

Idaho Pollutant Discharge Elimination System

User's Guide to Permitting and Compliance
Volume 1—General Information



**State of Idaho
Department of Environmental Quality**

April 2017



Printed on recycled paper, DEQ April 2017, PID
IPGF, CA code 82988. Costs associated with this
publication are available from the State of Idaho
Department of Environmental Quality in accordance
with Section 60-202, Idaho Code.

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User's Guide to Permitting and Compliance

Volume 1—General Information

April 2017



**Prepared by
Idaho Department of Environmental Quality
Water Quality Division
1410 N. Hilton
Boise, ID 83706**

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Abbreviations and Acronyms

| | | | |
|------------------------|---------------------------------------------------------------------------------------|----------------|---------------------------------------------------|
| § | section (usually a section of federal or state rules or statutes) | CSO | combined sewer overflow |
| ADB | assessment database | CSS | combined sewer system |
| AFO | animal feeding operation | CV | coefficient of variation |
| AG | office of the attorney general | CWA | Clean Water Act |
| BAT | best available technology economically achievable | DEQ | Idaho Department of Environmental Quality |
| BCT | best conventional pollutant control technology | DMR | discharge monitoring report |
| BMP | best management practice | EDU | equivalent dwelling unit |
| BOD₅ | five-day biochemical oxygen demand | EIN | employer identification number |
| BPJ | best professional judgment | ELG | effluent limit guideline |
| BPT | best practicable control technology currently available | eNOI | electronic notice of intent |
| CAAP | concentrated aquatic animal production | EPA | United States Environmental Protection Agency |
| CAFO | concentrated animal feeding operation | ESA | Endangered Species Act |
| CFR | code of federal regulations (refers to citations in the federal administrative rules) | FDF | fundamentally different factors |
| CGP | construction general permit | FWPCA | Federal Water Pollution Control Act |
| CIE | compliance, inspection, and enforcement | GWGP | ground water remediation general permit |
| CNE | certificate of no exposure | HEM | hexane extractable material |
| COC | chain of custody | IDAPA | refers to citations of Idaho administrative rules |
| CRIPS | DEQ's compliance, reporting, inspection, and permitting system database | I&I | infiltration and inflow |
| | | IML | interim minimum level |
| | | IP | individual permit |
| | | IPDES | Idaho Pollutant Discharge Elimination System |

| | | | |
|--------------|-------------------------------------------------|----------------|-----------------------------------------------|
| kg | kilogram | NSPS | new source performance standard |
| L | liter | O&M | operations and maintenance |
| LA | load allocation | ORW | outstanding resource waters |
| LEW | low erosivity waiver | PCB | polychlorinated biphenyls |
| MCL | maximum contaminant level | PGP | pesticide general permit |
| MDL | method detection limit | POTW | publicly owned treatment works |
| MEP | maximum extent practicable | QAPP | quality assurance project plans |
| mg/L | milligrams per liter | QA/QC | quality assurance/quality control |
| mgd | million gallons per day | RAPP | Refuse Act Permit Program |
| ML | minimum level | RPA | reasonable potential analysis |
| MOA | memorandum of agreement | RPTE | reasonable potential to exceed |
| MS4 | municipal separate storm sewer system | SDWA | Safe Drinking Water Act |
| MSGP | multi-sector general permit | SEP | supplemental environmental project |
| NAICS | North American industry classification system | SHPO | state historic preservation offices |
| NMP | nutrient management plan | SIC | standard industrial classification |
| NNCR | NPDES noncompliance reports | SNC | significant noncompliance |
| NOD | notice of deficiency | SPCC | spill, prevention, control and countermeasure |
| NOI | notice of intent | SSO | sanitary sewer overflow |
| NOIE | notice of intent to enforce | SWMP | storm water management program |
| NONC | notice of noncompliance | SWPPP | storm water pollution prevention plan |
| NONFA | notice of no further action | | |
| NOT | notice of termination | | |
| NOV | notice of violation | | |
| NPDES | National Pollutant Discharge Elimination System | | |

| | |
|--------------|------------------------------------------|
| TBEL | technology-based effluent limit |
| TKN | total Kjeldahl nitrogen |
| TMDL | total maximum daily load |
| TRC | technical review criteria |
| TSS | total suspended solids |
| TWTDS | treatment works treating domestic sewage |
| US | United States |
| USACE | United States Army Corps of Engineers |
| WET | whole effluent toxicity |
| WLA | wasteload allocation |
| WQA | Water Quality Act |
| WQBEL | water quality-based effluent limit |
| VGP | vessel general permit |

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1 Introduction

The Idaho Department of Environmental Quality's (DEQ's) Idaho Pollutant Discharge Elimination System (IPDES) Program developed this guidance to help the regulated community and other public users easily understand and follow the IPDES permitting and compliance process. This IPDES User's Guide to IPDES Permitting and Compliance provides assistance to Idaho's municipalities, industries, and citizens on complying with the statutory and regulatory requirements of the IPDES Program, which governs the discharge of pollutants to waters of the United States in Idaho.

1.1 Purpose and Scope

This guide serves as a reference for successfully navigating the IPDES permitting and compliance process and is designed to achieve the following:

- Assist the regulated community (permittees) in selecting and applying for the proper IPDES or other permits to address discharges to waters of the United States in Idaho.
- Explain technical considerations for developing IPDES permits.
- Assist users in fully understanding and complying with all processes, protocols, and requirements of IPDES permits.

This guide is based on the Clean Water Act (CWA), Idaho Code and administrative rules, federal regulations, and state and national policies and standards. Some sections of this guide have been newly developed to address rules, regulations, and conditions specific to Idaho, while other sections represent an adaptation of existing state and the following US Environmental Protection Agency (EPA) guidance documents:

- *NPDES Permit Writer's Manual* (EPA 2010a):
https://www3.epa.gov/npdes/pubs/pwm_2010.pdf
- *NPDES Compliance Inspection Manual* (EPA 2004a):
http://www.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf

This guide describes the framework for the IPDES Program and presents broad aspects of the permit application, development, and compliance processes. It is not intended to be a stand-alone reference document but is supplemented with more detailed IPDES guidance that addresses specific circumstances, topics, and references, and adopts existing state and federal guidance, as appropriate.

While this guide provides direction in many cases, DEQ may have to adjust permit-specific aspects to address site-specific concerns and conditions. These considerations may include compliance with Idaho's "Water Quality Standards" (IDAPA 58.01.02), "Wastewater Rules" (IDAPA 58.01.16), "Rules Regulating the IPDES Program" (IDAPA 58.01.25), and additional state and federal guidance. This guide does not replace, supplant, or change any requirements under state or federal rules and regulations but does identify and reference relevant regulations, policy, and other guidance documents.

1.2 Web-Based Access to Information

IPDES web pages, accessible through DEQ's website, contain information and publications to assist the regulated community in applying for and complying with individual and general permits. As new guidance becomes available, the web pages and posted information will be updated periodically at www.deq.idaho.gov/water-quality/ipdes/.

DEQ is developing additional web-based tools, which are discussed throughout the guide, to assist the regulated community with specific aspects of permit application and compliance. These tools, available for most aspects of IPDES permitting and compliance, serve as valuable resources for the regulated community, public users, permit writers, and compliance, inspection, and enforcement (CIE) personnel. The IPDES web-based tools allow applicants, permittees, and the general public to comply with federal electronic reporting requirements by providing a single location for electronically submitting:

- Applications for individual permits
- Notices of intent (NOI) to obtain coverage under general permits
- Notices of termination (NOT) of discharge to waters of the United States in Idaho
- Certificates of no exposure (CNEs) and low erosivity waiver (LEW) requests
- Annual reports
- Other required documentation (e.g., noncompliance reports)
- Corrections to erroneously recorded/reported data
- Ability to search and view permit, compliance, inspection, and enforcement documents

Many of the IPDES web-based tools are affiliated with the IPDES Compliance, Reporting, Inspection, and Permitting System (CRIPS) database. Additional information about the web-based tools and CRIPS database is provided throughout this guide and in subsequent guidance.

1.3 Legislative and Regulatory Citations

In this guide, the following conventions are used to cite legislation and regulations:

- Idaho Code—Title of the code follow by the code citation: “Approval of State NPDES Program” (Idaho Code §39-175C). After initial use, the code is then referred to by the citation (e.g., Idaho Code §39-175C).
- Idaho Administrative Rules—Title of the rule is followed by the rule citation: “Rules Regulating the Idaho Pollutant Discharge Elimination System Program” (IDAPA 58.01.25). After initial use, the rule is then referred to by the rule citation (e.g., IDAPA 58.01.25).
- Code of Federal Regulations—Initial and subsequent references to CFRs use the regulation citation (e.g., 40 CFR 136).
- US Code—Initial and subsequent references to US code use the code citation (e.g., 16 U.S.C. §1531 et seq. or 33 U.S.C. §§1251–1387).
- Clean Water Act (CWA)—Title of the act is followed by the act citation: Clean Water Act section 402 (e.g., CWA §402). After initial use, the act is then referred to by the act citation (e.g., CWA §402).

Most regulatory citations in this guide are from the “Rules Regulating the IPDES Program” (IDAPA 58.01.25) and CFR Title 40. Other rules and regulations are explicitly referenced in full citation when used for the first time in this guide. Applicable IDAPA and CFR references are included as endnotes after the appendices.

1.4 Time Computation¹

Throughout this guide, references to days represent calendar days, unless specified otherwise (e.g., business days). In computing any period of time scheduled to begin after or before the occurrence of an activity or event, the date of the activity or event is not included. The last day of the period is included, unless it is a Saturday, Sunday, or legal holiday, in which case the period runs until the end of the next day (which is not a Saturday, Sunday, or holiday). When a party or interested person is served by mail, 3 days are added to the prescribed time.

1.5 Hyperlinks

Websites provide supplementary information and are referenced in this guide. The website address appears in blue italics so that readers can access the reference in printed and electronic versions of this document. In the electronic version, the website address is hyperlinked to the site. Correct website addresses and hyperlinks are provided; however, these references may change or become outdated after publication.

2 Clean Water Act, NPDES Program, and IPDES Program

This section presents an overview of the history of water pollution control in the United States, evolution and accomplishments of the National Pollutant Discharge Elimination System (NPDES) Program, and development of the IPDES Program.

2.1 History of Water Pollution Control in the United States

Major water pollution control legislation in the United States dates back to the end of the 19th century. A summary of key legislative and executive actions in the history of developing the US clean water program is provided below:

- 1899 Rivers and Harbors Act
- 1948 Federal Water Pollution Control Act (FWPCA)
- 1965 Water Quality Act
- 1970 Executive Order—EPA established
- 1970 Refuse Act Permit Program (RAPP)
- 1972 FWPCA Amendments
- 1977 Clean Water Act (CWA)
- 1987 Water Quality Act

The first major water pollution control statute was the 1899 Rivers and Harbors Act, which established permit requirements to prevent unauthorized obstruction or alteration of any navigable waters of the United States. The act focused on navigation rather than water quality.

The 1948 FWPCA initiated the federal government's involvement in water pollution control for public health protection. The act allotted funds to state and local governments for water pollution control and emphasized the states' role in controlling and protecting water resources with few federal limits or guidelines. The act, however, did charge the US Surgeon General with developing comprehensive programs to eliminate or reduce the pollution of interstate waters.

Over the next two decades, Congress became increasingly interested in the problem of water quality degradation. From 1956 through 1966, it enacted four major laws to strengthen the federal role in water pollution control, including the 1956 FWPCA Amendments and the 1961 FWPCA Amendments. Those statutes focused primarily on providing funding to municipalities to construct wastewater treatment plants.

A few years later, Congress further strengthened federal water pollution control laws by enacting the 1965 Water Quality Act. This law created the Federal Water Pollution Control Administration and represented a major regulatory advancement in water pollution control by requiring states to develop water quality standards for interstate waters by 1967. The Water Quality Act also called for states to quantify the amount of pollutants that each discharger could release without exceeding the water quality standards (i.e., pollutant loads). Despite escalating public concern and increased public spending, only about half of the states developed water quality standards by 1971. Furthermore, enforcement of the federal statute was minimal because the regulatory agencies had to demonstrate a direct link between a discharge and a health or water quality problem, and the scientific data to make such demonstrations were often lacking. Finally, there were no criminal or civil penalties for violations of statutory requirements.

Growing concern about the environment prompted President Nixon to form the EPA in 1970 to enforce environmental compliance and consolidate federal pollution control activities. That year, the president also created RAPP through Executive Order 11574 under the authority of the 1899 Rivers and Harbors Act, section 13 (known as the Refuse Act). This new permitting program focused on controlling industrial water pollution. EPA and the US Army Corps of Engineers (USACE) prepared the program requirements and USACE administered the program. EPA was tasked with developing guidelines on effluent quality for 22 different categories of sources. When a discharger applied for a permit, USACE asked EPA if the proposed effluent levels were consonant with state water quality standards and with the newly developed guidelines on effluent quality. States were asked to examine permit applications and advise EPA whether existing or proposed treatment processes would ensure that established water quality standards would be met. EPA reviewed the state's response for interstate waters and instructed USACE whether to issue the permit. The US District Court for the District of Columbia struck down RAPP (*Kalur v. Resor* 1971) because the program would allow issuing permits to discharge refuse to nonnavigable tributaries of navigable waterways, which the court said exceeded the authority given in the act and because the regulations implementing the program did not require compliance with certain procedural requirements of the National Environmental Policy Act.

Because of the perceived need for a discharge permit program and to rectify the problems encountered in earlier water pollution control legislation, Congress enacted the 1972 FWPCA Amendments. This legislation, which was passed over a presidential veto in November 1972, provided a comprehensive recodification and revision of past federal water pollution control law. The 1972 amendments marked a distinct change in the philosophy of water pollution control in the United States and marked the beginning of the present water programs, including the NPDES

permit program. Under those amendments, the federal government assumed a major role in directing and defining water pollution control programs. In establishing the basis for clean water programs, Congress sought a balance between economics (considering both the costs and benefits of cleanup) and ecology (setting deadlines and ambitious requirements for reducing discharges and restoring water quality).

The 1972 FWPCA Amendments established a series of goals in section 101. Perhaps the most notable goal was that the discharge of pollutants into navigable waters be eliminated by 1985. Although that goal remains unmet, it underlies the CWA approach to establishing the technology standards that are implemented through technology-based effluent limits (TBELs) in NPDES permits.

The 1972 FWPCA Amendments created a new requirement for technology-based standards for point source discharges. EPA develops these standards for categories of dischargers, based on the performance of wastewater treatment technologies and pollution control technologies without regard to the conditions of a particular receiving water body. The intent of Congress was to create a "level playing field" by establishing a basic national discharge standard for all facilities within a category, using a best available technology. The standard becomes the minimum regulatory requirement in a permit. If the national standard is not sufficiently protective at a particular location, then water quality standards may be employed.

These amendments authorized continued use of the water quality-based approach but in coordination with the technology-based standards. After applying technology-based standards to a permit, if water quality is still impaired for the particular water body, then the permit agency (state or EPA) may add water quality-based limits to that permit. The additional limits must be more stringent than the technology-based limits and require the permittee to install additional controls.

The 1972 FWPCA Amendments also set an interim goal of achieving, "water quality [that] provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" by July 1, 1983. The goal, commonly referred to as the *fishable, swimmable* goal, is one of the factors that states must consider in developing their water quality standards. The water quality standards are implemented in NPDES permits through water quality-based effluent limitations (WQBELs). By prohibiting the discharge of a pollutant or pollutants from a point source to waters of the United States—except as in compliance with the statute—the 1972 FWPCA Amendments also established the important principle that the discharge of pollutants to navigable waters is not a right, and without a permit, it is prohibited.

Since 1972, FWPCA has been further amended on several occasions, including the 1977 CWA, which is now the name for the statute, and the 1987 Water Quality Act (WQA). These statutes are discussed further in section 2.2 with regard to their impact on the evolution of the NPDES Program.

2.2 Evolution of the NPDES Program

FWPCA, section 402 of Title IV, Permits and Licenses Certification, created the federal system for permitting wastewater discharges, known as the NPDES Program. Under the requirements of the program, a point source may be authorized to discharge pollutants into waters of the United

States by obtaining a permit. A permit provides two types of control: technology-based limits (based on the technological and economic ability of dischargers in the same category to control the discharge of pollutants in wastewater) and water quality-based limits (to protect the quality of the specific water body receiving the discharge).

The 1972 FWPCA Amendments established several important requirements and deadlines. Municipal facilities were required to meet secondary treatment standards by July 1, 1977. Industrial facilities were required to meet two levels of technology standards: (1) best practicable control technology currently available (BPT) and (2) best available technology economically achievable (BAT), which would bring them further toward the goal of eliminating the discharge of all pollutants (CWA §301(b)(2)(A)). Compliance deadlines for BPT and BAT were established as of July 1, 1977, and July 1, 1983, respectively.

In addition to BPT and BAT requirements for industrial categories, the 1972 FWPCA Amendments established new source performance standards (NSPS) or best available demonstrated control technology including, where practicable, a standard permitting no discharge of pollutants (CWA §306(a)). The legislative history indicates that Congress believed that technologies would be more affordable for new dischargers who could plan control technologies at the design phase. The standards represent state-of-the-art control technologies for new sources because the permittees have the opportunity to install the most efficient production processes and the latest in treatment technologies during construction. NSPS are effective on the date the facility begins operation, and the facility must demonstrate compliance within 90 days of start-up.

EPA tried to set national, uniform effluent limit guidelines and standards (effluent guidelines) as a basis for technology-based limits; however, most effluent guidelines were not in place when the first set of permits was issued between 1973 and 1976. About 75% of the first round permits were issued under a section of the act that allows a permit writer to use best professional judgment (BPJ) to establish case-by-case limits. Using that approach, a single permit writer developed effluent limits for a specific facility using knowledge of the industry and the specific discharge, rather than using a set of national standards and limits developed by EPA for the entire industry.

Because CWA first set out a technology-based obligation, and an additional water quality-based obligation if needed to meet the water quality standards for the individual water body, this first round of permitting focused on conventional pollutants generally found in sanitary waste from households, businesses, and industries. CWA §304(a)(4) and 40 CFR 401.16 designate the conventional pollutants with oil and grease added to 40 CFR 401.16 in 1979. The following are formally designated as conventional pollutants:

- Five-day biochemical oxygen demand (BOD₅)
- Total suspended solids (TSS)
- pH
- Fecal coliform
- Oil and grease

The 1972 FWPCA Amendments, however, also required that EPA publish a list of toxic pollutants within 90 days and propose effluent standards for those pollutants 6 months later. EPA

was not able to meet those requirements because of the lack of information on treatability. The Natural Resources Defense Council sued EPA, resulting in a court-supervised consent decree (NRDC et al. v. Train 1976) that identified the following:

- Toxic (priority) pollutants to be controlled
- Primary industries for technology-based control
- Methods for regulating toxic discharges through the authorities of the FWPCA Amendments

The provisions of the consent decree were incorporated into the framework of the 1977 FWPCA Amendments, formally known as CWA. This statute shifted the emphasis of the NPDES Program from controlling conventional pollutants to controlling toxic pollutant discharges. CWA §307(a)(1) required EPA to publish a list of toxic pollutants or combination of pollutants. Those pollutants often are called the priority pollutants and are listed in 40 CFR 401.15. The terms, toxic pollutant and priority pollutant, are used interchangeably throughout this guide.

