the BLM. The model requires the input of 11 different water quality parameters that affect the bioavailability and toxicity of copper in freshwaters. For the model to be useful, sufficient data, both effluent and ambient, must be collected for each parameter. The lack of a robust data set from the facility was an issue for PG during permit development. In the proposed permit for the City of Tillamook, DEQ chose to include a requirement for the permittee to establish a BLM monitoring plan, which would need to be approved by DEQ prior to implementation.

Although the Biotic Ligand Model Windows Interface 2.2.3 User’s Guide and Reference Manual was easy to understand and follow, the instructions for running the application on various Windows operating systems did not resolve the issue. The software would not conduct the analysis in certain operating systems, regardless of the changes made to the accessibility of the software.

Typically, Specialized Support staff conducts the copper BLM analysis to calculate the applicable criteria, performs the RPA, and calculates WQBELs, if necessary, according to the procedures specified in DEQ’s Implementation of the Freshwater Aquatic Life Water Quality Standards for Copper²¹. The Specialized Support staff then provides a memorandum summarizing the analysis and conclusions to the permit writer for incorporation in the permit and fact sheet.

²¹ <https://www.oregon.gov/deq/FilterDocs/copperBLMimp.pdf>

4.3.3 pH

DEQ has developed a spreadsheet²² and guidance²³ for RPAs for pH. PG utilized the spreadsheet during permit development and found it to be straightforward and useful. PG noted that the pH RPA tool is duplicated in the Toxics RPA spreadsheet.

4.3.4 Temperature

To assist with the RPA for temperature, DEQ has developed a temperature RPA spreadsheet²⁴ and Temperature Policy titled Implementation of Water Quality Standards for Temperature in NPDES Permits²⁵. The Temperature Policy describes and clarifies the temperature standard rules and their applicability, as well as the procedures and methods for applying the standard in individual NPDES permits, TMDLs, and 401 certifications for hydroelectric projects.

PG utilized both the Temperature Policy and RPA spreadsheet during permit development for the City of Tillamook. Although the Temperature Policy was useful in deciding if the criteria were applicable to the facility, it lacked guidance on applying seasonal limits. This was a particularly difficult issue with the City of Tillamook permit development, which utilized *Addendum #1 Modification to North Coast Basin Temperature and Waste Load Allocations for the Tillamook Bay Watershed Total Maximum Daily Load (TMDL)*. The Addendum was enacted in 2006. However, the flow data for the facility used in the addendum is no longer representative of facility operations due to major upgrades to the facility in 2009. Additionally, the addendum used only summer flow data with no guidance as to whether the limit should be applied seasonally or year-round.

The Temperature RPA spreadsheet provided instruction and an example on the first spreadsheet which was useful. However, PG noted that the links in the spreadsheet are no longer active and need to be updated. The individual worksheets were straightforward and self-explanatory once the appropriate criteria are chosen. One observation made in several worksheets was the requirement for the entry of the 7-day average of the daily maximum temperature for ambient temperature. The 7-day minimum of the ambient temperature is more appropriate.

4.3.5 Other Pollutants

DEQ has developed RPA spreadsheet and/or guidance for ammonia²⁶, bacteria²⁷, cyanide²⁸, dissolved oxygen^{29,30}, and methylmercury³¹. The RPAs for cyanide and methylmercury are incorporated into the RPA spreadsheet for toxics. Although PG did not use all of the RPA materials

²² https://www.oregon.gov/deq/FilterPermitsDocs/RPAspreadsheetpH2_0.xlsx

²³ <https://www.oregon.gov/deq/FilterPermitsDocs/NPDES-InstructPHmix.pdf>

²⁴ <https://www.oregon.gov/deq/FilterPermitsDocs/RPATemperature.xlsx>

²⁵ <https://www.oregon.gov/deq/Filtered%20Library/IMDTemperature.pdf>

²⁶ <https://www.oregon.gov/deq/Filtered%20Library/RPAAmmonia.xlsx>

²⁷ <https://www.oregon.gov/deq/Filtered%20Library/IMDBacteria.pdf>

²⁸ <https://www.oregon.gov/deq/FilterDocs/sToxicscyanide.pdf>

²⁹ <https://www.oregon.gov/deq/FilterPermitsDocs/RPAStreeter-PhelpsDOModel.xlsx>

³⁰ <https://www.oregon.gov/deq/FilterPermitsDocs/RPADOSaturationEquation.xls>

³¹ <https://www.oregon.gov/deq/Filtered%20Library/IMDmethylmercuryCriterion.pdf>

provided (i.e., dissolved oxygen spreadsheet) for permit development, materials were comprehensible and easily located.

4.4 Regulatory Mixing Zones Guidance

DEQ has developed Regulatory Mixing Zone IMDs as guidance documents to assist permit writers and Specialized Support staff in implementing regulatory mixing zones in permits. *Part One, Allocating Regulatory Mixing Zones*³² details the necessary steps for sizing and allocating a mixing zone consistent with State and federal regulations, and further clarifies what documentation if needed in the permit and fact sheet. Applicable State regulations and a mixing zone evaluation report checklist are provided as appendices. *Part two, Reviewing Mixing Zone Studies*³³ provides guidelines for consistency when requesting and reviewing mixing zone study information and clarifies what information is required in a mixing zone study prior to permit development. A mixing zone study checklist, examples of mixing zone study effort levels, and appropriate critical flows are provided as appendices.