CWA §307(a) originally identified 65 toxic pollutants and classes of pollutants for 21 major categories of industries (i.e., primary industries). The list was later further defined as the current list of 126 toxic pollutants. The priority pollutants are listed in 40 CFR 423, Appendix A. The list goes up to 129 pollutants; however, only 126 are priority pollutants because 017, 049, and 050 were deleted.

The 1977 CWA adjusted technology standards to reflect the shift toward control of toxics, clarified and expanded the concept of BAT controls, created a new level of control for conventional pollutants, and made changes to strengthen the industrial pretreatment program. The 1977 law created a new pollutant category, nonconventional pollutants, that included pollutants (such as chlorine and ammonia) not specifically categorized as conventional or toxic. The CWA clarified that BAT covers both toxic and nonconventional pollutants, extended the compliance deadline for BAT for toxic pollutants to July 1, 1984, established a 3-year deadline for compliance with BAT for newly listed toxics, and gave industries until as late as July 1, 1987, to meet BAT requirements for nonconventional pollutants. In addition, conventional pollutants, controlled by BPT and BAT in the first round of permitting, were now subject to a new level of control termed best conventional pollutant control technology (BCT). CWA established a compliance deadline for BCT of July 1, 1984. BCT was not an additional performance standard but replaced BAT for the control of conventional pollutants. Finally, among other changes, the 1977 CWA authorized EPA to approve local pretreatment programs and required authorized states to modify their programs to provide for local pretreatment program oversight.

The 1977 CWA recognized that the technology-based limits could not prevent the discharge of toxic substances in toxic amounts in all waterways. To complement its work on technology-based limits, EPA initiated a national policy in February 1984 to control toxics using a water quality approach. On February 4, 1987, Congress amended CWA with the 1987 WQA that outlined a strategy to accomplish the goal of meeting state water quality standards. The 1987 WQA required all states to identify waters that were not expected to meet water quality standards after technology-based controls on point source were imposed. Each state then had to prepare individual control strategies to reduce toxics from point and nonpoint sources to meet the water quality standards. Among other measures, those plans were expected to address control of

pollutants beyond technology-based levels. These amendments also saw the end of the grant program; it transitioned to the Clean Water State Revolving Fund program.

The 1987 WQA further extended the compliance deadline for BAT- and BCT-based effluent limits, this time to a new deadline of March 31, 1989. The 1987 WQA also established new schedules for issuing NPDES permits to industrial and municipal storm water dischargers. In addition to meeting water quality-based standards, industrial storm water discharges must meet the equivalent of BAT and BCT effluent quality standards. Municipal separate storm sewer systems (MS4s) were required to have controls to reduce pollutant discharges to the maximum extent practicable (MEP), including management practices, control techniques and system design and engineering methods, and other provisions the administrator deems appropriate for the control of such pollutants (CWA §402(p)(3)(B)). The 1987 WQA also required EPA to identify toxics in sewage sludge and establish numeric limits to control such toxics. A statutory antibacksliding requirement in the WQA specified the circumstances under which an existing permit can be modified or reissued with less stringent effluent limits, standards, or conditions than those already imposed.

Since 1987, minor revisions have been made to CWA (e.g., combined sewer overflow [CSO] program requirements). In 1995, EPA introduced affordability and financial capability interim guidance that was made final in 1997. In 2011, EPA adopted an integrated planning policy that allows municipalities with multiple CWA and Safe Drinking Water Act (SDWA) obligations to prioritize and implement capital improvements over a longer time frame to meet those obligations. However, the basic structure of the NPDES Program remains unchanged from the framework established in the 1972 FWPCA Amendments.

2.3 IPDES Program Development

In 2000, DEQ began developing the first of several analysis reports to determine whether or not Idaho should seek approval to administer a state NPDES Program from EPA. A summary of key departmental, legislative, and executive actions in developing the IPDES Program is provided below:

- 2001—NPDES Decision Analysis Report #1 (DEQ 2001)
www.deq.idaho.gov/media/529911-npdes_primacy_report1.pdf
- 2002—NPDES Decision Analysis Report #2 (DEQ 2002a)
www.deq.idaho.gov/media/529907-npdes_primacy_report2.pdf
- 2005—Legislative Findings and Purpose (e.g., direction to evaluate primacy statute): Idaho Code §39-175A
- 2005—Relationship between State and Federal Law: Idaho Code §39-175B
- 2005—NPDES Decision Analysis Report #3 (DEQ 2005a)
www.deq.idaho.gov/media/490946-npdes_primacy_report3.pdf
- 2014—Approval of State NPDES Program Idaho Code §39-175C
- 2015—Idaho DEQ-generated Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25) through negotiated rulemaking with stakeholders
- 2016—Idaho Legislature assessed the draft rules

The NPDES Decision Analysis Report #1 (DEQ 2001) focused on determining the scope and estimated cost of a potential Idaho NPDES program, determining the requirements under CWA to obtain such a program and identifying advantages, disadvantages, and uncertainties. The report concluded that state NPDES primacy was conceptually attractive; however, a more detailed analysis of costs and benefits needed to be developed before making a recommendation to proceed.

The NPDES Decision Analysis Report #2 (DEQ 2002a) addressed specific steering committee needs related to understanding the potential costs and benefits of a state run NPDES permitting program. The following key issues and products were discussed in this report based on the following needs:

- State capacity to run the NPDES Program
- Endangered Species Act (ESA) consultation
- Potential flexibility and innovative state NPDES program approaches
- Program costs and funding
- Annotated outline for a storm water guidance
- Water quality-based effluent limits guidance

In 2005, the Idaho Legislature authorized DEQ to explore, by further evaluating the costs and benefits to the state, whether the state should operate an NPDES program. This report updated information for review by the legislature and Idaho citizens.

The NPDES Decision Analysis Report #3 (DEQ 2005a) revised the NPDES Decision Analysis Report #2 (DEQ 2002a) to reflect current permitting practices and the current list of NPDES permittees within the state. The report reviewed and updated the resource costs, scope of programs included, and number and nature of permits. Additionally, ESA consultation procedures were reviewed in the context of recent court cases, and updated funding options were also briefly addressed.

With the passage of Idaho Code §39-175A in 2005, the legislature established requirements before legislative approval of a state NPDES permitting program. The legislature established that a state program must be run with a minimum of federal interference in permitting, inspection, and enforcement activities and that all state permitting actions under an approved state program are state actions and not subject to consultation under the ESA or National Environmental Policy Act. Further, it was identified that a decision to accept delegation from the EPA to operate a state NPDES program had significant public policy implications that should be made by the legislature.

Subsequently, Idaho Code §39-175B was promulgated to clarify the relationship between state and federal law. The legislature recognized it could not conveniently or advantageously set forth, in statute, all of the requirements for regulations that have been or will be established under CWA. However, the legislature asserted that any state permitting program would avoid duplicative, overlapping, or conflicting state and federal regulatory systems. Further, the DEQ board may promulgate rules to implement a state permitting program but not impose conditions or requirements more stringent or broader in scope than CWA and associated federal regulations. DEQ cannot require NPDES permits for activities and sources not required to have permits by EPA.

The 2014 Idaho Legislature passed Idaho Code §39-175C, authorizing DEQ to pursue approval to administer a state NPDES program from EPA, including rules authorizing the collection of reasonable fees for processing and implementing the program. The statute identified that implementing the state NPDES program cannot occur before statutory enactment of implementing legislation and authorizing a memorandum of agreement (MOA). Additionally, water rights shall be protected, and nothing in the statute is intended to supersede any existing agreements between federal, state, or local agencies regarding authority over inspections.

In 2014–2016, DEQ completed a negotiated rulemaking process to develop rules that comply with the NPDES requirements established in CFR Title 40, including those in 40 CFR 123, which specifically address requirements for states pursuing approval to administer a state NPDES program. These “Rules Regulating the IPDES Program” (IDAPA 58.01.25) were approved during the 2016 Idaho legislative session for statewide implementation. DEQ expects to submit a complete application package to EPA by September 1, 2016.

3 Permit Descriptions by Type and Sector

3.1 Individual versus General Permits

The two basic IPDES permit types are individual and general. These permit types have similar components but are used under different circumstances and involve different permit issuance processes.

3.1.1 Individual Permits

Individual permits are specifically tailored to individual facilities. Upon receiving the appropriate application form, DEQ will develop a permit for that facility based upon the information provided by the permit application and other sources (e.g., previous permit requirements, discharge monitoring reports [DMRs], technology and water quality standards, total maximum daily loads [TMDLs], ambient water quality data, and special studies). DEQ then issues a permit to the facility for up to a 5-year cycle with a requirement to reapply no less than 180 days before the expiration date.

3.1.2 General Permits

General permits can be an efficient and cost-effective option for DEQ because multiple facilities may be covered under a single permit. DEQ may develop and issue general permits to cover multiple facilities in a specific category of discharge, sludge use, or disposal practice. General permits must clearly identify the applicable conditions for each category or subcategory covered by the permit. General permits may exclude specified sources or areas from coverage. Similar to individual permits, DEQ can only issue general permits for a 5-year period or less. Permittees covered by a general permit must reapply within a specific time to remain covered under an administratively extended general permit² (EPA 1984a).

A general permit may be written to cover one or more categories or subcategories of dischargers, or sludge use, or disposal practices, or facilities described in the permit, except those covered by individual permits³. The following sources may be covered under a general permit:

- Storm water point sources
- One or more categories or subcategories of point sources if they all
 - Involve the same or substantially similar types of operations (e.g., treatment processes).
 - Discharge the same types of wastes (e.g., pollutants) or engage in the same types of sludge use or disposal practices.
 - Require the same effluent limits, operating conditions, or standards for sewage sludge use (e.g., including discharge) or disposal.
 - Require the same or similar monitoring.
 - Are more appropriately controlled under a general permit than under individual permits.

General permits may be written to cover dischargers within an area corresponding to existing geographic or political boundaries such as the following:⁴

- Designated planning areas
- Sewer districts or sewer authorities
- City, county, or state political boundaries
- State highway systems
- Standard metropolitan statistical areas as defined by state or federal agencies
- Urbanized areas as designated by the US Census Bureau
- Any other appropriate division or combination of boundaries

Where a large number of similar facilities require permits, a general permit allows the permitting authority to allocate resources in a more efficient manner and to provide timely permit coverage rather than issuing an individual permit to each facility. In addition, using a general permit ensures consistent permit conditions for comparable facilities.

3.2 Permitted Sectors

IPDES permits can be broadly classified as municipal and nonmunicipal facilities. Federal facilities fall into the broader category of nonmunicipal facilities. Within those broad categories, specific types of activities are subject to unique programmatic requirements in IDAPA 58.01.25 and CFR Title 40 (Table 1).

Table 1. IPDES Program areas and applicable regulations.

| Program Area | Applicable IDAPA 58.01.25 Rules and CFR Title 40 Code |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Municipal | |
| Municipal (publicly owned treatment works [POTWs]) effluent discharges | IDAPA 003, 010, 102, 105, 108, 110, 130, 201, 203, 301, 302, 303, 310, 370, 380 40 CFR 122, 125, 133 |
| Indirect nonmunicipal discharges (pretreatment) | IDAPA 003, 010, 102, 105, 201, 302, 370 40 CFR 122, 403, 405-471 |
| Sewage sludge use and disposal | IDAPA 003, 010, 100, 102, 105, 108, 109, 130, 201, 300, 302, 304, 305, 380 40 CFR 122, 257, 501, 503 |
| Combined sewer overflow (CSO) discharges | IDAPA 105, 130 40 CFR 122, 125 |
| Sanitary sewer overflow (SSO) discharges | IDAPA 010, 105 40 CFR 122 |
| Municipal separate storm sewer systems (MS4s) discharges | IDAPA 003, 010, 102, 105, 201, 301 40 CFR 122, 125 |
| Nonmunicipal (Industrial, Commercial, and Manufacturing) | |
| Process wastewater discharges | IDAPA 010, 105, 303 40 CFR 122, 125, 405-471 |
| Nonprocess wastewater discharges | IDAPA 105 40 CFR 122, 125 |
| Storm water discharges associated with industrial activity | IDAPA 105, 130, 304 40 CFR 122, 125 |
| Storm water discharges from construction activities ^a | IDAPA 105, 302 40 CFR 122 125 |
| Cooling water intake structures | IDAPA 003, 105, 109, 302, 303, 310 40 CFR 122, 125, 401 |
| Concentrated animal feeding operations (CAFOs) | IDAPA 003, 010, 102, 105, 130, 201, 301 40 CFR 122, 123, 125, 412 |
| Concentrated aquatic animal production (CAAP) facilities | IDAPA 003, 010, 102, 105 40 CFR 122, 125, 451 |
| Ground water remediation | IDAPA 010, 105 40 CFR 122 |
| Pesticide discharges | IDAPA 010, 105, 455 40 CFR 122, 125 |
| Vessel discharges | IDAPA 010, 102 40 CFR 122 |

a. Storm water discharges from construction activity resulting in disturbance of 5 or more acres of total land area are technically, “storm water discharges associated with industrial activity” as defined by 40 CFR 122.26(b)(14)(x), but these discharges are commonly referred to as storm water discharges from large construction activities.

3.2.1 NPDES Permits in Idaho

Appendix A identifies EPA-issued NPDES permits in Idaho that are effective or administratively continued, as of January 2016. The numbers and examples presented in the appendix are subject to change.

3.2.2 Major and Minor Facility Designation

In addition to categorizing facilities as municipal and nonmunicipal, DEQ adopted EPA criteria to determine which sources should be considered major facilities. This distinction assists DEQ in setting priorities for permit issuance and reissuance. DEQ defines a major facility⁵ or activity as follows:

A publicly or privately owned treatment works with a design flow equal to or greater than one million gallons per day (1 MGD), or serves a population of ten thousand (10,000) or more, or causes significant water quality impacts; or

A non-municipal facility that equals or exceeds the eighty (80) point accumulation as described in the Score Summary of the NPDES Non-Municipal Permit Rating Work Sheet (June 27, 1990) or the Department equivalent guidance document.

The IPDES Permit Rating Worksheet and instructions (Appendix B) evaluate the significance of a facility, other than publicly owned treatment works (POTW) or domestic sewage treatment works, using the following criteria:

1. Toxic pollutant potential
2. Flow and streamflow volume
3. Conventional pollutants
4. Public health impact
5. Water quality factors (such as impairment of the receiving water)

Factor 6 of the EPA rating sheet, Proximity to Near Coastal Waters, is not included in the IPDES Permit Rating Worksheet because it does not apply to Idaho facilities or permits. All facilities that are not designated as majors are considered minor facilities.

3.2.3 Municipal Sources

In addition to POTW effluent requirements, state and federal regulations establish programmatic requirements applicable to other POTW activities (e.g., sewage sludge disposal and management and storm water discharges from the treatment plant site) or activities that may be conducted by a municipality (e.g., MS4s, sanitary sewer overflows [SSOs], and industrial pretreatment). A description of those programs and how they relate to IPDES permits is provided in the following sections.

3.2.3.1 *Financial Capability and Integrated Planning*

EPA developed guidance to address integrated planning and financial capability for municipalities to meet multiple CWA permitting obligations (Table 2) (EPA 2011; EPA 2012a; EPA 2013a; and EPA 2014a). Additional guidance was created to further help municipalities develop integrated plans and financial capability assessments (Conference of Mayors et al., 2013). Integrated planning and financial capability considerations do not remove obligations to

comply with CWA, nor do they lower existing regulatory or permitting standards. Rather, they provide municipalities meeting the appropriate affordability and financial capability screening factors with a voluntary opportunity to prioritize implementing CWA requirements that address the most pressing health and environmental protection issues. The choice and responsibility to develop an integrated plan rests with the municipality. An integrated plan for multiple CWA permitting obligations (e.g., POTW, MS4, and combined sewer systems [CSS]) can inform DEQ in developing appropriate compliance schedules and consent decree implementation. The plan also facilitates implementing innovative solutions (e.g., green infrastructure and water quality trading), sequencing critical capital projects (e.g., wastewater and storm water), and addressing operation and maintenance in a way that ensures human health and environmental protection.

Table 2. Summary of EPA integrated planning guidance.

| | |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integrated planning framework | June 5, 2012—EPA released the final <i>Integrated Municipal Stormwater and Wastewater Planning Approach Framework</i> . The framework was developed in conjunction with the October 27, 2011, memorandum <i>Achieving Water Quality Through Integrated Municipal Stormwater and Wastewater Plans</i> to provide further guidance for EPA, states and local governments in developing and implementing effective integrated plans under CWA. This framework was finalized after extensive public input including a series of workshops across the country. |
| Assessing financial capability | January 13, 2013—EPA provided a memo, <i>Assessing Financial Capability for Municipal Clean Water Act Requirements</i> , clarifying how the financial capability community will be considered when developing schedules for municipal projects necessary to meet CWA obligations. |
| Financial capability assessment framework | November 24, 2014—EPA issued a memo, <i>Financial Capability Assessment Framework for Municipal Clean Water Act Requirements</i> , to EPA regions that transmitted a <i>Financial Capability Assessment Framework</i> , providing greater clarity on the flexibilities built into existing guidance that local governments or authorities can use in assessing their financial capability and provides examples of additional information that could be submitted. |

3.2.3.2 Publicly Owned Treatment Works

POTWs primarily receive domestic sewage from residential and commercial customers. POTWs may also receive and treat wastewater from industrial facilities (indirect dischargers) connected to the collection system. POTWs always treat for conventional pollutants and may include treatment of nonconventional and toxic pollutants, depending on the characteristics of the sources discharging to a POTW. The treatment provided by a POTW typically produces a treated effluent and sewage sludge residual.

Volume 2 of this guide discusses incorporating specific conditions into POTW permits.

3.2.3.3 Pretreatment

Pretreatment regulates nondomestic (e.g., industrial and commercial) wastewater discharges to POTWs. Because such effluent is conveyed to and treated by POTWs before discharging to waters of the United States, they are called indirect discharges. The pretreatment program prohibits indirect dischargers from discharging pollutants that will pass through a POTW to receiving waters, interfere with POTW treatment processes, or contaminate sewage sludge. Pretreatment regulations also require certain indirect dischargers to meet technology-based requirements developed specifically for such POTW users that are similar to those for direct dischargers.