The application of regulatory mixing zones and the review of mixing zone studies is often complex and beyond the typical day-to-day analysis conducted by permit writers. In PG's experience, the review of mixing zone studies is typically performed by a subject matter expert. DEQ relies on Specialized Support staff to review mixing zone studies for application within the NPDES permits. However, the guidance provided in the regulatory mixing zone IMDs is thorough and well organized and provides the typical permit writer with a working knowledge of the expectations for applying regulatory mixing zones and evaluating mixing zone studies.

4.5 Antidegradation Tools and Guidance

4.5.1 Antidegradation Review Checklist

DEQ has developed an antidegradation review sheet to aid permit writers in conducting an antidegradation analysis. This worksheet is attached as Appendix B of the Antidegradation IMD mentioned in Section 4.5.2. of this document. The worksheet includes a step-by-step-process for determining if a new or increased pollutant load will have a detrimental effect on water quality of the receiving water. PG utilized this worksheet during the permit development process for both the City of Tillamook WWTP and GP Toledo. PG found the worksheet was easy to follow, increased efficiency, and was a transparent method of documenting the antidegradation analysis. PG believes this review checklist is useful in completing the antidegradation analysis.

4.5.2 Antidegradation Policy Implementation

Federal and state antidegradation policies require certain determinations to permit a new or increased pollutant load to high quality waters. However, EPA allows states to compare the impact of the discharge on water quality against a *de minimis* threshold so that States can “allocate limited staff resources to high priority reviews that are likely to yield the greatest environmental benefits.”

³² <https://www.oregon.gov/deq/Filtered%20Library/RMZIMDpart1.pdf>

³³ <https://www.oregon.gov/deq/Filtered%20Library/RMZIMDpart2.pdf>

DEQ has developed several guidance documents to aid in the implementation of the antidegradation policy in NPDES permits.

The first document, titled *IMD Antidegradation Policy Implementation*³⁴, details background information on the Antidegradation Policy and the process for completing an Antidegradation Review. The second document available is a memorandum³⁵ dated May 2, 2018 which describes the procedures to determine if a new or increased load would be a *de minimis* lowering of water quality.

4.6 Water Quality Permitting Program Monitoring Matrix

DEQ has developed a guidance document, the *Water Quality Permitting Program Monitoring Matrix*³⁶ on establishing appropriate compliance monitoring requirements based on facility type, treatment process, and design capacity. When permit writers deviate from the recommended frequencies, the guidance requires permit writers to provide justification for the deviation. The matrix is a useful tool for permit writers for establishing monitoring requirements and complements guidance in the permit and RPA templates and RPA IMD.

4.7 Biosolids IMD

DEQ has developed a guidance document, *IMD Implementing Oregon's Biosolids Program*³⁷ to aid staff in establishing appropriate biosolids program requirements. The Biosolids IMD addresses several topics including development of a facility Biosolids Management Plan, land application requirements, and monitoring and reporting requirements.

In addition to the guidance document, DEQ provides standard language related to biosolids management in their permit template and have a Biosolids Program Specialist review the draft permit prior to the public comment period.

PG utilized these resources for the development of biosolids management requirements for the City of Tillamook WWTP permit. Although the facility does not currently land apply biosolids, they requested the ability to land apply biosolids at an unspecified future date. PG found the provided guidance to be easily comprehensible and useful for the permit development process.

4.8 Recycled Water IMD

To aid various staff in developing and implementing recycled water requirements for these facilities, DEQ has developed a guidance document addressing the permitting of recycled water projects. The guidance document, titled *IMD Implementing Oregon's Recycled Water Rules*³⁸. The Recycled Water IMD provides detailed guidance on recycled water rules and how to incorporate them into the permit, including requirements of the permittee's Recycled Water Use Plan, monitoring and reporting requirements, and effluent limitation requirements.

³⁴ <https://www.oregon.gov/deq/Filtered%20Library/IMDantideg.pdf>

³⁵ <https://www.oregon.gov/deq/FilterDocs/saMemowqDeMin.pdf>

³⁶ <https://www.oregon.gov/deq/FilterPermitsDocs/MonMatrix.pdf>

³⁷ <https://www.oregon.gov/deq/Filtered%20Library/biosolids.pdf>

³⁸ <https://www.oregon.gov/deq/Filtered%20Library/RecycledWater.pdf>

In addition to the guidance document, DEQ provides standard language related to recycled water use in their permit template and have a Recycled Water Program Specialist review the draft permit prior to the public comment period.

PG utilized these resources for the development of the recycled water permit requirements for the City of Tillamook WWTP permit. The documents were found to be easily comprehensible and useful for the permit development process.

4.9 Compliance Schedules

Compliance schedules are permissible in NPDES permits if certain conditions are met. To aid in the permit development process, DEQ has developed a guidance document on the implementation of compliance schedules, *IMD Compliance Schedules in NPDES Permits*³⁹. The Compliance Schedule IMD addresses existing laws pertaining to compliance schedules, steps for granting compliance schedules, incorporating these schedules into NPDES permits, and tracking the schedule following permit issuance.

Although PG did not utilize the IMD during permit development, PG is aware that DEQ has hesitated to renew permits in a timely manner for facilities that will be at risk of being unable to comply with their effluent limits. DEQ has stated the concern that compliance schedules are limited to a 5-year time limit. However, compliance schedules may be issued for a time period greater than 5 years as described below.

Part 4 of the federal guidance for compliance schedules⁴⁰ states that a compliance schedule may extend past the expiration date of a permit (although a final limit must be established, compliance with that limit during the permit term is not required). However, Part 3 also makes it clear that the length of any compliance schedule may not exceed the timeframe allowed by the applicable provisions authorizing compliance schedules.

OAR 340-041-0061 states, “(15) Compliance schedules. In a permit issued under OAR 340, division 045 or in a water quality certification under OAR 340, division 48, the department may include compliance schedules for the implementation of effluent limits derived from water quality criteria in this division. A compliance schedule in an NPDES permit is allowed only for water quality based effluent limits that are newly applicable to the permit and must comply with provisions in 40 CFR 122.47 (including the requirement that water quality criteria must be achieved as soon as possible).”

PG believes there does not appear to be anything specifically limiting compliance schedules to 5 years. This also appears consistent with Section 3.2 of the Compliance Schedule IMD.

The IMD contains Appendix B, “*Typical Construction Schedule for Major Plant Upgrades*”, which provides “typical” timeframes for upgrades. However, the IMD acknowledges that “not all projects will fit within the timeframes shown below.” Further, Appendix B states that permit writers need to devise a tailor-made, site-specific solution for each permit, based on a determination of what is “appropriate” and “as soon as possible” for each permit. There does not appear to be any reason

³⁹ <https://www.oregon.gov/deq/Filtered%20Library/ComplianceSchedule.pdf>

⁴⁰ https://www3.epa.gov/npdes/pubs/memo_complianceschedules_may07.pdf

this could not exceed a 5-year period once all necessary steps are accounted for (necessary studies, reviews, time to obtain financing, acquisition of property, permitting, construction, purchase and install of equipment, and testing). As long as the permit writer can demonstrate it is necessary, compliance schedules can exceed 5 years, and may stretch across multiple permit terms. Therefore, compliance schedules are a valuable option that DEQ should utilize during permit development.

PG recommends DEQ consider the use of compliance schedules that extend beyond 5 years when determined necessary and appropriate.

4.10 Quality Assurance Checklist

DEQ maintains a Quality Assurance Checklist which is used during the internal review process. The QA Checklist is intended to document the review and ensures appropriate items are reviewed during the QA process. The QA checklist poses questions to the reviewer on each required permit component and requires input if the item was adequately addressed. Additionally, the minimum acceptable requirement and guidance for evaluating each question is provided to the reviewer within the checklist. The QA Checklist appears detailed and adequate for its purpose, with one exception. The QA Checklist does not include a final data review to ensure accurate, adequate and representative data was used during the RPA and limit calculation process. PG recommends that data be reviewed to ensure accuracy and representativeness, particularly if a portion of the data was manually entered by the permittee or permit writer. PG typically recommends a minimum of 25 percent of all data be reviewed for accuracy to evaluate the data for the potential for data entry errors and identify systematic data summary errors. All maximum observed effluent concentrations should be verified and 100 percent of the data for all pollutants identified as having reasonable potential should be reviewed. Additionally, 100 percent of all manually entered data should be reviewed and verified.

In addition to data accuracy, the representativeness of the data should be verified. Ensuring the use of data for correct outfalls are used and data that is representative of effluent and receiving water conditions during the permitting term. For example, if a permittee modified their facility 2 years before permit renewal, significantly impacting the quality of the effluent, the permit writer and reviewer may consider limiting the RPA analysis to the period since the facility modification. PG recommends that DEQ revise the QA Checklist or implement an earlier review by the QA review or Specialist Support staff to validate the representativeness of the data used during the permit development process.

5 NPDES PERMIT WRITER TRAINING

DEQ's training program for new staff includes taking either the in-person or online version of EPA's NPDES Permit Writers' Training Course⁴¹ and a mentoring process through development of the permit writer's first permit. Following completion of the first permit, the permit writer is assigned a full case load and develops permits on their own, consulting senior permit writers as necessary. NPDES permit development is a complex process that requires knowledge of a myriad of state and federal laws, regulations, and policies. In PG's experience, new permit writers typically require 1 to 2 years to gain a baseline understanding of the process. PG recommends that the mentoring process extend beyond the first permit until the permit writer demonstrates, through periodic assessment, mastery of the major components of the permit development process.

DEQ does not have a formal program for ongoing training, but instead relies on Specialized Support staff for permit writers to consult for common permitting issues (e.g., copper BLM, mixing zones, temperature, biosolids) and monthly permit writer meetings.

As discussed in Section 2, the use of Specialized Support staff is valuable, but may lead to bottlenecks in the permitting process and knowledge gaps if those staff change positions or leave DEQ. PG recommends that all permit writers receive specific training on these topics to empower them to address issues on their own and reduce the workload of the Specialized Support staff, allowing them to focus on particularly complex situations.

DEQ monthly permit writer meetings are useful to ensure that staff in different offices are integrated and consistently address common permitting issues. In meetings attended by PG, Specialized Support staff provided presentations on permitting topics, including the process for identifying ICIS codes and summary statistics in monitoring tables, antidegradation implementation procedures for *de minimis* lowering of water quality, implementation procedures for temperature, and biosolids requirements.

DEQ's new and experienced permit writers may also benefit from additional opportunities for ongoing training. In addition to the NPDES Permit Writers' Training Course, EPA has developed a series of online webinars⁴² covering water quality trading, translating TMDLs to NPDES permits, whole effluent toxicity (WET), permit writing tips and best practices, and pretreatment. DEQ could consider developing a training series covering Oregon's basic NPDES permitting procedures and advanced topics. For the basic training, DEQ could adapt EPA's training course to reflect Oregon's state laws, regulations, policies, and procedures. In addition to those covered by Specialized Support staff, the advanced topics could include compliance schedules, anti-backsliding, antidegradation, water-effect ratio and metal translator special studies, intake credits, and response to comments and defending permitting decisions.