Pretreatment regulations⁶ require certain POTWs to develop a pretreatment program, including the authorities and procedures, which are generally included as special conditions of a POTW's IPDES permit. Indirect dischargers are not required to comply with the Effluent Limits Guidelines (ELG) found in 40 CFR 401–699. However, a POTW must create local limit requirements as part of their pretreatment program, if necessary for implementing the pretreatment program, and if the indirect discharge may pass through the POTW to receiving waters, interfere with POTW treatment processes, or contaminate sewage sludge. Additionally, indirect dischargers may be subject to national categorical pretreatment standards as well as the national general and specific prohibitions.

Volume 2 of this guide discusses incorporating pretreatment special conditions into permits.

3.2.3.4 Sewage Sludge

In 1987 Congress amended CWA §405 to establish a comprehensive sewage sludge program. The program regulates the use and disposal of sewage sludge by POTWs and by other treatment works treating domestic sewage (TWTDS). These facilities generate sewage sludge, provide commercial treatment of sewage sludge, manufacture products derived from sewage sludge, or provide disposal of sewage sludge. CWA §405 requires EPA to develop technical standards that establish sewage sludge management practices and acceptable levels of toxic pollutants in sewage sludge.

State and federal regulations⁷ govern the technical standards for sewage sludge use and disposal. TWTDS facilities not otherwise subject to the IPDES permit requirements under CWA §402 must apply for and receive a permit addressing standards for use and disposal of sewage sludge. Details of 40 CFR 503 are described in *A Plain English Guide to the EPA Part 503 Biosolids Rule* (EPA 1994a). Where applicable, sewage sludge management requirements may be included as a special condition in permits issued to POTWs.

Volume 2 of this guide discusses incorporating special conditions that address sewage sludge requirements.

3.2.3.5 Combined Sewer Systems

A concern for some older POTWs may be CSS, which are wastewater collection systems owned by a state or municipality that convey sanitary wastewater (domestic, commercial, and industrial) and storm water through a single-pipe system to a POTW. Nationwide, CSSs serve approximately 860 communities with a total population of about 40 million. Common

understanding is that Idaho has no CSS-designed systems. Although some relic CSSs exist in Idaho (Glenns Ferry and Sandpoint), there are no known CSOs. During dry weather, CSSs collect and convey domestic, commercial, and industrial wastewater to a POTW. However, during periods of rainfall, snowmelt, and other forms of precipitation, the systems can become overloaded. When that overloading occurs, a CSS can overflow at designed relief points and discharge a combination of untreated sanitary wastewater and storm water directly to a surface water body.

CSO is the discharge from a CSS at a point before reaching the POTW. CSOs can be major sources of water pollution in communities served by CSSs. CSOs often contain high levels of TSSs, pathogenic microorganisms, toxic pollutants, floatables, nutrients, oxygen-demanding organic compounds, oil and grease, and other pollutants, causing water quality standard exceedances. EPA prohibits permitting any new CSO outfalls.

3.2.3.6 Sanitary Sewer Overflows

Properly designed, operated, and maintained, sanitary sewer systems are meant to collect and transport all sewage to a POTW. However, occasional, unintentional spills (i.e., SSOs) of raw sewage from municipal sanitary sewers occur in almost every system.

SSOs are a prohibited discharge under CWA, with a goal of zero events and strict associated liability. SSOs have a variety of causes including severe weather, equipment failure, loss of power or other electric faults, lack of system operation and maintenance, and vandalism. System users that flush sanitary wipes, rags, and disposable baby wipes; fats, oils and grease; or root intrusions, structural degradation, and capacity limitations all demand an increased schedule of routine operation and maintenance. EPA estimates that over 40,000 SSO events occur every year in the United States. Overflows of untreated wastewater can present risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing, and contact recreation.

A description of the extent of human health and environmental impacts caused by releases of untreated sewage, along with other information, was provided in *Report to Congress: Impacts and Control of CSOs and SSOs* (EPA 2004b). The report showed that NPDES permit requirements establishing clear reporting, record keeping, third-party notification of overflows from municipal sewage collection systems, and clear requirements to properly operate and maintain the collection system are critical to effective program implementation.

EPA developed a draft fact sheet and draft model permit conditions that explain how NPDES permitting authorities can better address SSOs and operate and maintain sanitary sewer collection systems.

Volume 2 of this guide discusses incorporating conditions to address SSOs reporting in IPDES permits. DEQ's approach for reporting, compliance, and enforcement of SSOs is addressed in Section 9, "Compliance Monitoring Activities," and Section 10, "Enforcement."

3.2.3.7 Municipal Separate Storm Sewer Systems

Storm water from metropolitan areas is a significant source of pollutants discharged to waters of the United States. While rainfall and snow are natural events, the nature of storm water

discharges and their impact on receiving waters are greatly affected by human activities and land use. Storm water from lands modified by human activities, such as metropolitan areas and urban streets, can affect surface water resources by modifying natural flow patterns or by elevating pollution concentrations and loads. Development also increases the storm water runoff rate and surge volume due to the increase in impermeable surfaces. As a result, the receiving water's flow increases, resulting in quicker and more frequent incidents of flooding.

To address such concerns, the 1987 CWA Amendments added §402(p), a provision that directed EPA to establish phased NPDES requirements for storm water discharges. Phase I of the storm water program addresses permits for discharges from medium and large MS4s serving a population of 100,000 or more, as well as certain categories of industrial activity, including construction activity disturbing greater than 5 acres. Phase II expanded the storm water program to include small MS4s and construction activity disturbing 1 to 5 acres.

MS4 storm water application regulations established requirements for a two-part permit application. The first part allows large and medium local governments to help define priority pollutant sources in the municipality and to develop and implement appropriate controls for such discharges to MS4s (55 FR 47990, November 16, 1990). The second part of the application requires municipal applicants to propose municipal storm water management programs to control pollutants to MEP and to effectively prohibit nonstorm water discharges to the municipal system. Medium and large MS4 operators may be required to submit comprehensive permit applications for issuing individual permits, or NOI information for coverage under a general permit.

Phase II of the storm water program extended the NPDES permitting program to small MS4s in urbanized areas (64 FR 68722, December 8, 1999). The Phase II MS4 regulations require small MS4s to develop a program to address six minimum control measures that include best management practices (BMPs) and measurable goals for each BMP. The IPDES Program has the option of permitting regulated small MS4s operators using an individual permit, general permit, or modification of an existing Phase I MS4's individual permit.

Municipal storm water management programs combine source controls and management practices that address targeted sources within the boundaries of the municipal system. For example, a municipality that expects significant new development may focus more on proposing requirements for new development and construction. A municipality that does not expect significant new development could focus more on municipal activities that affect storm water quality such as leaking sanitary sewers maintenance, road deicing and maintenance, municipal landfill operation, flood control efforts, and controlling industrial contributions of storm water.

MEP is not precisely defined to allow maximum flexibility in MS4 permitting to optimize reductions in storm water pollutants on a location-by-location basis (64 FR 68754, December 8, 1999). Permit writers must rely on application requirements specified in the regulations and the applicant's proposed management program when developing appropriate permit conditions. Permit writers may consider water quality-based concerns such as TMDLs to include additional water quality-based conditions in the permit beyond MEP (*Defenders of Wildlife v. Browner* [1999]).

The storm water Phase II rule was challenged in the courts, with the US Court of Appeals for the Ninth Circuit generally upholding the Phase II rule but remanding three issues back to EPA. EPA

issued guidance on April 16, 2004, *Implementing the Partial Remand of the Stormwater Phase II Regulations Regarding Notices of Intent & NPDES General Permitting for Phase II MS4s* (EPA 2004c). This guidance identifies how new general permits should address the issues of public availability of NOIs, opportunity for public hearings, and permitting authority reviews of NOIs. Further, EPA is proposing changes (81 FR 415, January 6, 2016) to the regulations governing small MS4 permits to respond to a remand from the US Court of Appeals for the Ninth Circuit in *Environmental Defense Center, et al. v. EPA* (2003). EPA indicates that the proposal would not establish any new substantive requirements for small MS4s.

In addition to storm water information on the EPA website, EPA developed the following guidance documents and memoranda to help permit writers and permittees implement the municipal storm water program:

- *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharge from Municipal Separate Storm Sewer Systems* (EPA 1992a)
- *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm water Permits* (EPA 1996a)
- *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs* (EPA 2002a; EPA 2014b)
- *MS4 Program Evaluation Guidance* (EPA 2007a)
- *MS4 Permit Improvement Guide* (EPA 2010b)
- *Post-Construction Performance Standards and Water Quality –Based Requirements: A Compendium of Permitting Approaches* (EPA 2014c)

Volume 2 of this guide discusses the application requirements for storm water discharges from large, medium, and small MS4s.

3.2.4 Nonmunicipal Sources

Nonmunicipal sources include industrial and commercial facilities, industrial storm water (including large construction activities), and discharges from small construction activity, concentrated animal feeding operations (CAFOs) and concentrated aquatic animal production (CAAP) facilities. Unlike municipal sources, the types of raw materials, production processes, treatment technologies used, and pollutants discharged at industrial facilities vary widely, exhibit more diurnal and seasonal variation, and are dependent on the type of industry and specific facility characteristics. The operations, however, generally are carried out within a more clearly defined area with less complex collection systems than POTWs. In addition, unlike sewage sludge generated at POTWs, the IPDES Program does not regulate residuals (sludge) generated by nonmunicipal facilities.

Nonmunicipal facilities may discharge storm water contaminated through contact with manufacturing activities or raw material and product storage. Alternatively, they may have nonprocess wastewater discharges such as cooling water that is regulated under an IPDES permit.

3.2.4.1 Industrial Dischargers of Process and Nonprocess Wastewater

Industrial, commercial, and manufacturing facilities often use process wastewater when manufacturing and processing products.

Process wastewater can contain pollutants at levels that affect the quality of receiving waters. The IPDES permit program identifies specific requirements for discharges of process wastewater from industrial, commercial, and manufacturing sources. Facility discharges to waters of the United States require coverage under an IPDES permit. Alternatively, facilities that discharge wastewater to a municipal sewer system may need to be covered under that municipality's pretreatment program. Many types of facilities, whether they discharge directly to waters of the United States or to a municipal sewer system, are covered by effluent guidelines and/or standards. Storm water that runs off a facility's property or from a construction site might require an IPDES permit under the industrial storm water program (section 3.2.4.2).

Industrial, commercial, and manufacturing facilities often produce wastewater from sources other than processing products, such as sanitary or cafeteria wastes or using noncontact cooling water for heat exchange. For example, most hydropower facilities have noncontact cooling water discharges to reduce the thermal load on power generation equipment.

Like process wastewater, nonprocess wastewater is regulated under the IPDES Program. Nonprocess wastewater might also be important to the permit writer when drafting monitoring conditions for facilities where the nonprocess wastewater dilutes the concentration of pollutants in process wastewater. DEQ must ensure that required monitoring locations provide an accurate measurement of pollutants discharged relative to all effluent limits.

Volume 2 of this guide discusses the application requirements for process and nonprocess wastewater.

3.2.4.2 Storm Water Associated with Industrial or Construction Activity

To minimize the impact of storm water discharges from industrial, commercial, and manufacturing facilities, the IPDES Program includes an industrial storm water permitting component. Facilities are required to obtain an IPDES industrial storm water permit if they are included in 1 of the 11 categories of storm water discharges associated with industrial activity, which discharge or propose to discharge storm water to an MS4 or directly to waters of the United States. For example, the 2012 NPDES general permit for discharges from construction activities (Construction General Permit [CGP]) (EPA 2012b) and the 2015 NPDES Multi-Sector General Permit (MSGP) for storm water discharges associated with industrial activity (EPA 2015) require applicants to identify the MS4s and receiving waters into which their storm water is discharged.

Permit Regulations for Storm Water Associated with Industrial Activity

Storm water discharges associated with industrial activity include discharges from any conveyance used for collecting and conveying storm water that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. Federal regulations⁸ identify the following 11 industrial categories for which operators are required to apply for storm water discharge permits:

1. Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR 400–471, Subchapter N.
2. Certain heavy manufacturing facilities (lumber, paper, chemicals, petroleum refining, leather tanning, stone, clay, glass, concrete, and ship construction)
6. Active and inactive mining operations and oil and gas operations with contaminated storm water
7. Hazardous waste treatment, storage, or disposal facilities, including Resource Conservation and Recovery Act Subtitle C facilities
8. Landfills, land application sites, open dumps, and Resource Conservation and Recovery Act Subtitle D facilities
9. Recycling facilities, including metal scrap yards, battery reclaimers, salvage yards, and automotive junkyards
10. Steam electric power generating facilities, including coal-handling sites
11. Transportation facilities that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations
12. Major POTW sludge handling facilities, including on-site application of sewage sludge
13. Construction activities that disturb 5 acres or more
14. Light industrial manufacturing facilities

Federal-, state- or municipal-owned or operated industrial facilities that meet the above descriptions must also submit applications.

Volume 2 of this guide discusses regulations, application requirements, and permit conditions to address storm water discharges associated with industrial and construction activities, including storm water discharges from industrial facilities that have no exposure to industrial activities or materials, and that may be conditionally excluded from the storm water permitting program.

3.2.4.3 Cooling Water Intake Structures

CWA §316(b) provides that any standard established pursuant to CWA §301 or 306 and applicable to a point source, requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. This provision is unique because it addresses the intake of water, in contrast to other provisions that regulate the discharge of pollutants into waters of the United States.

EPA established national performance standards under CWA §316(b) designed to reduce the impingement and entrainment of fish and other aquatic organisms as they are drawn into a facility's cooling water intake structures. Impingement occurs when organisms are trapped against cooling water intake structures by the force of water being drawn through the intake structure. Entrainment occurs when organisms are drawn through a cooling water intake structure into a cooling system, through the heat exchanger, and then pumped back out into the water body.

In April 1976, EPA published regulations at 40 CFR 402 to address cooling water intake structures. Fifty-eight electric utility companies challenged the final rule. The US Court of Appeals for the Fourth Circuit remanded the rule in 1977, and in 1979, EPA withdrew

40 CFR 402. Beginning in 1977, NPDES permit authorities made decisions implementing CWA §316(b) on a case-by-case basis using BPJ (40 CFR 125.90(b) and 401.14).

In the 1990s, EPA began developing CWA §316(b) regulations establishing national standards. EPA divided the rulemaking into three phases:

1. Phase I addressed new facilities and was completed in December 2001 (40 CFR 125, Subpart I).
2. Phase II addressed existing electric generating plants that use at least 50 million gallons per day (mgd) of cooling water and was completed in July 2004 (40 CFR 125, Subpart J).
3. Phase III addressed other existing facilities, including small existing electric generating plants that use less than 50 mgd of cooling water, manufacturers, and new offshore and coastal oil and gas extraction facilities.

The Phase III regulations, finalized in June 2006, established national standards only for new offshore and coastal oil and gas extraction facilities (40 CFR 125, Subpart N). EPA decided that other Phase III industrial facilities withdrawing water for cooling purposes would not be covered by national standards but would continue to be subject to CWA §316(b) requirements set by the NPDES permitting director on a case-by-case BPJ basis (40 CFR 125.90(b) and 401.14). All three regulations were subject to judicial challenges.

In 2014 EPA published rules (79 FR 48300, August 15, 2014) constituting their response to the remand of the Phase II and Phase III rules. These rules established requirements under CWA §316(b) for existing power-generating facilities and existing manufacturing and industrial facilities that withdraw more than 2 million gallons per day (mgd) of water from waters of the United States and use at least 25% of the water they withdraw exclusively for cooling purposes. These national requirements apply to the location, design, construction, and capacity of cooling water intake structures at regulated facilities by setting requirements that reflect the best technology available for minimizing adverse environmental impact.

Volume 2 of this guide discusses additional regulatory requirements and permit conditions for cooling water intake structures.

3.2.4.4 Concentrated Animal Feeding Operations

Animal feeding operations⁹ (AFOs) are agricultural facilities where animals are kept and raised in confined situations. AFOs typically maintain animals, feed, and manure and have production operations in a limited land area. Manure and wastewater from AFOs have the potential to contribute pollutants such as nitrogen and phosphorus, organic matter, sediments, pathogens, heavy metals, hormones, antibiotics, and ammonia to the environment.

AFOs that meet DEQ's definition of a CAFO, or that are designated as CAFOs by DEQ, and that discharge or propose to discharge to waters of the United States are required to obtain an IPDES permit.

CAFOs are subject to requirements that limit discharges from the production area and requirements applicable to land application areas under the control of the CAFO operator. Large CAFOs are subject to a no discharge requirement for production areas, whereas other CAFOs are

subject to BPJ requirements for their production areas. One of the principal substantive pollution control conditions in any CAFO permit is the requirement to implement the terms of the nutrient management plan (NMP) incorporated into the permit when permit authorization is granted.

Additional permit regulations and application requirements for CAFOs are discussed in Volume 2 of this guide.

3.2.4.5 Concentrated Aquatic Animal Production Facilities

In 2004 EPA promulgated new effluent guidelines that address CAAP facilities. These effluent guidelines apply to CAAP facilities (flow-through, recirculating, and net pen) that directly discharge wastewater and have annual production \geq 100,000 pounds of aquatic animals. The rule requires a BMP plan and implementation measures, including recordkeeping and reporting requirements, to minimize discharges of solids, to prevent spills of drugs, feed, and chemicals that could result in discharges to waters of the United States, and to ensure proper maintenance of the facility. A facility that does not meet the effluent guideline threshold might still need an IPDES permit if it meets the CAAP facilities thresholds established in the NPDES regulations at 40 CFR 122.24(b) or if it is designated as a CAAP facility by DEQ under the designation authority in 40 CFR 122.24(c).

Idaho also uses the *Idaho Waste Management Guidelines for Aquaculture Operations* (DEQ 1997) at www.deq.idaho.gov/media/488801-aquaculture_guidelines.pdf.

Additional permit regulations and application requirements for CAAPs are discussed in Volume 2 of this guide.

3.2.4.6 Ground Water Remediation Facilities

Facilities conducting ground water remediation activities, such as pump and treat, or seepage water collection systems in which treated ground water is discharged to waters of the United States within Idaho, are eligible for coverage under a ground water remediation permit. In addition, construction and excavation dewatering activities, building dewatering, and aquifer pump testing that occur at designated or known contaminated sites are eligible for coverage.

3.2.4.7 Small Suction Dredge Mining

On May 6, 2013, EPA's general permit For Small Suction Dredge Placer Miners in Idaho became effective. Under this permit, owners and operators of placer mining operations in Idaho with small suction dredges having (1) intake nozzle size of 5 inches in diameter or less (or the diametrical equivalent defined in the permit); and (2) equipment rated at 15 horsepower or less are authorized to discharge to waters of the United States according to effluent limits, monitoring requirements, and other conditions in the permit. However, some water bodies are excluded from coverage of the permit to protect beneficial uses.