While in-person training is preferable, DEQ might consider providing trainings in a webinar format so that the information is available to new permit writers or existing permit writers as refresher training. Webinars may also provide greater accessibility to permit writers in DEQ's regional offices.

⁴¹ <https://www.epa.gov/npdes/npdes-training#writers>

⁴² <https://www.epa.gov/npdes/npdes-training>

6 LEVEL OF EFFORT ESTIMATES

The level of effort necessary for permit development is highly variable and dependent on several factors. Many of these factors are outside DEQ's capability to manage, however many are not. In PG's experience, the main variables impacting realized level of effort for individual permits include:

Knowledgeable and Experienced Permit Writers. To effectively draft NPDES permits, permit writers must be familiar with State and federal NPDES program requirements and water quality standards; DEQ implementation procedures; understand basic and complex engineering concepts; have a working knowledge of statistics, chemistry and biology; and in some cases, be familiar with basic economic concepts. Additionally, effective permit writers must become familiar with applicable permitting tools, resources, programs, and databases. Broad knowledge and experience enables more efficient and effective permit writing, reduced oversight and QA review time, and increased self-reliance.

Current Permit and Fact Sheet Templates. The availability of current templates that include coherent organization, incorporate recent implementation procedures and policy decisions, accounts for common permitting issues, include boilerplate text for standard language, and references appropriate procedure manuals or guidance provide a strong starting point for permit development. Templates help to ensure that permits are developed to meet state and federal minimum requirements, increase consistency between permits, and increase the efficiency of permit writing.

Available Tools for Data Analysis. During the permit development process, permit writers must analyze a variety of data through compliance assessments, RPAs, and feasibility analyses. The availability of accurate and straightforward tools significantly reduces effort by the permit writer, and helps ensure accurate implementation of water quality standards, TMDLs, and other regulatory requirements.

Clear and Consistent Implementation Procedures. Defined procedures that are clear and consistently implemented not only provide transparency to the permit development process but define a decision-making process that can be routinely implemented, increasing proficiency and consistency among permits. Conversely, the lack of clear and consistent implementation procedures can result in additional effort by permit writers to determine appropriate permitting approaches or create the need for unnecessary revisions during the QA process.

Data. The availability, format, and quality of data can directly impact the level of effort associated with permit development. Existing data requires a quality assessment, summary, and analysis, adding to the permit development process. Alternatively, the lack of existing data can delay permit development while the permittee is required to collect, analyze, and report the data to DEQ for use in the permit writing process.

Data that is provided electronically is preferable to hard copy data, as it does not have to be manually entered, saving time and reducing the potential for data entry errors. Managing large amounts of data provided electronically typically do not take significantly more time to analyze than small data sets. However, large amounts of data provided in hard copy may add significant time to the permit development process.

Additionally, when data quality issues are identified by the permit writer, the process is slowed due to the need to identify and correct the issues. In some cases, resampling may be necessary, prolonging the permitting process. Further, when data quality issues arise, unrepresentative data should be excluded from the data analysis. The exclusion of data requires adequate explanation in the fact sheet and results in increased effort in the permitting process.

New Versus Reissued Permits. In PG's experience, permit renewals typically require significantly less time to develop than new permits, due to the ability of the permit writer to rely on previous permitting decisions and monitoring requirements. Further, many new facilities may be in the design stage without a complete understanding of final design or operation, which may lead to the development of additional permit conditions to account for all possible options as opposed to a single known operational condition. However, permit renewals that require significant modifications (e.g., for facilities that have undergone facility upgrades or expansion) require additional time to develop.

Complexity. Multiple variables affect the complexity of permit development. In PG's experience, it is often difficult or impossible to manage many of these components that lead to increased permit complexity.

- **Facility Type** – Municipal facilities typically utilize more boilerplate text, while industrial facilities often have more facility-specific text to explain the permitted activity and permit requirements. Additionally, the development of technology-based effluent limitations for industrial facilities is often more complex.
- **Feasibility to Comply with Permit Conditions** – Facilities that cannot immediately comply with permit conditions may require additional feasibility analysis, the consideration of potential compliance strategies, additional communication with the permittee, establishing compliance schedules, additional EPA involvement, and increased public comment.
- **Application of Effluent Limitation Guidelines (ELGs) or other regulatory requirements** – The application of complex ELGs or other regulatory requirements, such as Clean Water Act Sections 316(b) or 316(a), may require the collection of additional facility information, increased communication with the permittee, additional data analysis, complex study reviews, and generation of facility-specific permit requirements and fact sheet text.
- **Permittee Requests/Special Studies to be Reviewed** – Permit applications or previous permit requirements that include special studies (e.g., mixing zone or water effects ratio studies) require review by Specialized Support staff, additional communication with the permittee, facility-specific permit requirements and fact sheet text, and may require a modification from the standard procedures implemented by DEQ.
- **Application of TMDLs** – TMDLs vary in complexity, but in worst cases can require Specialized Support staff for proper and consistent application. The application of TMDLs requires a review of the TMDL, recent TMDL implementation procedures, facility specific analysis, and the generation of facility-specific permit requirements and fact sheet text.
- **Backsliding/Antidegradation** – The public and EPA are appropriately prudent in the occurrence of backsliding and the application of antidegradation procedures in the permitting process. When permits allow for backsliding and degradation, permit writers must adequately document consistency with the applicable state and federal laws and regulations, requiring facility-specific fact sheet text and additional data analysis. Further, allowance of

backsliding or degradation is likely to result in increased scrutiny during the public comment period and result in additional effort during the response to comments.