Additional permit regulations and application requirements for small suction dredge mining are discussed in Volume 2 of this guide.

3.2.4.8 Pesticide Discharges

On October 31, 2011, EPA's Pesticide General Permit (PGP) for Discharges from the Application of Pesticides became effective. This permit covers any operator who meets the eligibility requirements identified in the PGP and has submitted an NOI.

This permit is available to operators who discharge to waters of the United States from the application of (1) biological pesticides or (2) chemical pesticides that leave a residue (collectively called pesticides), when the pesticide application is for one of the following pesticide use patterns:

- Mosquito and other flying insect pest control—To control public health/nuisance and other flying insect pests that develop or are present during a portion of their life cycle in or above standing or flowing water. Public health/nuisance and other flying insect pests in this use category include mosquitoes and black flies.
- Weed and algae pest control—To control weeds, algae, and pathogens that are pests in water and at water's edge, including ditches and/or canals.
- Animal pest control—To control animal pests in water and at water's edge. Animal pests in this use category include fish, insects, mollusks, and pathogens.
- Forest canopy pest control—Application of a pesticide to a forest canopy to control the population of a pest species (e.g., insect or pathogen) where, to target the pests effectively, a portion of the pesticide unavoidably will be applied over and deposited to water.

Volume 2 of this guide addresses additional permit regulations and application requirements for the PGP.

3.2.4.9 Vessel Discharges

On March 30, 2005, the US District Court for the Northern District of California, in *Northwest Environmental Advocates et al. v. EPA* (2005) ruled that the EPA regulation excluding discharges incidental to the normal operation of a vessel from NPDES permitting exceeded EPA's authority under CWA. On September 18, 2006, the court issued an order revoking this regulation (40 CFR 122.3(a)) as of September 30, 2008. EPA appealed the district court's decision, and on July 23, 2008, the Ninth Circuit upheld the decision, leaving the September 30, 2008, *vacatur* date in effect. In response to the court order, EPA developed two proposed permits to regulate discharges from vessels. The district court ultimately extended the date of *vacatur* to February 6, 2009.

In July 2008, Congress amended CWA (P.L. No. 110-288) to add §402(r), which excludes discharges incidental to the normal operation of a recreational vessel from NPDES permitting. Instead, it directs EPA to regulate those discharges under a newly created CWA §312(o). As a result of the law, EPA did not finalize the previously proposed Recreational Vessel General Permit and instead undertook rulemaking to develop BMPs for these vessels under the authority of CWA §312(o).

In July 2010, P.L. 111-215 (Senate Bill S. 3372) was signed into law. This law amends P.L. 110-299 (Senate Bill S. 3298), which generally imposes a moratorium during which time neither EPA nor states may require NPDES permits for discharges incidental to the normal operation of

commercial fishing vessels and other nonrecreational vessels less than 79 feet. As a result, of P.L. 110-299, the Vessel General Permit (VGP) does not cover vessels less than 79 feet, or commercial fishing vessels, unless they have ballast water discharges. P.L. 111-215 extended the expiration date of the moratorium from July 31, 2010, to December 18, 2013. As a result of the court ruling, EPA issued the VGP on December 18, 2008. The 2008 VGP regulates discharges incidental to the normal operation of vessels operating in a capacity as a means of transportation. The VGP includes the following:

- General effluent limits applicable to all discharges
- General effluent limits applicable to 26 specific discharge streams
- Narrative water quality-based effluent limits
- Inspection, monitoring, recordkeeping, and reporting requirements
- Additional requirements applicable to certain vessel types

EPA estimates that approximately 61,000 domestically flagged commercial vessels and approximately 8,000 foreign flagged vessels could be affected by this permit.

3.2.5 Hydrologic Connectivity

In some cases, discharges of pollutants to or on the ground, near surface water, can result in pollutants entering surface water via ground water. On a case-by-case basis, DEQ will determine the appropriate regulatory mechanism to address the discharge. This mechanism may include applying Idaho's Wastewater Rules, Recycled Water Rules, Subsurface Sewage Rules, or the IPDES rules.

3.2.6 Nonpermitted Sectors

Additional sectors exist that are not permitted by the EPA NPDES program. For the IPDES Program, Idaho Code §39-175B states the following:

...shall not impose conditions or requirements more stringent or broader in scope than the clean water act and regulations...[and] the Department will not require NPDES permits for activities and sources not required to have permits by the United States environmental protection agency.

As a result, DEQ does not intend to require permits addressing those sectors that do not have NPDES permits or are not required by federal regulations to obtain permits.

3.3 IPDES Fee Schedule

The IPDES fee schedule is based on a combination of application and annual fees, depending on the following factors:

- Permit type (e.g., individual permit versus general permit)
- Permit sector (e.g., POTW, industrial, and storm water)
- Project size or impact (e.g., major or minor and project area size)
- Population served or equivalent dwelling units (EDUs)

All IPDES fees discussed here pertain to the July 1, 2015, "Rules Regulating the IPDES Program." Any change in the IPDES fee schedule requires authorization by the Idaho Legislature.

3.3.1 POTWs and Domestic Sewage Treatment Works

POTWs, domestic sewage treatment works, and sewer districts are charged an annual fee of \$1.74 per EDU that the facility serves; these facilities are not assessed an application fee. DEQ defines EDU¹⁰ as the following:

A measure where one (1) equivalent dwelling unit is equivalent to wastewater generated from one (1) single-family residence. The number of EDUs must be calculated from the municipality's population served divided by the average number of people per household as defined in the most recent Census Bureau data (for that municipality, county, or average number of persons per household for the state of Idaho).

This definition refers to the most recent US Census Bureau annual estimate for the municipality or area served (e.g., sewer districts may not be clearly represented in US Census Bureau statistics).

In this theoretical example, if a facility serves a community of 10,000 people, and the average number of people per household is 2.68, then the following annual fee would be calculated:

$$\$ 1.74 \times \text{EDUs} = \$ \text{Annual Fee} \quad \longrightarrow \quad \$ 1.74 \times (10,000/2.68) = \$ 6,492.54$$

To determine the appropriate annual fee for these facilities, DEQ requires calculating EDUs¹¹ by the following:

- i. Using the most recent Census Bureau statistics for estimates of the population served and the average number of people in a household; or
- ii. Existing facilities may report to the Department the number of EDUs served, annually; or
- iii. New facilities may report to the Department the number of EDUs to be served, based on the facility planning design as part of the IPDES permit application.

Other Municipal Discharges

No IPDES fees exist for other municipal discharge programs (e.g., MS4s and pretreatment). Fees for those sources are covered by the annual fees paid by POTWs and domestic sewage treatment works.

3.3.2 All Other Permit Types and Sectors

Table 3 identifies the fee schedule for all permitted IPDES dischargers other than POTWs, domestic sewage treatment works, and sewer districts that are addressed in section 3.3.1.¹²

Table 3. IPDES fee schedule for all permitted IPDES dischargers except for POTWs, domestic sewage treatment works, and sewer districts.¹³

| Permit Type | Application (\$) | Annual (\$) |
|---------------------------------------|------------------|-------------|
| Industrial Permits^a | — | — |
| Major | 0 | 13,000 |
| Minor | 0 | 4,000 |
| Storm Water Permits | — | — |
| Construction (CGP) | — | — |
| 1–10 acres | 200 | 0 |
| 10–50 acres | 400 | 75 |
| 50–100 acres | 750 | 100 |
| 100–500 acres | 1,000 | 400 |
| >500 acres | 1,250 | 400 |
| Low erosivity waiver (CGP) | 125 | 0 |
| Industrial (MSGP) permits | 1,500 | 1,000 |
| Certificate of no exposure (MSGP) | 250 | 100 |
| Other General Permits | 0 | 0 |

a. For a description of major versus minor facilities, see Section 3.2.2 “Major and Minor Facility Designation” and Appendix B, “IPDES Permit Rating Work Sheet and Instructions.”

3.3.3 Fee Assessment and Payment

3.3.3.1 Annual Fees

DEQ will generate annual fee assessments for each IPDES-permitted facility that is required. Annual fees will be assessed in June for the 12 months between October 1 of the previous calendar year and September 30 of the current calendar year. DEQ will mail the annual fee assessment to each facility on or before July 1 of each year.¹⁴

Owners or operators of multiyear storm water facilities or construction projects are subject to annual fees that will be assessed in the year (October of the previous calendar year through September of the current calendar year) immediately following the receipt of the application or notice of intent for coverage.¹⁵ In subsequent years, annual fees will be assessed in the same manner as individual IPDES-permitted facilities. DEQ will provide a final assessment of annual fees upon approval of NOT.

Annual fees will be assessed according to the number of months a permittee was covered by an IPDES permit within a given year (i.e., October of the previous calendar year through September of the current calendar year). If a permittee was covered for less than a full 12 months, the assessed fee will be prorated to account for less than a full year's coverage under the permit.¹⁶

Payment of annual fees to DEQ are due on October 1, unless it is a Saturday, Sunday, or legal holiday, in which event the payment is due on the successive business day. Figure 1 illustrates the annual fee assessment schedule. Fees paid by check or money order must be made payable to the following:¹⁷

Idaho Department of Environmental Quality
 1410 North Hilton Street
 Boise, ID 83706-1255

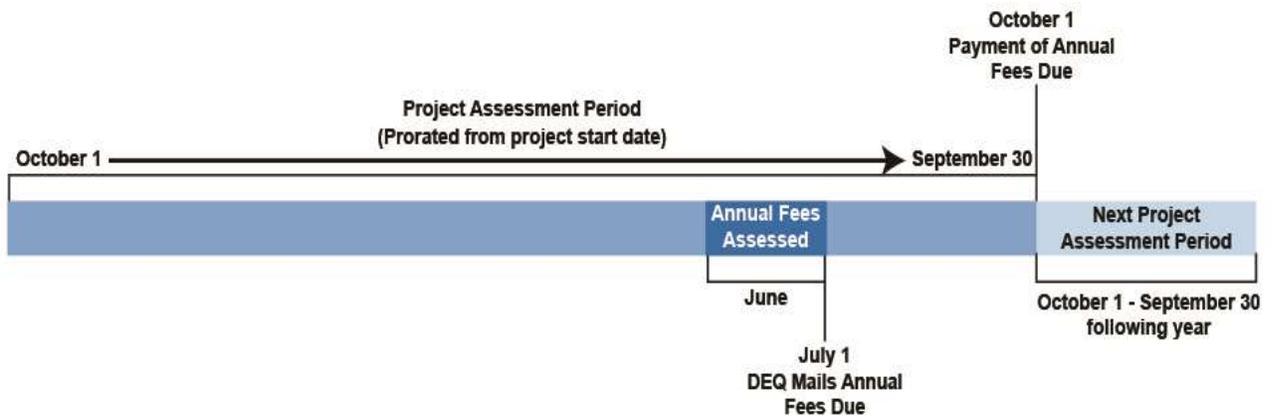


Figure 1. IPDES annual fee assessment schedule.

POTWs and Domestic Sewage Treatment Works

If a facility serves 575 EDUs or more, it may request to divide its annual fee payment into equal monthly or quarterly installments by submitting a request to DEQ on the proper request form provided with the initial billing statement. DEQ will notify a facility, in writing, of approval or denial of a requested monthly or quarterly installment plan within 10 business days of receiving a request.¹⁸

If a facility has been approved to pay monthly installments, then each installment is due by the first day of each month following permit coverage, unless it is a Saturday, Sunday, or legal holiday, in which event it is due on the successive business day.¹⁹

If a facility has been approved to pay quarterly installments, then each installment is due by the first day of the month of each quarter following permit coverage (October 1, January 1, April 1, and July 1), unless it is a Saturday, Sunday, or legal holiday, in which event it is due on the first successive business day.²⁰

3.3.3.2 Application Fees

DEQ will assess application fees at the time of application for coverage under an individual permit, or NOI for coverage under a general permit.²¹

Payment of an application fee is due with an application for an individual permit or NOI for coverage under a general permit, if required.²²

3.3.4 Delinquent Fees

DEQ will not consider a permit application to be complete until all applicable fees are paid.²³

3.3.4.1 Annual Fees

Annual fees will be considered delinquent in payment if DEQ has not received the assessed annual fee by November 1. If the permittee has been approved by DEQ to pay monthly or quarterly installments, its installment will be considered delinquent if DEQ has not received it by the last day of the month or quarter in which payment is due.²⁴

3.3.4.2 Suspension of Services and Other Actions

For any permittee that is delinquent in payment of fees in excess of 90 days, DEQ will suspend providing any technical services (e.g., review plans and specifications, monitoring plans, and preliminary engineering reports). DEQ will inform the permittee of the fee delinquency in a warning letter identifying administrative enforcement actions that DEQ may pursue if the permittee does not pay all applicable fees.²⁵

For any permittee delinquent in payment of fees in excess of 180 days, DEQ will suspend all technical services provided and consider the permittee in noncompliance with permit conditions and subject to potential enforcement action.²⁶

4 Individual Permit Application Process

This section describes the permit application process and the information that must be submitted to support permit development for all individual permits. Application details specific for each individual permit sector are found in Volume 2. For details about permit development and NOI submittal for coverage under a general permit, see section 6.

Figure 2 presents a flow chart identifying the main steps in the IPDES individual permit application and development process. This section addresses the first three steps in the application process: (1) optional preapplication meeting, (2) application submittal, and (3) application completeness determination activities. Permit development steps 4–9 are presented in section 5.

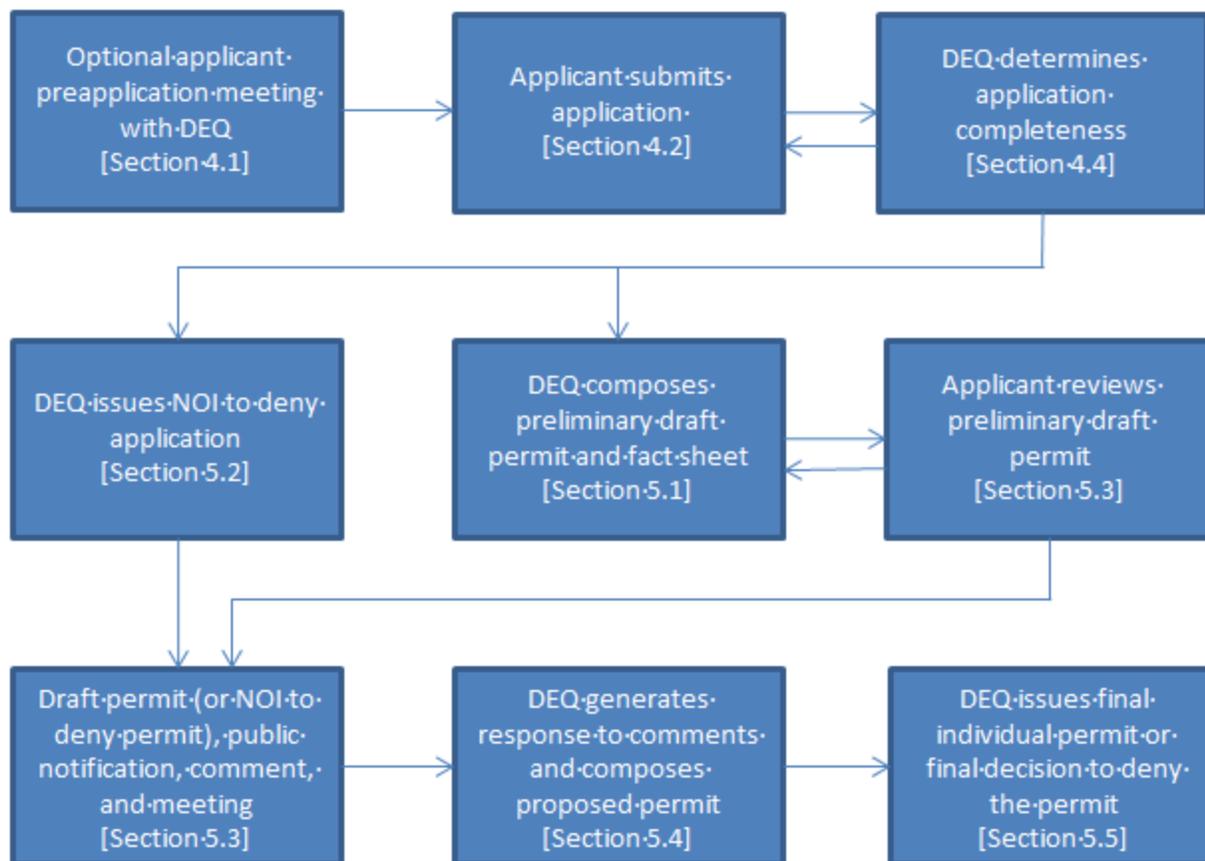


Figure 2. Individual permit development process.

4.1 Preapplication Meeting

Any person who intends to apply for a permit or who proposes to discharge a pollutant into the waters of the United States in Idaho should contact DEQ to schedule a meeting before submitting an application.²⁷ This preapplication process takes place before a permit application is submitted, involves the voluntary participation of the permit applicant, and serves three purposes: (1) determine whether the activities or facility will require an IPDES permit and whether other suitable permitting options are available (e.g., reuse, discharge to ground water, or elimination of the discharge); (2) identify the IPDES permit application requirements; and (3) identify the IPDES permit application submittal schedule. Additionally, DEQ personnel and the applicant may discuss any applicable antidegradation provisions.

DEQ encourages potential wastewater discharge applicants to contact DEQ before submitting a permit application to discuss whether a surface water discharge permit (IPDES) is the most prudent method for disposing of treated wastewater. DEQ has multiple permitting programs for wastewater collection, treatment, disposal, as well as beneficial reuse of treated wastewater. Each permit type available for disposing or reusing treated wastewater has benefits that the facility may determine to be economically, socially, and environmentally feasible and desirable. The potential permitting schemes include the following:

- Individual/Subsurface Sewage Disposal Rules²⁸

- Recycled Water Rules²⁹
- Rules Regulating the IPDES Program³⁰

If an operator has already been issued an IPDES permit but is planning or has completed material or substantial alterations or additions to the facility or activity since the current permit was issued, a preapplication meeting may be appropriate to discuss pertinent IPDES permit modifications or, if permit renewal is eminent, how the renewed permit may differ from the existing permit.

The operator or owner should contact the appropriate DEQ regional office to schedule a meeting. The operator, owner, and consulting engineer should attend the meeting with the documentation necessary to identify the facility or activity, or any changes proposed for the facility or activity. The process for modifying an existing permit is discussed in section 7.

Some basic information should be brought to the meeting to convey to DEQ the purpose for or the proposed changes to a permitted facility or activity. Once the appropriate permitting program has been identified, DEQ can assist the applicant with determining the necessary information required of a complete application.

The information DEQ recommends to support a preapplication meeting varies depending on the facility or activity. Information that should be brought to, or provided before, the preapplication meeting includes the following:

- Owner and operator information
 - Company name
 - Addresses
 - Representative names and title/purpose (e.g., consultant, contractor, or operator)
 - Phone numbers and e-mail addresses
- Facility or activity location
- Facility description (applicable Standard Industrial Classification [SIC] or North American Industry Classification System [NAICS] codes) and wastewater constituents
 - Anticipated or measured daily volume of wastewater generated and the basis for this flow rate (extrapolation from similar facility data is acceptable). Generated wastewater may be from one or more of the following:
 - Process wastewater
 - Nonprocess wastewater
 - Sanitary wastewater
 - Description of processes either used or planned to be used at the facility or activity
 - Description of any seasonality of discharge or potential for discharge/nondischarge options
 - Anticipated or known pollutants and their effluent concentrations
 - If a POTW
 - Will/does the facility receive industrial wastewater?
 - Will/does the collection system accept and transport storm water?
- Topographic map of the area extending at least 1 mile outside the facility's or activity's boundary
- Whether a mixing zone will be requested

- Any information concerning potential variance, waiver, intake credit, or water quality trading requests

If the applicant believes that some information is a trade secret or should be held confidential, DEQ requires that each page describing the confidential information contain language such as *trade secret, proprietary, or confidential*.³¹ Because no documentation or information must be submitted to DEQ during the preapplication meeting, an owner or operator may claim all information as confidential. However, an owner or operator may want to work with DEQ to determine what information cannot be claimed as confidential during this preapplication meeting to avoid issues later in the permitting process. Information **required** by Idaho rules and supporting an individual permit application cannot be held confidential. The applicability of a confidential designation for IPDES permitting purposes are addressed in sections 4.2.2 and 6.9.5 and Volume 2 of this guide.

4.2 Individual Permit Application—Common Content

4.2.1 Web-Based Interface for Permit Application Submittal

DEQ is developing web-based tools that support submittal of electronic applications along with all necessary supporting documentation (e.g., reports and maps) and interface with the IPDES CRIPS database. The web-based tools and database are integral to DEQ providing new and renewed permits that are accurate, thorough, and issued in a timely manner.

Applicants must submit their new permit and existing permit renewal applications using the web-based tools, which will speed up application submittal by eliminating hard-copy mailings and DEQ data entry and associated errors. DEQ will provide support to those facilities and activities that are unable to submit their applications using the web-based tool. However, the applicant must contact DEQ and request paper copies of all pertinent application forms and instructions well in advance of the minimum time required to submit an application. Read Section 4.3 “Time to Apply” for additional information on timely application submittal and the risks associated with application submission delays.

4.2.2 Who Must Submit the Application

The Rules Regulating the IPDES Program stipulate that the operator must obtain the IPDES permit. Additionally, the application must be signed by a certifying official.³²

In contrast to the status of information and documentation evaluated at the preapplication meeting (section 4.1), all information submitted in support of developing an IPDES permit, when required, may not be classified as confidential.³³ This information includes the following:

- Name and address of any IPDES applicant or permittee
- Content of any IPDES permit
- IPDES permit applications and information required to be submitted for IPDES applications
- Information submitted in any attachments used to supply information required by the applications
- Effluent data³⁴

4.2.3 Owner and Operator Information

Information identifying the legal entity owning and operating the facility or activity is required on all applications. This information includes the following:

- Owner's name (e.g., company, corporation, or municipality)
- Responsible signatory person's name and title
- Mailing address
- Phone number
- E-mail address
- Federally issued Employer Identification Number (EIN)

Similarly, the following information about the operator must be provided:

- Operator's name (e.g., company, corporation, or municipality)
- Whether the operator is also the owner of the facility or activity
- Mailing address
- Phone number
- E-mail address
- Operator's EIN

Finally, a billing address must also be provided, which includes the following:

- Name (e.g., company or municipal billing office) to which the bill will be submitted
- Billing address
- Contact person's name and title
- Phone number
- E-mail address, if available.

4.2.4 Facility or Activity Physical Location and Description

The facility or activity physical location and description must be identified and submitted as part of the application information. This information includes the following:

- Physical address of the facility or activity
- Facility location (latitude and longitude in decimal degrees at the entrance)
- Township, range, and section
- County
- Whether it lies on Indian lands
- Facility or activity status as federal, state, private, public, or other

A map of the area extending to 1 mile outside the facility's or activity's property boundary should be supplied with the application (Figure 3). This map should indicate the following:

- Area surrounding all unit processes (topographic if available) extending 1 mile past the property boundary
- Influent and effluent pipes and structures
- Springs or other surface water bodies
- Drinking water wells within 1 mile of the property

- Areas where sewage sludge produced by the treatment works is stored, treated, or disposed
- Areas assigned to receive, store, treat, or dispose of hazardous waste

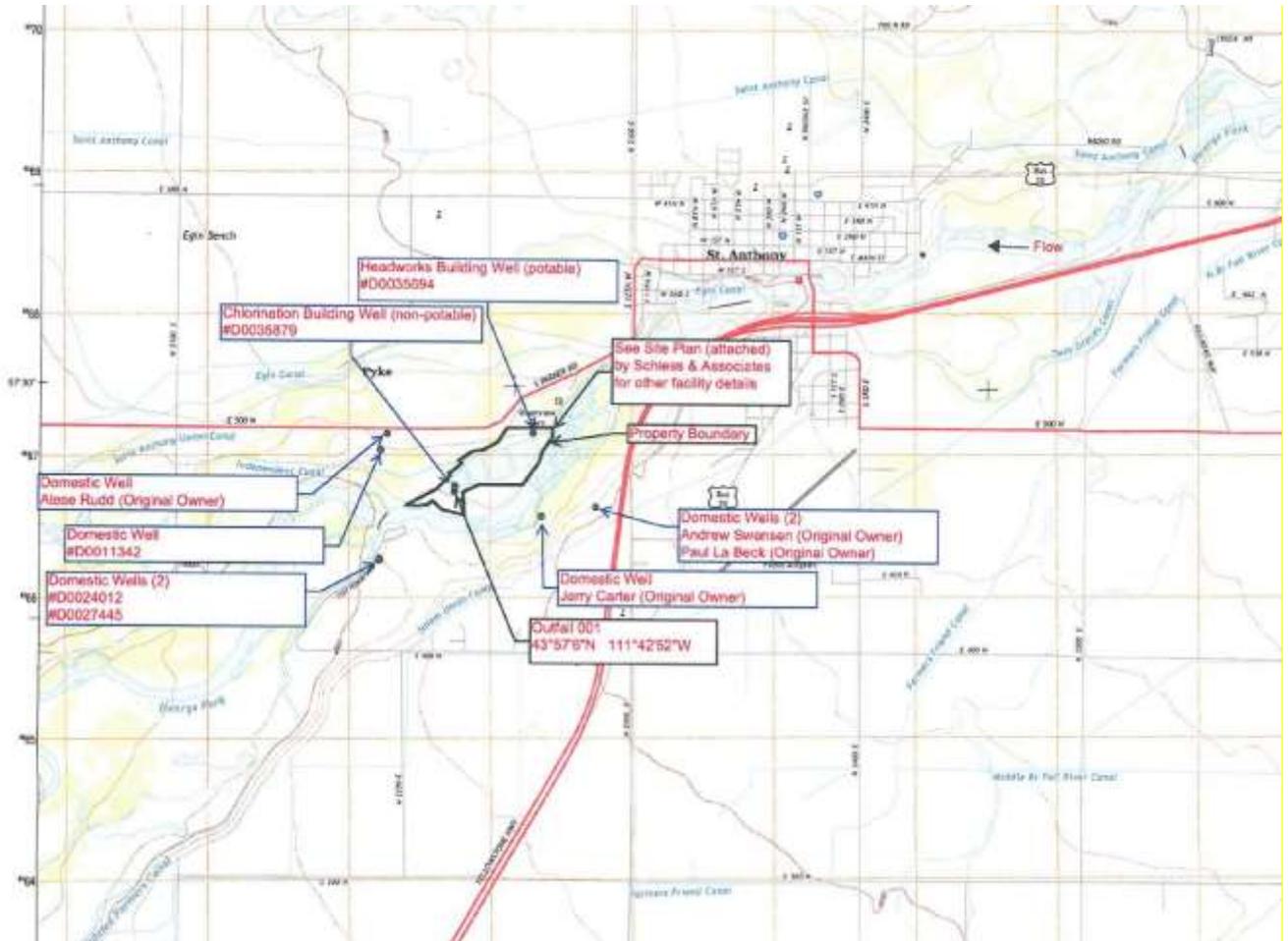


Figure 3. Example map.

4.2.5 Outfall Description

For point source dischargers, a complete description of the outfall is required. This location information should include the following:

- Outfall location (latitude and longitude in decimal degrees of the actual outfall location)
- Distance from shoreline (if applicable)
- Distance above or below water surface
- Applicable wastewater flow rate (million gallons per day) (indicate measured or estimated) as required by the application:
 - Annual average daily
 - Average weekly
 - Average monthly
 - Maximum daily
 - Design

- Wastewater pollutant analytical results and the associated EPA testing method³⁵
- Whether discharge is continuous or intermittent (frequency, duration, months in which discharge occurs)
- If the outfall has a diffuser, specify the type

Wastewater discharge flow rates must be provided in units of million gallons per day. These data must be submitted for each of the last 3 years, and, for the annual average rate, based on a 12-month averaging period.

If the applicant is requesting a mixing zone, the request must be made concurrently with the submittal of the application using the appropriate form. The required information necessary to support a mixing zone analysis includes the following:

- Type of outfall (single port, multiport, or surface side channel discharge)
- Location and orientation of discharge pipe or port
- Receiving water body characteristics:
 - Lake/reservoir bathymetry or stream channel profile for flowing waters
 - Surface water drinking water intakes and public swimming beaches within 5 miles (may not be applicable in upstream situations)
 - Critical flow conditions
- Effluent and receiving water pollutant concentrations
- Existing authorized mixing zones

4.2.6 Receiving Waters Description

The water body receiving the discharge must be identified. The application also requires critical low flow (e.g., 7Q10 or 4B3, 1Q10 or 1B3, 30Q5, and harmonic mean flow) and the hardness of the receiving water at critical low flow to determine the potential to exceed water quality standards. Some of these data may be difficult to accurately measure, especially in waters without an active gaging station. In some instances consulting with DEQ to estimate values may be the most appropriate option.

Applicants seeking a new IPDES discharge permit and applicants proposing an increase in discharge should be aware of the beneficial use status of the receiving water. They should determine the receiving water body's designated beneficial uses as specified in Idaho's water quality standards³⁶ and the beneficial use support status for each use by consulting the most recently approved Integrated Report (www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report/).

Alternatively, this beneficial use determination can be accomplished by contacting the appropriate DEQ regional office's Surface Water Quality Program staff. The applicant should identify the location of the facility or activity to DEQ staff so that the receiving water body status can be identified. If the water body is impaired for a pollutant that may be discharged, DEQ staff must determine whether a TMDL has been developed for the receiving water body and whether a wasteload allocation (WLA) or reserve for growth is available for the proposed discharge. If the quality of water exceeds levels necessary to support aquatic life or recreation, or both, that quality must be maintained and protected. The discharger must provide justification that lower

water quality is necessary to accommodate important economic or social development in the area in which the waters are located.³⁷

4.2.7 Other State and Federal Permits Affiliated with the Facility or Activity

The facility or activity must also submit information regarding other permits or construction approvals received or applied for under the following programs.

- Hazardous waste management program under Rules and Standards for Hazardous Waste³⁸
- Underground injection control program under the Idaho Department of Water Resources, Rules and Minimum Standards for the Construction and Use of Injection Wells³⁹
- IPDES Program under Rules Regulating the IPDES Program⁴⁰
- Prevention of significant deterioration program under Rules for the Control of Air Pollution in Idaho⁴¹
- Nonattainment program under Rules for the Control of Air Pollution in Idaho⁴²
- National emission standards for hazardous pollutants preconstruction approval under Rules for the Control of Air Pollution in Idaho⁴³
- Dredge or fill permits under the CWA §404
- Sludge management program under the Wastewater Rules⁴⁴ and section 380 of the Sewage Sludge in the Rules Regulating the IPDES Program
- Subsurface sewage disposal permits under Individual/Subsurface Sewage Disposal Rules⁴⁵
- Reuse permits under Recycled Water Rules⁴⁶
- Other relevant environmental permits, programs, or activities, including those subject to state jurisdiction, approval, and permits.

4.2.8 Compliance with Permit Prohibitions

Some information is required by all applicants to help DEQ determine that the facility or activity discharges comply with permit prohibitions.⁴⁷ Information that the applicant provides should address the proposed discharges of any potential sources of radiological, chemical, or biological warfare agents or high-level radioactive waste.⁴⁸ Although it is unlikely these pollutants will be present in most facilities' or activities' wastewater, the applicant must divulge this information if any of these constituents may be present at their facility or activity.

Aspects of IPDES permits that are applicable to all permits and permittees involve information required by DEQ to determine whether the facility or activity complies with components of Idaho's water quality standards:

- Antidegradation policy and implementation provisions⁴⁹
- Mixing zone provisions⁵⁰
- Criteria for authorization of a compliance schedule⁵¹

4.3 Time to Apply

Specific application submittal deadlines are stipulated in the IPDES rules.⁵² For a permit renewal, an application must be submitted and deemed complete at least 180 days before the

current permit expires. For a new permit, an application must be submitted and deemed complete at least 180 days before the applicant intends to begin discharging. To obtain administrative continuation of a permit, the applicant must submit a complete application at least 180 days before the existing permit's expiration date, unless a later date is allowed by DEQ through written approval (in advance of the 180-day requirement). A later application date cannot be granted past the permit's expiration. An application for an individual construction storm water permit must be submitted and deemed complete at least 90 days before construction is anticipated to begin. These minimum application submittal milestones are identified in Table 4.

Early permit application submittal is good risk management, and it provides DEQ time to assess the application for completeness, identify deficiencies in the application, request and obtain information from the applicant, generate the permit and fact sheet, and complete the public comment and permit revision process before issuing the final permit. Timeliness of NOI submittal for new or renewed coverage under a general permit is addressed in section 6.

To ensure prudent risk management, an applicant seeking to renew a permit should submit a complete application in a timely manner to provide DEQ the option of administratively continuing the permit. Idaho's IPDES rule on continuation of individual permits⁵³ lists two criteria that must be met to qualify for an administrative extension:

1. Submit a complete permit application.
2. Submit the application in a timely manner.

DEQ is allowed 60 days to determine if the application is complete for an existing source or sludge-only facility.⁵⁴ To provide adequate time for DEQ to assess the completeness of an application renewal without jeopardizing the possibility of obtaining an administrative extension, the application should be submitted at least 240 days (180 days by rule + 60 days for DEQ review = 240 days) before the permit's expiration date. It is possible that applications for complex facilities with multiple discharge points or types of permits may require even more time to ensure application completeness.

For an applicant seeking a new permit, submitting an application early in the facility construction period prevents lost revenue or an idle facility because the facility will have a valid permit when it is ready to be brought online. DEQ is allowed 30 days to determine if the application is complete for a new source or new discharge.⁵⁵ To provide adequate time for DEQ to assess the completeness of a new application without jeopardizing the possibility of not discharging on schedule, the application should be submitted at least 210 days (180 days by rule + 30 days for DEQ review = 210 days) before the applicant's anticipated discharge date.

If a permit is not reissued before its expiration date, and the permittee submitted a complete application to renew the permit in a timely manner, the expired permit's conditions remain fully effective and enforceable until the effective date of a new permit.⁵⁶ DEQ will notify the permittee in writing that the expiring permit will not be reissued before its expiration date and that the expiring permit will be administratively extended until the new permit is issued. If an application is not submitted according to the rule requirements, a permittee would be considered in violation and may be subject to an enforcement action.

Table 4. IPDES individual permit application submittal deadlines.

| Type of Discharge | Minimum Application Submittal Deadlines |
|--------------------------|-------------------------------------------------------------------------|
| New | At least 180 days before the date on which the discharge is to commence |
| Existing | At least 180 days before expiration date of existing permit |
| Construction storm water | At least 90 days before the date on which construction is to commence |

4.4 Application Completeness Review

DEQ will evaluate a submitted application to determine whether it is complete. DEQ will not start developing a draft permit until the application has been determined to be complete. An application is complete when an application form and any required information are completed and submitted to DEQ's satisfaction,⁵⁷ allowing DEQ to calculate all pertinent limits, establish necessary compliance schedules, and identify special conditions.

For those facilities and activities that must submit fees, DEQ will not consider an application complete until all applicable fees are paid.⁵⁸ Additionally, DEQ may schedule a facility or site visit to assist in application completeness determination, or to become familiar with the facility. The applicant is obligated to accommodate this request to support the completeness determination; failure to accommodate a site visit request is cause for permit denial.⁵⁹

DEQ will review submitted applications and supply a completeness determination within 30 days for new permits and within 60 days for permit renewals. Since the completeness determination process is time constrained and may jeopardize the possibility of administratively extending an existing permit, DEQ will prioritize completeness determination efforts ahead of other permitting activities. The completeness determination notification will be provided in a written format, either as a letter or e-mail, and retained as part of the administrative record. Figure 4 presents a flow chart defining the application completeness determination process.

DEQ may request additional information not provided in the application at any time before making an application completeness determination. Additional information may be necessary to establish permit-specific conditions. After DEQ has determined the application to be complete, it qualifies a permit for an administrative extension, if necessary, but does not preclude DEQ from requesting additional information needed to clarify, modify, or supplement previously submitted material⁶⁰ and compose a complete and accurate permit.

If the applicant believes data collection will result in a delay in application submittal, the applicant must obtain DEQ's approval to submit an application in less than 180 days before the expiration date of the existing permit.⁶¹ Alternatively, at DEQ's discretion (and if a schedule for submission is agreed upon by DEQ and the permittee), DEQ may deem an application complete that initially lacks some necessary information for limit calculations, compliance schedule development, special conditions identification, or other specific information required to compose a complete and accurate permit.

Some applications require data to be collected before the application being submitted. These data must be analyzed using sufficiently sensitive analytical methods.⁶² Identifying the analytical method used to assess the collected samples must be included as part of the application. DEQ will evaluate the analytical method's minimum level to determine whether it is sufficiently

sensitive to detect the targeted pollutant at or below the water quality criterion, or meets the sufficiently sensitive methods criteria.⁶³ If data are being collected to support a permit renewal, evaluation of the analytical method is still required to determine whether it is sufficiently sensitive to yield the data required for permit generation. Instances in which data are still being collected may precipitate a delay in permit generation.

If the applicant is securing additional permits from other state or federal agencies, DEQ will assess the IPDES application completeness independently of these other permit applications.⁶⁴

Waiver requests may also impact application completeness. Review Section 8.3, “Waivers” and the sector-specific sections of Volume 2 applicable to your permit type.