- **Compliance History/Enforcement Issues** – Facilities with compliance issues or ongoing enforcement issues may require the development of facility-specific permit requirements and the fact sheet text. Additionally, these facilities are often subject to increased public scrutiny during the public comment period and result in additional effort during the response to comments.
- **Anticipated/Actual Public Interest/Involvement** – Facilities that have an anticipated public interest often require more effort during the public process. Early stakeholder engagement may require an increased initial effort but can reduce the overall level of effort by reducing the need for extensive written response to comments during the public review process or the need for a public hearing.

DEQ tracks NPDES permit hours using their System to Improve Permit Analysis, Review and Quality (SPARQ). Hours are tracked by development milestone, such as file review, data acquisition, application review, site visit, receiving water characterization, mixing zone study review, RPAs, TMDL implementation, permit component area, the QA process, external review process, and response to comments.

In discussions with DEQ, PG has been informed that the anticipated level of effort for individual permits range from 200 to 400 hours, depending on complexity. PG assisted with two permits, less than one percent of the overall permitting load for DEQ; however, PG's own experience and observations support this assertion. Nearing the completion of the NPDES permitting process for the two permits, PG is averaging approximately 225 hours for each permit. PG's level of effort does not include DEQ's data gap analysis or QA process. However, PG's total hours do include PG permit writers becoming familiar with Oregon's water quality standards, implementation procedures, templates, permitting tools, and discussions with DEQ staff. PG believes that DEQ's overall estimate of 200 to 400 hours is realistic, with most permits averaging 200 hours and very complex permits approaching 400 hours. The range of anticipated levels of effort for permit development milestones by PG is provided below:

Permit Development Milestone	Anticipated Hours (Range)
Initial File Review	2 - 20
Data Gap Analysis and Acquisition	2 - 8
Application Review	2 - 16
Site Visit	4 - 16
Receiving Water Characterization	4 - 32
Data Analysis and QA	8 - 40
Mixing Zone Study	1 - 16
RPAs and WQBELs	4 - 20
TMDL Implementation	4 - 24
Technology-based Effluent Limitations	1 - 20
Program Components (biosolids, pretreatment, etc.)	1 - 16
Draft Permit Text	10 - 40
Draft Fact sheet Text	10 - 80
Internal Review/QA	8 - 24
Response to Applicant and EPA Comments	1 - 40

Permit Development Milestone	Anticipated Hours (Range)
Response to Public Comments	1 – 40
Final Posting	1 – 4
Other (compliance schedules, admin, special study review, etc.)	4 – 40

DEQ is responsible for renewing approximately 360 permits over a 5-year period, or 72 permits a year. With eight dedicated permit staff, this equates to an expectation of nine permits issued each year for each permit writer. After factoring for vacation, holidays, and estimated sick time, this leaves approximately 200 hours for each permit. Assuming the eight core permitting staff were solely dedicated to permit writing, there is insufficient time available to maintain production at a level necessary to eliminate the permit backlog. Additionally, it is unlikely that the eight core permit writers will be free from additional obligations, such as supporting other program areas, permit tool development, and attendance at training and meetings.

PG expects that DEQ would require additional permit writer staff to address the current permit backlog and maintain timely permit issuance in the future. PG provides a number of program and permitting resource enhancements in Section 7 that will enable DEQ to reduce the level of effort associated with the permit development process.

7 POTENTIAL PROGRAM AND PERMITTING RESOURCE ENHANCEMENTS

Based on PG's understanding of DEQ's individual NPDES permit development process, PG has identified and prioritized program components for immediate enhancement or future development, as well as DEQ staff training needs, based on PG's permit development experience and observations.

PG recommendations have been characterized into three categories: high priority, intermediate priority, and low priority. In characterizing PG's recommendations, PG considered: overall impact on program efficiency, ease of immediate implementation, and perceived benefit per dollar spent. High priority recommendations are anticipated to provide significant benefit to overall program efficiency or be easily implemented with a low level of effort in relation to their perceived benefit. Intermediate recommendations are expected to provide benefit to the overall program, but less so than those specified as high priority. Further, intermediate recommendations may require more effort and resources to implement related to the perceived benefit. Low priority recommendations are anticipated to provide overall benefit to the program but are unlikely to have an immediate or significant impact on the program or may require the highest level of effort compared to the perceived benefit.

High Priority

- DEQ should formalize a process for permit writers to convey and discuss potential permitting issues following the application and file review process, and to develop an agreed upon approach to address these issues prior to actual permit development.

In developing the formal consultation process, DEQ should identify the types of issues permit writers should elevate to Direct Support, and possibly the Senior Legal Policy Analyst, staff during the consultation. Having a formal process for this consultation early in the process improves efficiency by ensuring the identified issues are addressed prior to drafting the permit and fact sheet, reducing the need for significant revisions later in the process.

- DEQ should utilize the methods specified in the TSD for evaluating reasonable potential with limited data sets to conduct RPAs and establish effluent limitations where reasonable potential is demonstrated.