These special situations illuminate the need for applicants to submit the application package early enough to allow DEQ to determine completeness based upon an acceptable data collection and submittal plan.

Various sector-specific application requirements must be completed to support DEQ's permit generation process. The sector-specific requirements are discussed in the individual sections in Volume 2.

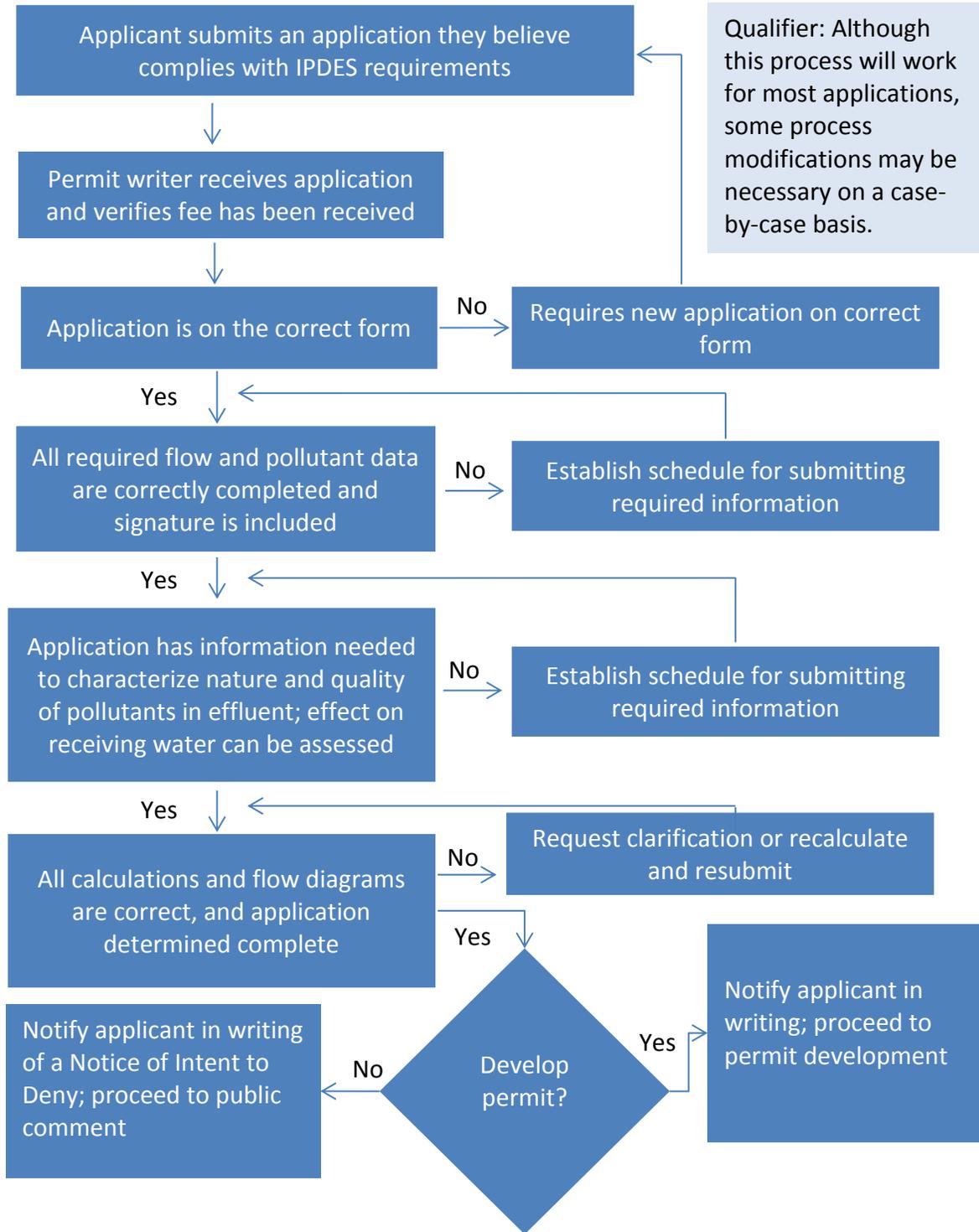


Figure 4. Application completeness determination process.

4.5 Permitting Assistance

DEQ IPDES personnel are available to provide clarification on this guidance and answer any questions users may have related to IPDES permit application, compliance, monitoring, reporting, inspection, and the web interface. The IPDES staff work closely with DEQ's Surface Water and Wastewater Program staff and will pursue answers to questions or relay your question to the appropriate staff. IPDES Program staff contact information is found on DEQ's website at www.deq.idaho.gov/water-quality/ipdes/.

5 Individual Permit Development Process

This section provides an overview of the required content for an individual IPDES permit and fact sheet and the development process. Figure 5 illustrates the process for developing and issuing an individual permit. A permit contains the conditions a permittee must meet. Information considered in development and the rationale for permit conditions is included in the supporting fact sheet for each permit, which makes up part of the documentation that supports a draft permit.

Although this section identifies common components of nearly all permits and fact sheets, the contents and structure may vary depending on the nature of the discharge and permit sector (e.g., industrial, MS4, and POTW). These sector-specific attributes are discussed in Volume 2. Appendix C provides an outline of the individual permit and fact sheet development and issuance process.

Stakeholder Coordination

To the extent practicable, DEQ will coordinate with and inform applicants, permittees, and EPA throughout the permit development process—beginning with the preapplication meeting and continuing through permit issuance, as well as any compliance, inspection, and enforcement activities (sections 9 and 10). Permit development coordination includes interpreting monitoring and reporting data; characterizing the effluent and receiving water body; and developing effluent limits, compliance schedules, and other permit conditions. This communication allows the applicant, permittee, and EPA to be well-informed about permit development and enables DEQ to develop more complete, accurate, and enforceable permits.

5.1 Draft Permit and Fact Sheet Development

All IPDES permits consist, at a minimum, of five sections:

- Cover Page (section 5.1.1)
- Effluent Limits (section 5.1.2)
- Monitoring and Reporting Requirements (section 5.1.2.7.1)
- Special Conditions (section 5.1.4)
- Conditions Applicable to all Permits (section 5.1.5)

A fact sheet contains similar structure and content to that of a permit. The fact sheet, however, provides the basis and explains permit decisions and effluent limits, including findings that

indicate compliance with effluent limits will result in controls on pollutants of concern that are sufficient to achieve and maintain applicable water quality standards. The permit fact sheet also includes an applicant's contact information and the facility's or activity's permit history, a description of the wastewater source (e.g., service area, process wastewater, nonprocess wastewater, and storm water), the treatment facility and processes, the outfall location and design, and a summary of current permit compliance.

IPDES fact sheets typically contain the following major components:

- Facility and location description
- Information on public comment, public meeting, and appeal procedures
- Proposed discharge description
- Receiving water body description and location
- Applicable water quality standards
- Proposed effluent limits and other conditions list
- Effluent limit development
- Discharge location description
- Information supporting the conditions in the draft permit

5.1.1 Cover Page

The permit cover page includes information authorizing a discharge and the applicable dates of the permit:

- Operator
- Facility or permittee name
- Facility physical and mailing address
- IPDES permit number
- Discharge authorization statement
- Receiving water body name as identified in the assessment database (ADB) and water quality standards
- Outfalls and locations—From application (latitude and longitude), verified by DEQ
 - Includes secondary and emergency outfalls and recycled water discharge, if applicable
- Issuance date—Date the permit is signed by DEQ
- Effective date—Date permit conditions take effect
- Reapplication due date—Date by which a permittee must submit a complete application
- Expiration date—Date permit coverage terminates
- Signature—DEQ director or designee
- Submission schedule—Examples of items a permittee must complete and/or submit during the permit period may include, but are not limited to:
 - DMRs
 - Quality assurance project plans (QAPPs)
 - Operations and maintenance (O&M) plans
 - Whole effluent toxicity (WET) tests and reports
 - Permit application for renewal
 - Surface water monitoring reports

- Receiving water studies
- Pollution prevention plans (e.g., nutrients and toxics)
- Methylmercury fish tissue annual reports
- Emergency response and public notification plans
- Inflow and infiltration reports
- SSO reports
- BMP plan
- Total chlorine residual effluent limits
- Twenty-four hour notice of noncompliance (NONC) reporting
- Ambient monitoring reports
- Temperature monitoring reports
- Outfall inspections
- Engineering studies
- Facility planning
- Pretreatment annual reports
- Sewage sludge (biosolids) annual reports
- Local limits evaluations
- Compliance evaluation reports

The fact sheet cover page includes information about the permit development:

- Facility or permittee name
- Facility physical and mailing address
- IPDES permit number
- DEQ technical contact information
- Receiving water body name as identified in the ADB and water quality standards
- Public comment open date—Date on which a minimum 30-day public comment period for the draft permit begins
- Public comment close date—Date on which the public comment period for the draft permit ends
- Public meeting date (if applicable)—Date on which a public meeting for the draft permit is held
- Other permit development information, as appropriate (e.g., location for document review, public comment, and response information)

5.1.2 Effluent Limit Development

Effluent limits in a permit are the primary mechanism for controlling discharges of pollutants to receiving waters. The fact sheet explains how effluent limits included in the permit are developed (Figure 5) and outlines the steps to developing effluent limits.

While developing IPDES permits, the impact of the proposed discharge on the quality of the receiving water will be considered. When analyzing the impact of a discharge on the receiving water, DEQ may determine that TBEL alone will not achieve the applicable water quality standards.

When TBELs alone are not enough to protect water quality, IPDES rules, CWA, and federal regulations require DEQ to develop WQBELs. WQBELs ensure that authorizing the discharge

still meets the CWA objective of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters as well as providing for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water (i.e., fishable/swimmable).

Water quality goals for a water body are defined by Idaho's water quality standards. Requirements more stringent than promulgated technology limits are included in a permit if they are necessary to achieve water quality standards; this includes narrative criteria and antidegradation provisions.

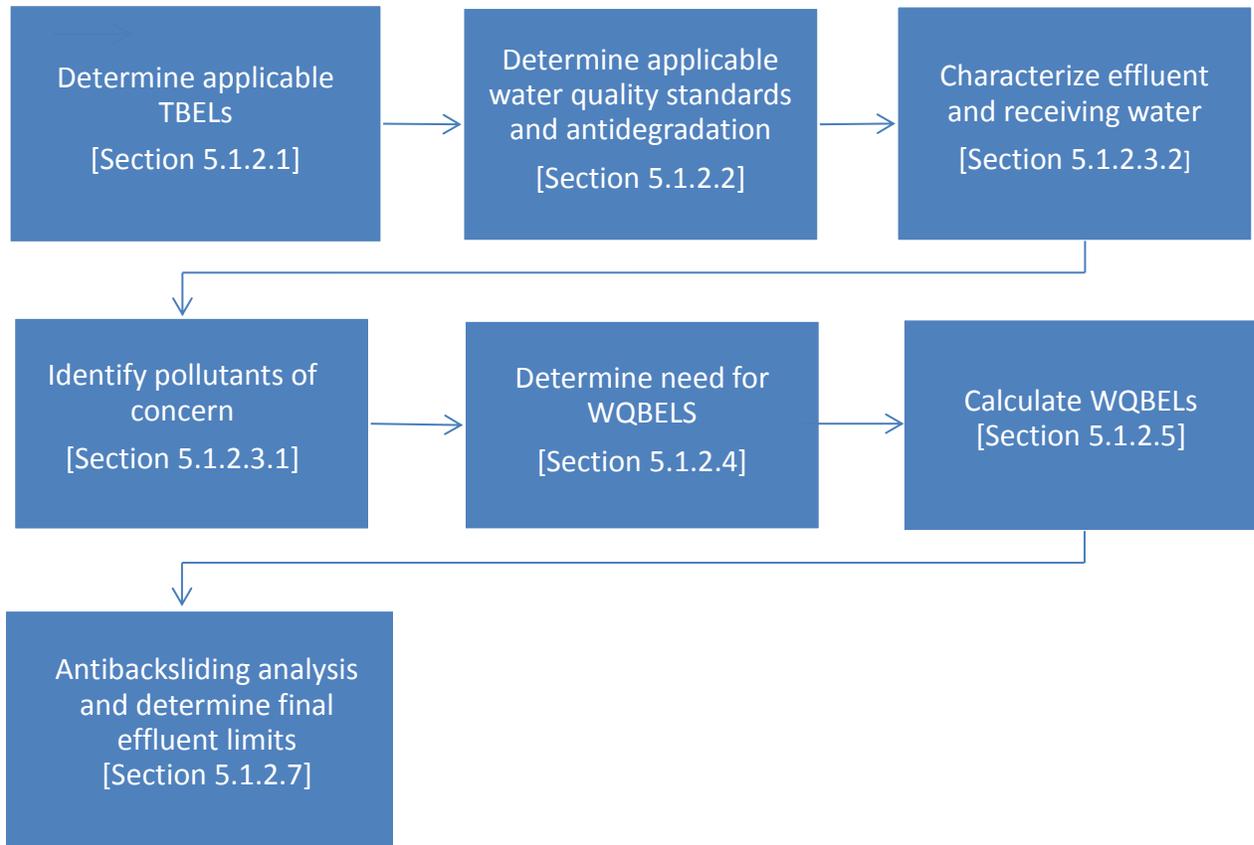


Figure 5. Effluent limits development.

5.1.2.1 Technology-Based Effluent Limits and Standards

ELGs and standards are developed at a national level and promulgated in CFR. DEQ develops TBELs for permits based on these ELGs and standards and determines how much of the pollutant can be removed from the effluent using available technology. Consequently, they do not account for the potential impact of a discharge on the receiving water body. Any water quality impact is addressed through reasonable potential analysis (RPA) and WQBEL development (sections 5.1.2.4 and 5.1.2.5).

The first step in identifying appropriate effluent limits is to evaluate what, if any, TBELs are required, representing the minimum level of control that must be imposed in a permit. Based on

the permit and type of discharge, DEQ will determine which pollutants require TBELs. Necessary TBELs are based on the following:

- Standards promulgated under CWA §301
- New source performance standards under CWA §306
- Effluent limits determined on a case-by-case basis under CWA §402(a)(1)
- Combination of the three⁶⁵

New sources are subject to specific standards referenced in state and federal regulations.⁶⁶

The application of TBELs is different for POTWs than industrial permits. Volume 2 and DEQ's draft *Effluent Limit Development Guidance* (2017a) more fully address TBEL requirements specific to sectors (e.g., POTWs, MS4s, and industrial discharges). In some cases, a single permit could have TBELs based on effluent guidelines, BPJ, and state law (as well as WQBELs based on water quality standards).

5.1.2.1.1 TBELs for POTW and Domestic Sewage Dischargers

Based on CWA §301(b)(1)(B) provisions and §304(d) amendments, EPA developed secondary treatment regulations and alternative standards, referred to as “equivalent to secondary treatment,” for certain types of POTWs. Secondary treatment and equivalent to secondary treatment standards are also appropriate for privately owned domestic sewage treatment works and sewer districts because they have similar influent quality and treatment technologies.

Determining if secondary treatment standards or equivalent to secondary standards apply and determining the specific discharge limits can be a complex process. Under these conditions, DEQ ensures that compliance with limits is measurable and recognizes that percent removal limits may require influent monitoring.

5.1.2.1.2 TBELs for Industrial Dischargers

When developing TBELs for industrial (nondomestic) facilities, DEQ considers all applicable technology standards and requirements for all pollutants discharged. If no applicable ELGs exist for a discharge or pollutant, DEQ must identify any needed site-specific TBELs on a case-by-case basis according to CWA §§301(b)(2) and 304(b). The site-specific TBELs reflect DEQ's BPJ, taking into account the same factors EPA would use in establishing a national effluent guideline but applying them to the permit circumstances. DEQ also identifies if state laws or regulations might require more stringent performance standards than those required by federal regulations.

5.1.2.2 Determine Applicable Water Quality Standards

CWA and implementing regulations require states to develop and, from time to time, revise water quality standards. Wherever attainable, water quality standards protect water quality and provide for the protection and propagation of fish, shellfish and wildlife, and recreation in and on the water (i.e., fishable/swimmable). In establishing standards, DEQ must consider the use and value of waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation. EPA reviews and approves or disapproves new and

revised water quality standards to ensure that the new and revised water quality standards meet the CWA requirements and federal regulations.

When developing an IPDES permit, DEQ will identify and implement the applicable water quality standards for the receiving water. The fact sheet will describe any applicable water quality standards and how they are supported by permit conditions. Although many components make up water quality standards (e.g., mixing zones and variances), there are three primary components:

1. Beneficial uses
2. Water quality criteria
3. Antidegradation

Beneficial uses of the water include the ways in which humans and animals use the water. Criteria specify what water quality is needed to protect beneficial uses. Criteria can be numeric concentrations or narrative requirements. Antidegradation is a policy developed to maintain and protect water quality.

5.1.2.2.1 Beneficial Uses

In the water quality standards, water body classification is based on the expected uses of those water bodies, which are called beneficial uses. A designated use is a beneficial use assigned to a specific water body in Idaho's water quality standards. CWA also requires Idaho to recognize existing uses, which are uses attained in a water body on or after November 28, 1975, whether or not they are designated uses. In some cases, a water body does not have uses designated. For these water bodies, DEQ applies a presumed use protection, meaning the water body will be protected for cold water aquatic life and contact recreation. This presumed use protection is referred to as a presumed use. DEQ must also consider and ensure the attainment and maintenance of the water quality standards of downstream waters when establishing designated uses.

5.1.2.2.2 Water Quality Criteria

Water quality criteria must be sufficient to support the beneficial uses of each water body. While a water body may have multiple beneficial uses, the criteria must protect the most sensitive use. DEQ adopted both numeric and narrative water quality criteria. Numeric water quality criteria are developed for specific parameters to protect aquatic life and human health and, in some cases, wildlife from the deleterious effects of pollutants. Narrative criteria are implemented where numeric criteria cannot be established or to supplement numeric criteria.

Numeric criteria for aquatic life are designed to protect aquatic organisms, including plants and animals, human health, or other categories (e.g., wildlife). Numeric criteria typically address both short-term (acute) and long-term (chronic) effects. Each numeric criterion generally consists of three components: magnitude, duration, and frequency:

- Magnitude—Level of pollutant (or pollutant parameter) usually expressed as a concentration that is allowable.
- Duration—Period (averaging period) over which the instream concentration is averaged for comparison with criteria concentrations.
- Frequency—How often criteria may be exceeded.