During discussions with DEQ staff, it was indicated that permit development is often delayed due to having limited data to conduct an RPA. PG acknowledges DEQ's concern that there is a greater likelihood of triggering reasonable potential with fewer data points; however, if additional monitoring data collected during the permit term demonstrates that the facility does not exhibit reasonable potential to exceed water quality criteria, the regulations provide flexibilities for adjusting or removing effluent limitations based on new data (i.e., anti-backsliding and antidegradation). Furthermore, if the additional monitoring data confirms that the facility exhibits reasonable potential, DEQ's prudent establishment of effluent limitations will avoid delays in implementing the necessary actions to bring the facility into compliance.

- DEQ should consolidate the industrial and municipal templates into a single permit template and single fact sheet template. This will eliminate discrepancies between the permit and fact sheet templates, ensure consistency between all permits statewide, and provide for more efficient template maintenance and permit development. The consolidated templates should provide example language, where appropriate, for major and minor domestic and industrial facilities and instructions to permit writers for when that language should be used. Alternatively, if DEQ prefers to maintain separate templates, DEQ should update the templates to have the same organizational structure so that permit writers tasked with development of major and minor domestic and industrial permits and fact sheets know where to reliably find permit requirements and rationale when referencing the templates and other example permits, regardless of facility type.

PG noted that the QA Checklist used during the internal review process contained guidance for the individual permit components. Much of this guidance could be included directly into the appropriate locations within the permit and fact sheet templates.

While reviewing numerous DEQ issued permits, inconsistent rationale for development of WQBELs was observed from one permit to the next. The fact sheet template could be expanded to provide rationale for common pollutants (e.g., ammonia, metals, nutrients), with each pollutant type following a prescribed format. This approach increases efficiency and consistency among permits, and ensures appropriate information is presented within the fact sheet.

Additionally, DEQ should develop standard operating procedures for updating the template that identify the staff person(s) responsible for template maintenance, when and how often updates should occur, approval process for template updates (e.g., review by management and legal staff), and a tracking process to ensure template updates are incorporated into draft permits under development at the time of the updates. To ensure consistent implementation of recent template revisions, DEQ might consider the use of a checklist for recent template revisions that must be completed and submitted with the draft permit at the time of the internal QA review.

- DEQ should ensure the consistent implementation of permit and fact sheet template text.

In discussions with DEQ staff, it was noted that permit and fact sheet template text is not consistently implemented. To ensure consistency between permits, maintain efficiency, and ensure that permits are legally defensible, DEQ must ensure that permit writing staff rely on the boilerplate language in the templates, deviating only in those site-specific scenarios that are not accounted for in the templates. Deviations from the templates should be identified and discussed with management during the internal QA process.

- DEQ should consider the use of compliance schedules that extend beyond 5 years when determined necessary and appropriate.

In discussions with DEQ staff, it was noted that DEQ has hesitated to renew permits in a timely manner for facilities that will be at risk of being unable to comply with effluent limits within 5 years. However, compliance schedules may be issued for a period greater than 5 years when necessary to comply with newly established limits. DEQ's regulations and current Compliance Schedule IMD provide the necessary flexibility to implement

compliance schedules for newly applicable water quality-based effluent limits where compliance may extend beyond 5 years.

- DEQ should revise their QA Checklist to include a specific item that requires a review of the accuracy of the data set used to develop permit conditions, and validation of the representativeness of the data used during the permit development process.

PG recommends that data be reviewed to ensure accuracy and representativeness, particularly if a portion of the data was manually entered by the permittee or permit writer. Verification of data may include a comparison of the data entered into the RPA tools to the data source or lab bench sheets. PG typically recommends a minimum of 25 percent of all data be reviewed for accuracy to evaluate the data for the potential of data entry errors and identify systematic data summary errors. All maximum observed effluent concentrations should be verified and 100 percent of the data for all pollutants identified as having reasonable potential should be reviewed for accuracy. Additionally, 100 percent of all manually entered data should be reviewed for accuracy with the source data (e.g., laboratory reports).

The use of incorrect data may result in a failure to establish appropriate effluent limits, or in inappropriate effluent limits. In addition to the potential for placing an inordinate burden on permittees, incorrect data results in inefficiencies during the public comment period, requiring the duplication of multiple permitting steps (i.e., data summary, RPA process, limit calculation, permit development, and fact sheet rationale, internal review, public comment period), erodes permittee and public confidence in DEQ, and delays permit issuance.

- DEQ should enforce the use of the established naming conventions by DEQ staff.

DEQ has developed naming conventions in Procedure Number: 002-PROC-FILENAMING-20180802, titled, "*Statewide File Naming Convention*". During the file review process, PG observed that DEQ staff failed to consistently use the established naming conventions. As a result, sorting through permit file material was difficult and time consuming. DEQ staff are likely experiencing similar difficulties when reviewing files. Additionally, without established naming conventions, necessary and applicable documentation that has been incorrectly labeled may be overlooked during the permit development process. Efficiency in reviewing appropriate files would be increased if DEQ staff consistently implemented the established naming conventions.

- DEQ should consolidate all applicable permitting procedures, policies, regulations, templates and tools into a central repository or compendium as a resource for permit writers.

DEQ has developed several procedures, policies, templates, and tools that are necessary for permit development. Many of these documents are discussed throughout this report. PG was able to locate many of these documents throughout DEQ's website, and documents were provided directly by DEQ staff. In some cases, PG was not aware that an established policy or procedure had been developed until late in the permitting process because there is no central repository that houses all applicable resources for permit writers. The use of a central repository or compendium ensures that all applicable procedures, policies, templates and tools are immediately known and available to their permit writers. DEQ may have

developed an internal central repository that was unavailable to PG during our permit development process.

- DEQ should request supplemental information from permittees with administratively extended permits that are placed on the 2019 issuance plan.

DEQ has stated they plan to use the completed readiness reviews to develop the 2019 permit issuance plan. Once completed, DEQ should send out letters to each of the permittees on the 2019 permit issuance plan that have permits that have been administratively extended for more than a year. PG found that both permit applications and multiple plans submitted by the permittee were no longer representative of current facility operations. Requesting this information early would increase the potential for a complete and accurate permit file prior to initiating permit development.

- DEQ should continue to develop and maintain a spreadsheet of response to public comments and consistently coordinate with the Senior Legal Policy Analyst on responses.

This recommendation will ensure uniform and defensible responses to public comments.

- DEQ should revise form NPDES-R to incorporate the minimum federal requirements specified in 40 CFR 122.21(f).

This revision is not anticipated to take significant time on behalf of DEQ permitting staff; however, it is also not anticipated to significantly improve program efficiency.

Intermediate Priority

- DEQ should update the RPA tools to make the automated calculations more user-friendly.

DEQ's RPA spreadsheets automate the RPA and WQBEL calculation for toxic pollutants based on raw effluent data provided in the EDD format. The spreadsheets are complex, and some DEQ staff expressed that many permit writers do not enter data using the format in the spreadsheets and perform the functions manually. This approach negates the advantage of having automated the RPA process and decreases overall program efficiency. Staff permit writers should be consulted to determine changes that would enable them to more effectively and efficiently use this functionality in the spreadsheets. Once the updates have been made, training should be provided, and permit writing staff should be strongly encouraged to maximize use of the automated calculations and minimize manual data entry and calculation of summary statistics.

Specific recommendations for the toxic RPA spreadsheet is provided in Section 4.3.1.

- DEQ should consider utilizing only the most recent effluent data collected (e.g., from the last 3 to 5 years) for pollutants for which a significant amount of data is available.

DEQ's current practice is to utilize all available effluent data collected during the permit term unless determined to not be representative. Many of DEQ's permits have been administratively extended and contain extensive data sets exceeding 5 years. To reduce the burden of compiling and analyzing such extensive datasets, DEQ may limit the RPA to use only the most recent effluent data collected (e.g., from the last 3 to 5 years) for pollutants for

which a significant amount of data is available. In addition to reducing the burden to permit writers for data compilation, the use of more recent data may improve the validity of the RPA since more recent data is likely to be more representative of current discharge conditions and because data QA/QC is expected to improve over time. If DEQ chooses to make changes to the selection of effluent data sets for RPA purposes, PG recommends that those decisions be documented in the RPA IMD, as well as the factors to be considered by permit writers when selecting the data set (e.g., timing of treatment process upgrades or other major changes, need for more extensive data for seasonal parameters, instances where limited data is available).

- DEQ should update the RPA IMD to reflect actual permitting procedures, and direct permit writers to make permitting decisions based on information available at the time of permit development and maximize use of tools for flexibility (e.g., compliance schedules, backsliding).

The RPA IMD specifies the RPA process, assuming analyses occur during Year 2 and Year 3 of the permit term, with the remainder of the permit term to work with the permittee to develop an implementation approach. The RPA process as described in the RPA IMD is not reflective of actual implementation procedures used by DEQ staff and is unrealistic given the current permit backlog and DEQ's goal to reduce backlog.

- DEQ should consider providing reoccurring generalized training on key permitting skills and concepts, such as: statistics, water quality criteria, word processing, and the use of Microsoft Excel.

Permit writing requires key remedial skills necessary to adequately implement program components and generate permits. These skills are used day-in and day-out by the individual permit writers, and a lack of proficiency in these skills may measurably impact day-to-day efficiency. Due to the reliance of most permitting programs on the implementation of Word templates and Excel tools, permit writers should receive appropriate training to address formatting and style usage in Word documents, and the use of advanced functions in Excel to use and modify the available permitting tools as necessary.

PG also recommends routine training in basic statistical concepts and approaches related to the permit development process. In PG's experience, this is an area where permit writers are reluctant to acknowledge a need for training, either based on an assumption that they should already be knowledgeable in this area, or a lack of understanding regarding the full potential of statistical concepts within permitting. Many permit writers rely on pre-developed tools for applying these statistical concepts. Over time, permit writers may lose familiarity with the basic statistical concepts applied in the tools. When this occurs, permit writers may not be able to identify that the application of a tool is inappropriate or requires modification due to a permit-specific situation. Further, basic statistical concepts provide the permit writer with a powerful tool for additional analysis capabilities and application in permit-specific situations (e.g., development of technology-based effluent limitations, feasibility analyses, review of special studies, application of unique water quality criteria, etc.).

Evaluating compliance with applicable water quality criteria and establishing appropriately protective WQBELs requires consideration of pollutant magnitude, frequency, and duration, state implementation procedures, and minimum federal requirements. In most cases, the

application of criteria is standardized by permitting authorities. However, permit writers occasionally must implement site-specific criteria, variances, water effects ratios, waste load allocations from a TMDL, or interpret narrative criteria that are not standardized and require an understanding of underlying criteria and the criteria development process. To ensure permit writers have the capability to address these unique circumstances, PG recommends permit writers receive training on water quality criteria and the criteria development process.