Numeric criteria and effluent limits are often not expressed in the same way. Criteria are generally expressed as a magnitude, duration, and frequency. For example to protect aquatic life in a receiving water body, the concentration of arsenic may not exceed 340 micrograms per liter (magnitude) as a 1-hour average (duration) more than once in 3 years (frequency). Whereas, effluent limits in IPDES permits are generally expressed as a magnitude in mass or concentration (e.g., milligrams per liter, micrograms per liter, or pounds per day) and an averaging period (e.g., maximum daily, average weekly, or average monthly). Typically, the components of the criteria are addressed in water quality models through the use of statistically derived receiving water and effluent flow values that ensure that criteria are met under critical conditions.

DEQ water quality standards also include narrative water quality criteria to supplement numeric criteria. Narrative criteria are statements that describe the desired water quality goal for a water body. Narrative criteria, for example, require that surface water be “free from hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses” or “free from toxic substances in concentrations that impair designated beneficial uses.” DEQ can use narrative criteria as the basis for limiting specific pollutants for which numeric criteria do not exist or as the basis for limiting toxicity using WET requirements where the toxicity has not yet been traced to a specific pollutant or pollutants.⁶⁷

5.1.2.2.3 Antidegradation

The draft *Idaho Antidegradation Implementation Procedures* (DEQ 2016a) are aimed at maintaining the existing quality of Idaho waters. Maintaining water quality better than the minimums set by water quality criteria is a primary objective of CWA. This objective is achieved by reviewing water quality-related permits for their effect on water quality. If the water receiving the discharge is of high quality (e.g., Tier II), proposed degradation in water quality is evaluated closely to determine if it can be minimized or avoided. If significant degradation cannot be avoided, then the activity is evaluated to determine if the activity is necessary and important to the social or economic health of the affected public.

Effluent limits included in IPDES permits must be consistent with Idaho's antidegradation policy,⁶⁸ which establishes three tiers of water quality protection.

Tier I maintains and protects existing uses and water quality conditions necessary to support such uses. Where an existing use is established, it must be protected even if it is not listed in the water quality standards as a designated use. Tier I requirements apply to all surface waters.

Tier II maintains and protects "high quality" waters—water bodies where existing conditions are better than necessary to support CWA "fishable/swimmable" uses. Water quality may be lowered in Tier II waters but only with public review of the necessity for degradation based on the social and economic importance of the activity. In no case may water quality be lowered to a level that would interfere with existing or designated uses.

Tier III maintains and protects water quality in outstanding resource waters (ORWs). Except for certain temporary changes, water quality cannot be lowered in such waters. ORWs generally include the highest quality waters of the United States. However, the ORW classification also offers special protection for waters of exceptional ecological significance, such as those that are

ecologically important, unique, or sensitive. In Idaho, the ORW designation requires legislative action.

5.1.2.3 Effluent and Receiving Water Characterization

After identifying the most current and approved water quality standards that apply to the receiving water body, DEQ characterizes the effluent discharged by the facility or activity. DEQ uses the information from those characterizations to determine whether WQBELs are required (section 5.1.2.4) and, if so, to calculate WQBELs (section 5.1.2.5). Characterizing the effluent and receiving water can be divided into three steps:

- Identify pollutants of concern in the discharge.
- Identify critical conditions of the effluent and receiving waters.
- Identify mixing zone applicability, analysis, and conditions.

5.1.2.3.1 Identify Pollutants of Concern

In WQBEL development, several sources of information and methods exist for identifying pollutants of concern. These pollutants may not necessarily receive an effluent limit in an IPDES permit but do go through a RPA. The following categories identify pollutants of concern for potential WQBEL development:

Pollutants with TBELs

Any pollutant with a TBEL may need more stringent limits necessary to support water quality standards. Pollutants subject to TBELs are addressed in state and federal regulations. POTWs must meet TBELs established in federal regulations, identified as secondary treatment or equivalent to secondary treatment,⁶⁹ while industries must meet ELGs.⁷⁰ If an industry does not have an ELG, the characterized effluent will be assessed and limits established, if necessary, using BPJ. Any pollutant with a TBEL may also need more stringent limits to support water quality standards.

Pollutants with a Wasteload Allocation from a TMDL

For any pollutant that a WLA has been assigned to the facility through a TMDL, DEQ publishes a priority list (i.e., “§303(d) list”) of Category 5 impaired waters in Idaho’s Integrated Report. For waters identified on this list, DEQ must develop a TMDL for the pollutants, set at a level to achieve water quality standards (in some cases the impairment may be due to pollution such as flow or habitat alteration).

A TMDL is a calculation of the maximum amount of a single pollutant that a water body can receive and still meet water quality standards and an allocation of that amount to the pollutant’s sources. The portions of the TMDL assigned to point sources are WLAs, and the portions assigned to nonpoint sources and background concentrations of the pollutant are called load allocations (LAs). The calculation must include a margin of safety to ensure that the water body can be used for the purposes designated in the water quality standards, to provide for the uncertainty in predicting how well pollutant reduction will result in meeting water quality standards, and to account for seasonal variations. A TMDL might also include a reserve capacity to accommodate expanded or new discharges in the future.

$$TMDL = WLA + LA + \textit{Margin of Safety} + \textit{Reserve Capacity}$$

IPDES permits must include effluent limits developed consistent with the assumptions and requirements of any WLA that has been assigned to the discharge as part of an approved TMDL. As a result, any pollutant for which a WLA has been assigned to the permitted facility through a TMDL is a pollutant of concern.

Pollutants with WQBELs in Previous Permit

DEQ must determine whether the conditions leading to a decision to include WQBELs for any pollutant in the previous permit continue to apply. When those conditions no longer apply, DEQ must complete an antibacksliding analysis to determine whether to remove the WQBELs from the reissued permit. In addition, DEQ may need to conduct an antidegradation analysis to determine if the revised limit would allow degradation of the quality of the receiving water.

Pollutants Identified as Present in Effluent through Monitoring

For any pollutant identified in effluent monitoring data reported in the discharger's IPDES permit application, DMRs, or special studies, DEQ may collect data through compliance inspection monitoring or another special study. DEQ can match information on which pollutants are present in the effluent to the applicable water quality standards to identify parameters that are candidates for WQBELs.

Pollutants Otherwise Expected to be Present in the Discharge

For any pollutant that neither the discharger nor DEQ have monitoring data, the discharger or DEQ expects that the pollutant could be present in the discharge because of raw materials stored or used, products or by-products of the facility operation, or available data and information on similar facilities. If analytical data cannot verify the concentrations of these pollutants in the effluent, DEQ must either postpone a quantitative analysis of the need for WQBELs and collect, or require the discharger to collect, effluent monitoring data, or base a determination of the need for WQBELs on other information, such as the effluent characteristics of a similar discharge.

Similarly, pollutants of concern include those present in the effluent that the Integrated Report identifies as contributing to the Category 5 listing of the receiving water body for which a TMDL has not yet been developed.

5.1.2.3.2 Identify Critical Conditions of the Effluent and Receiving Water

Characterizing the effluent and receiving water is important in identifying the critical conditions. To assess need and calculate WQBELs,⁷¹ receiving water body low flow conditions, facility design discharge rates, and effluent concentrations are used. Key effluent and receiving water conditions are described below.

Effluent Flow Rate

Effluent flow is a critical design condition used when modeling the impact on a receiving water body. DEQ should be able to obtain effluent flow data from DMRs or a permit application.

However, DEQ will evaluate concerns about calculating limits based on actual flow in case a change in the water body would not allow expansion of the discharge. DEQ will then specify which flow measurements and metrics for dilution and mass balance to use as the critical effluent values in WQBEL calculations. In some instances, multiple critical flows identified through flow tiering or seasonal flows may be appropriate.

Effluent Pollutant Concentration

DEQ can determine the critical effluent concentration of a pollutant of concern by gathering effluent data that represents the discharge (e.g., a concentration that represents close to the maximum concentration of the pollutant expected over time). In many cases, DEQ has a limited effluent data set and would not have a high degree of certainty that the data include the maximum potential effluent concentration of the pollutant of concern. Additionally, DEQ must consider the variability of the pollutant in the effluent when determining the need for WQBELs.⁷²

As described in EPA's *Technical Support Document for Water Quality-Based Toxics Control* (EPA 1991a), a maximum projected effluent concentration will be statistically calculated based on the maximum value reported in available effluent data and a coefficient of variation that accounts for the number of samples and effluent variability. DEQ will establish the maximum projected effluent concentration based on appropriate statistical analysis of the data available.

DEQ's draft *Effluent Limit Development Guidance* (2017a) and Chapter 3 of EPA's technical support document (EPA 1991a) provide details about critical conditions and other variables used in effluent limit calculations. Additionally, pollutants of concern may differ with each sector, facility, and activity. Volume 2 of this guide provides additional information specific to each permit sector.

Receiving Water Flow Rate and Nonflowing Water

For rivers and streams, an important critical condition is the streamflow upstream of the discharge. This information is typically gathered using state databases, US Geological Survey data, and other information. For most pollutants and criteria, the critical flow in rivers and streams is some measure of the low flow of that river or stream; however, the critical condition could be different (e.g., a high flow, where wet weather sources are a major problem). If a discharge is controlled so it does not cause a water quality criteria exceedance in the receiving water at the critical flow condition, the discharge controls should be protective and ensure that water quality criteria and beneficial uses are attained under all receiving water flow conditions.

The water body will be considered nonflowing when the receiving water body has a mean detention time greater than 15 days. DEQ will assess nonflowing water bodies on a case-by-case basis. Volume 2 this guide provides additional information on situations where the receiving water body is designated nonflowing.

Examples of typical critical hydrologically based design flows found in Idaho's water quality standards include the 7Q10 low flow applicable to chronic aquatic life criteria and the 1Q10 low flow applicable to acute aquatic life criteria. Other measures of critical flow are the biologically

based design flows. Examples include the 1B3, 4b3 and harmonic mean flow applicable to human health criteria for carcinogen pollutants.

Receiving Water Background Pollutant Concentration

DEQ also needs the critical background concentration in the receiving water to ensure that any pollutant limits derived protect the beneficial uses and support the antidegradation policy and implementation.⁷³ When available, ambient data provide the most reliable receiving water background pollutant characterization. When data are not available, DEQ may include ambient monitoring requirements in the permit conditions, along with a reopener clause. When data are not available but are being collected, ambient monitoring requirements and the availability of mixing would be determined on a case-by-case basis dependent on the potential risk to beneficial uses (sensitivity of uses and quality of effluent).

Related Receiving Water Characteristics Necessary for Calculations

For water bodies other than free-flowing rivers and streams, critical environmental conditions other than flow might apply (e.g., temperature and alkalinity). In addition, depending on the pollutant of concern, the effects of biological activity and reaction chemistry might be important in assessing the impact of a discharge on the receiving water. These assessments may include pH, temperature, hardness, or reaction rates.

5.1.2.3.3 Identify Mixing Zone Applicability, Analysis, and Conditions

A mixing zone is an area within a water body around the discharge point in which pollutant concentrations may exceed water quality standards. The boundary of the mixing zone is defined as that location where pollutant concentrations must achieve a level that meets water quality criteria. Toxic pollutants can have an acute zone in which the acute criteria (i.e., criterion maximum concentration) may be exceeded and a chronic zone where the chronic criteria (i.e., criterion continuous concentration) may be exceeded. The authorization of a mixing zone for dilution of pollutants in a discharge is not guaranteed, and DEQ maintains the right to determine its necessity and size.

The process of modeling or visualizing how the effluent discharge and receiving water mix is accomplished by performing a mixing zone analysis. Mixing zone dimensions depend upon many factors associated with the receiving water body, effluent, and discharge point. Receiving water body attributes may include, but are not limited to, the stream's low flow, cross-section, pH, and hardness; similar characteristics apply to nonflowing water bodies. Effluent attributes may include, but are not limited to, the pollutants of concern concentration and discharge rate, while discharge point characteristics may include, but are not limited to, the size of the discharge pipe, configuration of the diffuser, if used, and location and orientation of the discharge pipe relative to the water body.

Idaho's water quality standards require regulatory mixing zones to be no larger than necessary.⁷⁴ For flowing water bodies, a mixing zone is not to exceed 25% of the low flow volume of the receiving water for dilution and 25% of the width of the receiving water. For nonflowing waters, the regulatory mixing zone is not to exceed 10% of the total horizontal area of the water body for existing discharges and 5% of the area or 100 meters in length (whichever is smaller) for new

discharges. However, under some circumstances, DEQ may allow a mixing zone that varies from these limits.⁷⁵

If the applicant is requesting a mixing zone, the request must be made concurrently with the submittal of an IPDES permit application using the required IPDES form. Idaho mixing zone policy is described in the draft *Idaho Mixing Zone Implementation Guidance* (DEQ 2016b).

5.1.2.4 Determine Need for WQBELs

Once the applicable water quality standards have been identified and the effluent and receiving waters characterized, DEQ uses the RPA process to determine whether WQBELs are required. The RPA process determines if the pollutants of concern are or may be discharged at a level that will have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including narrative criteria for water quality.⁷⁶ An RPA uses effluent and receiving water data and modeling techniques to determine if the discharge has a reasonable potential to exceed water quality standards. DEQ will determine reasonable potential for an exceedance of numeric water quality criteria in general by following the procedures in DEQ's draft *Effluent Limit Development Guidance* (2017a), consistent with the EPA's technical support document (EPA 1991a).

Evaluating the impact that the effluent may have on the receiving water may require using a water quality model. In the majority of situations, DEQ will typically use a steady-state water quality model to assess the impact of a discharge on its receiving water. Steady-state means that the model projects the impact of the effluent on the receiving water under a single, or steady, set of environmental conditions. Steady-state models are more commonly used than dynamic models, and they can be used to develop seasonal and tiered effluent limits (EPA 1991a).

The specific steady-state model used will depend on the pollutant or parameter of concern and whether there is rapid and complete mixing or incomplete mixing of the effluent and the receiving water under critical conditions. Because the model is run under a single set of conditions, those conditions generally are set at receiving water low-flow conditions for protection of receiving water quality as discussed in section 5.1.2.3.2. DEQ will authorize the mixing zone (e.g., percent of streamflow) and determine the amount of the dilution (dilution factor) available under these critical conditions.

Dynamic models project the impact of the effluent on the receiving water under a range of conditions. For discharges with variable conditions and sufficient flow and concentration data, DEQ may deploy a dynamic model to determine the available dilution, mixing zone size, and allowable effluent concentration for different seasons or tiers of flow.

The following are the requirements for determining reasonable potential to exceed (RPTE):⁷⁷

- When performing RPA, DEQ must account for the following:
 - Existing controls on point and nonpoint sources of the pollutant.
 - Variability of the pollutant in the effluent.
 - Sensitivity of species to toxicity testing.
 - Dilution of the effluent in receiving water.
- If RPTE is determined, the permit must contain effluent limits for that pollutant.

- If RPTE is determined for the numeric criterion (WET), the permit must contain effluent limits for WET.
- If RPTE of a narrative criterion is determined based on toxicity testing data, or other discharge information, the permit must contain effluent limits for WET. Unless DEQ demonstrates in the permit's fact sheet⁷⁸ that chemical-specific limits are sufficient to attain and maintain applicable numeric and narrative state water quality standards.
- Where Idaho has not established a numeric criteria for a specific chemical pollutant, DEQ must establish effluent limits using one of the following options to determine RPTE:⁷⁹
 - Calculated numeric water quality target or concentration demonstrated to protect the designated use.
 - EPA water quality criteria under CWA §304(a).
 - Indicator parameter for the pollutant of concern.

5.1.2.5 Calculating WQBELs

If DEQ has determined that a pollutant or pollutant parameter is discharged at a level that will cause, have reasonable potential to cause, or contribute to an excursion above any water quality standard, DEQ must develop WQBELs for that pollutant. DEQ will follow procedures consistent with the draft *Effluent Limit Development Guidance* (2017a) and EPA technical support document (EPA 1991a) to calculate WQBELs for pollutants that show reasonable potential.

DEQ will first determine a WLA that represents the level of effluent quality necessary to attain and maintain the applicable narrative and numerical water quality standards in the receiving water. WLA will be based on the applicable water quality standards while accounting for dilution and background concentrations of the pollutant. DEQ will develop WLAs for acute, chronic, and human health criteria and long-term average values for each WLA. Finally, DEQ will use the most restrictive long-term average to establish effluent limits for a permit.

DEQ will then account for effluent variability to calculate the appropriate effluent limits (e.g., average monthly, average weekly, and maximum daily) to include in the permit, as appropriate. DEQ will calculate concentration limits for pollutants of concern that represent an appropriate distribution of the projected effluent data set and ensure compliance with antibacksliding and antidegradation requirements.

DEQ will also consult EPA and DEQ guidance, policy, regulations, and rules:

- *NPDES Permit Writers' Manual*, Chapter 6, "Water Quality-Based Effluent Limits" (EPA 2010a)
- *Guidance on Water Quality Based Effluent Limits Set Below Analytical Detection/Quantitation Limits* (EPA 2005)
- *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants* (EPA 1984b)
- *Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants* (EPA 1987a; 1987b)
- *Water Quality Standard Handbook: Second Edition* (EPA 1994b)
- Toxic Pollutant Effluent Standards and Prohibitions, 40 CFR 129.1–129.105, incorporated by reference at IDAPA 58.01.25.003.02.t

- Criteria and Standards for Determining Alternative Effluent Limitations, 40 CFR 127.70–125.73, incorporated by reference at IDAPA 58.01.25.003.02.q
- Draft *Idaho Antidegradation Implementation Procedures* (DEQ 2016a)
- *Water Body Assessment Guidance* (DEQ 2002b)

Some flexibility is allowed in calculating effluent limits for IPDES permits, as described in DEQ's draft *Effluent Limit Development Guidance* (2017a); however, effluent limits must adhere to the following:

- Ensure compliance with all water quality standards⁸⁰ (including antidegradation).
- Be consistent with assumptions used to develop TMDLs.⁸¹
- Be enforceable.
- Be expressed as mass,⁸² except
 - pH, temperature, radiation, or other pollutants that cannot be appropriately expressed by mass.
 - When applicable standards and limits are expressed in terms of other units of measurement.
 - Where permit limits are established on a case-by-case basis.⁸³
 - Where limits expressed in terms of mass are not feasible because the mass of pollutant discharged cannot be related to a measure of operation (e.g., discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.
- Be consistent with effluent limits from the current permit, unless backsliding is justified (section 5.1.2.7).