The development of these types of trainings typically require a relatively low level of effort and can be provided to staff in short periods of time. Once developed, these trainings can be provided routinely with little effort. These trainings have the potential to impact overall program efficiency, template format consistency, permit writer confidence, and the appropriate use and implementation of permitting tools and concepts.

- DEQ should develop a single comprehensive and cohesive permitting procedures manual that establishes expectations for consistency and incorporates all applicable DEQ water quality standards requirements, policies, procedures, templates, and tools.

As previously noted, DEQ maintains various permitting procedures, policies, templates and tools. Permit writers must be familiar with all applicable documents to effectively and efficiently develop permits and work within the established DEQ protocol. The consolidation of these documents into a single permitting resource minimizes the effort to identify the appropriate resources and procedures and ensures cohesive implementation procedures. Once current procedures are assembled, gaps in the procedures could be identified and addressed. Additionally, a single comprehensive manual minimizes training efforts for new permitting staff, who could rely on the manual to walk them through the individual steps and expectations associated with permit writing.

Low Priority

- DEQ should provide formal and thorough training within the more technical specialized support areas (i.e., copper BLM, mixing zones, antidegradation) to all permit writers and encourage permit writers to implement these components on their own when applicable, before consultation with the Specialized Support staff.

PG observed that Specialized Support staff provide training in their defined support areas during the monthly call. This training appears to be sufficient for explaining implementation procedures for the less complex subject areas (i.e., biosolids, recycled water, pretreatment, compliance schedules), or an overview of more complex subjects. However, due to time constraints, frequency of monthly meetings, and lack of audience involvement, these trainings may not be effective for subject areas such as mixing zones, where complex information must be conveyed and applied under numerous possible scenarios.

These trainings often require a high level of effort to develop and disseminate to staff. However, once trained, staff can self-implement the permit component, minimizing reliance on the Specialized Support staff. Further, permit writers will be more capable of identifying significant information gaps or issues during the initial application and file review, and elevate these issues for consultation early in the permitting process with the Direct Support team.

In addition to the subject areas covered by Specialized Support staff, the advanced topics could include water-effect ratio and metal translator special studies, intake credits, and response to comments and defending permitting decisions.

Additionally, by training all permit writers in these areas, DEQ secures institutional knowledge within the individual program areas and is less susceptible to losing technical capability due to unexpected employee turnover.

PG continues to support the use of Specialized Support staff to review permit implementation and ensure consistency among permits.

- DEQ should extend the individual mentoring process beyond the first permit until the permit writer demonstrates, through periodic assessment, mastery of the major components of the permit development process.

DEQ staff indicated that new permit writers are provided an assigned mentor during the development of their first permit. Following the initial mentoring phase, the permit writer relies on the core team of permit writers and Specialized Support staff to answer questions as they work their way through subsequent permits. DEQ will periodically send new permit writers to EPA NPDES Permit Writers' Course and encourage the use of EPA's additional online training resources. Overtime the new permit writer is expected to gain knowledge and experience, and function effectively as a permit writer.

Permit writing is complex, requiring the acquisition and application of an immense amount of technical skills and concepts, regulatory knowledge, and State and federal policies and procedures. Furthermore, there is a diverse universe of facilities that require permits, many of which need special considerations during the permit development process. Although DEQ likely assigns easier permits (including the consideration of facility type) to newer staff, permits and issues typically vary from one facility to the next. Mentoring through the development of a single permit is not sufficient to prepare new permit writers for the responsibility for development of subsequent permits. DEQ should consider extending the mentoring process until the permit writer has mastered the basic components of permit development.

- DEQ permit program staff should consider working with DEQ TMDL program staff to develop straightforward, practicable procedures for TMDLs issued without clear implementation procedures.

For TMDLs under development, DEQ permitting staff should work with DEQ TMDL program staff early and often through the TMDL development process to ensure that the implementation procedures contain the necessary information for NPDES permit writers to efficiently incorporate the applicable TMDL requirements in NPDES permits. EPA Region 9 provides additional helpful practices for TMDL and NPDES permit writing staff for NPDES permit-friendly TMDL development and interpreting existing TMDLs in their

June 2015 *Helpful Practices for Addressing Point Sources and Implementing TMDLs in NPDES Permits*⁴³. DEQ may benefit from implementing some of the recommended practices therein.

Additional Notes

As discussed in Section 6, PG believes that DEQ will require additional permit writer staff to address the permit backlog and maintain timely permit issuance into the future. Based on the total number of permit renewals necessary each year to consistently achieve 90 percent of the permits being current, eight core permit writers are not sufficient. DEQ has implemented several programmatic improvements over the last 2 years that are anticipated to increase program effectiveness and efficiency; however, there are realistic limitations on the efficiency that can be obtained via programmatic changes. Under the best circumstances, permit writing remains a time consuming technical process that requires an educated, skilled, and experienced staff. While some permits are likely to be completed with significantly less effort, based on PG's experience in other states and our limited experience within Oregon, PG expects an overall average level of effort by DEQ staff of at least 200 hours per permit.

DEQ's use of SPARQ to track the level of effort associated with various permit development steps will provide actual data to be used to identify the appropriate staffing level. However, DEQ is encouraged to have permit writers track time performing duties not directly associated with developing a specific permit. If permit writers can realistically only commit 90 percent of their time to permit writing due to other job commitments, this limitation must be considered when evaluating necessary staffing requirements.

⁴³ https://www.epa.gov/sites/production/files/2018-04/documents/tmdls-npdes_permits_helpful_practices_final_6_30_15.pdf