In addition, the following factors will be considered in developing permit effluent limits:

- Limits are calculated for each outfall, except
 - Discharge points for storm water, or other point sources, controlled by implementing BMPs.
 - When effluent limits imposed at the point of discharge are impractical or infeasible, and limits are more effective when imposed on internal waste streams before mixing with other waste streams or cooling water.⁸⁴
- Limits calculated by design flow for POTWs or production flow for other individual permits.⁸⁵
- Metals expressed as total recoverable,⁸⁶ unless
 - An applicable effluent standard or limit has been promulgated under CWA and specifies the limit for the metal in the dissolved, valent, or total form.
 - It is necessary to express the limit on the metal in the dissolved, valent, or total form to carry out the provisions of CWA, for permit limits established on a case-by-case basis.⁸⁷
 - All approved analytical methods for the metal inherently measure only its dissolved form (e.g., hexavalent chromium).
- Type of discharge—continuous or noncontinuous.⁸⁸
- Mass limits.⁸⁹
- Internal waste streams.⁹⁰
- Disposal of pollutants other than to surface water.⁹¹

5.1.2.6 Variances, Waivers, and Intake Credits

Variances, waivers, and intake credits provide unique exceptions to a particular effluent, water quality standards, monitoring, or reporting requirement. DEQ does not expect to routinely receive such requests. Variances, waivers, and intake credits are further discussed in section 8.

5.1.2.7 Antibacksliding and Determining Final Effluent Limits

After calculating applicable TBELs and WQBELs, the effluent limits are compared and the more stringent effluent limits are included as new (draft) effluent limits in the draft IPDES permit for each pollutant. For reissued permits, new effluent limits are also compared to current (existing) effluent limits to ensure the new effluent limits are consistent with the CWA antibacksliding provisions. This means new effluent limits that are less stringent than current effluent limits may have to be revised. When determining final effluent limits, DEQ ensures all applicable statutory and regulatory requirements, including CWA standards, technology, and water quality standards, are fully implemented (Figure 6).

5.1.2.7.1 Antibacksliding

CWA §402(o) expressly prohibits backsliding. Backsliding refers to the easing of effluent limits, permit conditions, or required standards from those established in the current permit. Certain exceptions to the backsliding prohibitions and a safety clause provide an absolute limitation on backsliding.

5.1.2.7.2 Prohibitions against Backsliding

First, CWA §402(o)(1) prohibits relaxing effluent limits established in the prior permit for two situations:

1. It is prohibited to revise an existing TBEL that was developed on a case-by-case basis using BPJ to reflect subsequently promulgated ELGs and standards that would result in a less stringent effluent limit (section 5.1.2.7.3).
2. It is prohibited to relax an effluent limit that is based on state standards, such as water quality standards or treatment standards, unless the change is consistent with CWA §303(d)(4) (section 5.1.2.7.4).

5.1.2.7.3 Exceptions for Case-by-Case TBELs

CWA §402(o)(2) outlines specific exceptions⁹² to the first general prohibition against revising an existing TBEL developed on a case-by-case basis using BPJ to reflect subsequently promulgated, less stringent effluent guidelines in a renewed, reissued, or modified permit. Relaxed limits may be allowed in the following cases:

- Material and substantial alternations or additions to the permitted facility justify the relaxation.
- New information (other than revised regulations, guidance, or test methods) is available that was not available at the time of permit issuance and would have justified a less stringent effluent limit. If the effluent limit was based on water quality standards, any changes must result in a decrease in pollutants discharged.

- Technical mistakes or mistaken interpretations of the law were made in issuing the permit under CWA §402(a)(1)(b).
- Good cause exists because of events beyond the permittee's control (e.g., natural disasters) and for which no reasonably available remedy exists.
- Permit has been modified under CWA §301(c), 301(g), 310(i), 301(k), 301(n), or 316(a).
- Permittee has installed and properly operated and maintained required treatment facilities but still cannot meet the effluent limits (relaxation may be allowed only to the treatment levels actually achieved).

5.1.2.7.4 Exceptions for Limits Based on State Standards

Alternatively, CWA §402(o)(1) allows relaxing WQBELs and effluent limits based on state standards if it is consistent with the provisions of CWA §303(d)(4) or if one of the exceptions in CWA §402(o)(2) is met (except that relaxing limits based on technical mistakes or mistaken interpretations are not allowed for WQBELs). The two provisions constitute independent exceptions to the prohibition against relaxing permit effluent limits, and if either is met, relaxation is permissible.

Two provisions are tied to the water quality of the receiving water body: (1) water bodies where water quality standards are attained and (2) water bodies where water quality standards are not attained.

Water Quality Standards Attained—If the permit's limit is based on a TMDL, WLA, other water quality standard, or any other permitting standard, less stringent effluent limits are allowed only if they comply with the antidegradation policy.

Water Quality Standards Not Attained—Less stringent permit limits will only be allowed if both of the following criteria are met:

1. Existing effluent limits are based on a TMDL or WLA.
2. Attainment of water quality standards will be ensured, or the designated use not being attained is removed according to the water quality standards.

5.1.2.7.5 Safety Clause

CWA §402(o)(3) is a safety clause that provides an absolute limitation on backsliding. This section prohibits relaxing effluent limits in all cases if the revised effluent limit would violate applicable effluent guidelines or water quality standards, including antidegradation requirements.

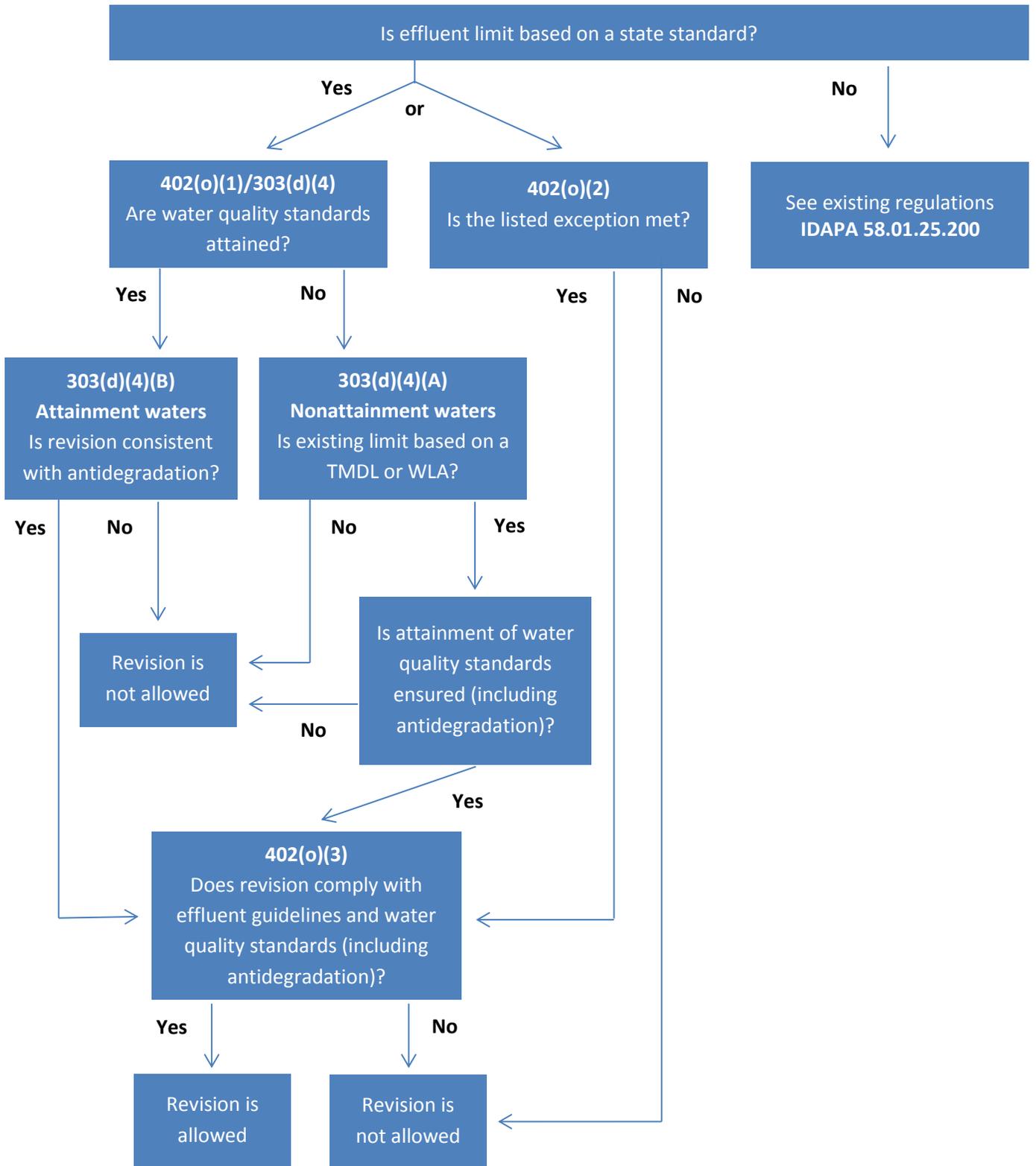


Figure 6. Antibacksliding review process.

5.1.2.7.1 Final Effluent Limits

The final effluent limits are expressed in the permit and fact sheet with tables or conditions for each outfall that identify effluent limits by pollutant, the point of compliance, and clearly state the applicable flow tier or season. In addition, the permit's fact sheet explains how the final limits were determined and how those limits meet both technology and water quality standards (including antidegradation) and, where appropriate, how an antibacksliding analysis was applied to the final effluent limits. If a mixing zone is authorized, the fact sheet describes the analysis supporting this authorization.

5.1.3 Monitoring and Reporting Requirements

Monitoring and reporting requirements identified in a permit and fact sheet are used to characterize waste streams and receiving waters, evaluate wastewater treatment efficiency, and determine compliance with permit effluent limits and state water quality standards. Further, fact sheets will explain the justification for waivers of any application requirements or monitoring requirements, and if applicable, explain why the permit contains applicable conditions or waivers.⁹³

5.1.3.1 Monitoring

DEQ uses a monitoring matrix to establish consistent monitoring requirements based on the type and design capacity of facilities and other factors, as appropriate.

Individual IPDES permits include conditions regarding effluent and receiving water monitoring that allow DEQ to determine the impact of the effluent on the receiving water body. These conditions require the permittee to conduct routine or episodic monitoring of permitted discharges, ambient conditions, and, sometimes, internal operations. Monitoring data are necessary for several reasons: assessing treatment efficiency; evaluating effluent and receiving water characteristics; determining compliance with effluent limits established in permits; and as a basis for enforcement actions.

An IPDES permit specifies the appropriate monitoring locations to determine compliance with the effluent limits and provide the necessary data to determine the effects on the receiving water. DEQ will consult with the permittee to ensure the monitoring locations are safe and accessible sampling points that represent the discharge or receiving water. The permittee is responsible for securing approval to access the monitoring locations and obtain any samples required in the permit.

DEQ considers several factors when determining monitoring requirements to be included in the permit. Factors that affect sampling location, frequency, and method include the following:

- Applicability of effluent limit guidelines and standards (effluent guidelines)
- Waste stream and process variability
- Access to sample locations
- Pollutants discharged
- Effluent limits
- Discharge frequency (e.g., continuous versus intermittent)
- Effect of flow and pollutant load on the receiving water

- Characteristics of the pollutants discharged
- Receiving water analyses
- WET testing
- Sewage sludge (biosolids)
- Expanded effluent testing (priority pollutants)
- Permittee's compliance history

Considering the need for sufficient data and the potential cost to the permittee, the permit specifies the date that monitoring should begin and establishes monitoring frequencies sufficient to characterize the effluent quality and detect noncompliance events. Monitoring frequency is determined on a case-by-case basis, and decisions for setting monitoring frequency are described in the fact sheet.

To establish a monitoring frequency, DEQ will consider the following:

- Variability of the effluent's pollutant concentration
- Design capacity of the treatment facility
- Treatment method
- Compliance history
- Cost of monitoring
- Location of discharge
- Sensitivity of receiving water
- Nature of pollutants
- Frequency of discharge
- Number of samples used in developing effluent limits
- Tiered limits
- Site- or discharge-specific conditions

For each pollutant with an effluent limit or monitoring requirement, the permit and fact sheet lists the unit of measure; monitoring type (e.g., temperature logger), interval, and frequency⁹⁴ (monthly, weekly, daily); sample collection location and sample method⁹⁵ (e.g., grab, composite, or continuous); analytical methods;⁹⁶ and any required *reporting levels* or instrument sensitivity/capability. Certain sample collection and storage requirements are identified as part of the analytical methods specified in 40 CFR 136.

The permit also will specify the minimum levels or method detection limits for each pollutant (sector-specific details in Volume 2 of this guide).

5.1.3.2 Reporting Requirements and Record Keeping⁹⁷

Reporting conditions in the permit require the discharger to submit analytical results to DEQ along with information necessary to evaluate discharge characteristics and compliance with the effluent limits. This periodic monitoring and reporting establishes an ongoing record of a permittee's compliance status, and it creates a basis for compliance assistance and any necessary enforcement actions (section 10).

IPDES regulations require the permittee to maintain records and periodically report on monitoring activities. The permittee must retain all monitoring information, for a period of at

least 3 years, or as specified in the permit, from the date of the sample, measurement, report or application.

Where pollutants are limited by both mass and other units of measurement, the permittee is required to comply with and report both limits. The permit will also specify that if the permittee monitors any pollutant more frequently than required by the permit, using EPA-approved test procedures or as specified in the permit, the permittee must include the results of this monitoring in calculating and reporting the data submitted in the DMR. Additionally, upon request by DEQ, the permittee must submit results of any other sampling, regardless of the test method used.

DEQ will establish requirements to report monitoring results on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year.⁹⁸ A permit that does not require monitoring result reports at least annually must require the permittee to report, at least annually, all instances of noncompliance not reported.⁹⁹ However, IPDES regulations state that monitoring frequency and reporting should depend on the nature and effect of the discharge or sludge use or disposal. DEQ may require more frequent reporting.

5.1.3.3 Submitting DMR and Related Information

Facilities covered under an individual permit are required to submit DMRs using EPA's NetDMR according to the submittal frequency identified in the permit, unless provided a waiver according to federal regulations. EPA and the permittees are responsible for quality control checks to ensure data input accuracy and retain qualifiers on analytical results. EPA's electronic reporting rule requires that NPDES-permitted facilities submit data via NetDMR by December 21, 2016. Most IPDES permittees will already be using NetDMR when DEQ begins implementing the IPDES Program. DEQ will acquire data from NetDMR and/or ICIS-NPDES to effectively track IPDES permit compliance.

Although permittees must electronically submit DMRs directly to EPA's NetDMR, other reporting records (e.g., annual and other reports) must be submitted to DEQ, as specified in the permit. DEQ will then submit the appropriate data and records to ICIS-NPDES according to federal regulations.

5.1.4 Special Conditions

Special permit conditions may require the permittee to undertake activities to reduce the overall quantity of pollutants being discharged, to collect information that could be used in determining future permit requirements, or DEQ may restrict the number of discharges allowed to sensitive water bodies. Examples include, but are not limited to, additional monitoring activities, special studies, BMPs, and compliance schedules.

Different reasons exist to include special permit conditions:

- To address unique situations, such as facilities discharging pollutants for which data characterizing the assimilative capacity of a receiving water body or the effectiveness of treatment are absent or limited
- To incorporate preventive conditions, such as requirements to install process control alarms, containment structures, and good housekeeping practices

- To address foreseeable changes to discharges, such as planned changes to process, products, or raw materials that could affect discharge characteristics
- To incorporate compliance schedules to provide the time necessary to comply with permit conditions
- To incorporate other IPDES programmatic requirements (e.g., pretreatment and sewage sludge)
- To identify additional monitoring requirements that provide data to evaluate the need for future changes in permit limits
- To identify permit conditions necessary to conduct water quality trading or offsets
- To increase or decrease monitoring requirements, depending on monitoring results or changes in processes or products
- To impose requirements for special studies such as ambient stream surveys, toxicity identification and reduction evaluations, bioaccumulation studies, sediment studies, mixing or mixing zone studies, pollutant reduction evaluations, or other such information-gathering studies

The following subsections address several types of special conditions that apply to individual permits. Additional sector-specific permit special conditions are included in Volume 2 of this guide.

5.1.4.1 Additional Monitoring and Special Studies

Additional monitoring requirements and special studies, beyond those required under the effluent limits section of the permit, are useful for collecting data previously unavailable during permit development. These requirements and studies generally supplement numeric effluent limits or support future permit development activities. Examples of the types of special studies that could be required in an IPDES permit include the following:

- **Treatability studies**—May be required in a permit when insufficient treatability information for a pollutant or pollutants would hinder DEQ from developing defensible TBELs. Treatability studies can also be required when DEQ suspects that a facility might not be able to comply with an effluent limit.
- **Toxicity identification and reduction evaluations**—Could be required in a permit when wastewater discharges are found to be toxic using WET tests. These evaluations identify and control the sources of toxicity in an effluent. Further guidance related to these EPA-recommended procedures and requirements are found in the following:
 - *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA 1999): www.epa.gov/npdes/pubs/tre.pdf
 - *Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program* (EPA 2001a): www.epa.gov/npdes/pubs/owmfinaltreie.pdf
 - *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA 1989a) (see endnote 3 in the NPDES Permit Writers Manual (EPA 2010a) for ordering instructions).
 - *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*. 2nd ed (EPA 1991b): www.epa.gov/npdes/pubs/owm0330.pdf

- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I* (EPA 1992b): www.epa.gov/npdes/pubs/owm0255.pdf
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA 1993a): www.epa.gov/npdes/pubs/owm0343.pdf
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA 1993b): www.epa.gov/npdes/pubs/owm0341.pdf
- **Mixing or mixing zone studies**—May be required in a permit to assist in determining how effluent and receiving waters mix and in establishing a regulatory mixing zone that can be applied when developing WQBELs.
- **Sediment monitoring**—Could be included in a permit if pollutants contained in wastewater discharges may accumulate in the sediments of the receiving water.
- **Bioaccumulation studies**—May be required in a permit to determine whether pollutants contained in discharges bioaccumulate in aquatic organisms (e.g., fish and invertebrates). Such studies could be required when water quality criteria are expressed in terms of fish tissue levels. Additional guidance related to evaluating the bioaccumulation potential of a pollutant is found in *Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors* (EPA 1994c).

When establishing additional monitoring or special studies, DEQ will ensure that any requirements related to the study (e.g., special sampling or analytical procedures) are specified in the appropriate permit condition. In addition, DEQ will establish a reasonable schedule for completing the study or monitoring program and submitting the compiled report. If the anticipated schedule is greater than 1 year, an interim progress report during the study is advisable.

5.1.4.2 Best Management Practices¹⁰⁰

In the context of the IPDES Program, BMPs are actions or procedures that prevent or minimize the potential for the release of toxic pollutants or hazardous substances in significant amounts to surface waters. BMPs, although normally qualitative, are expected to be most effective when used with numerical effluent limits in IPDES permits.

An IPDES permit includes BMPs to control or abate the discharge of pollutants for the following:

- Authorized under CWA §304(e) for the control of toxic pollutants and hazardous substances from ancillary industrial activities.
- Authorized under CWA §402(p) for the control of storm water discharges.
- Numeric effluent limits are infeasible.
- Practices are reasonably necessary to achieve effluent limits and standards or to carry out the purposes and intent of CWA.

Permits may include BMP requirements, which like all permit effluent limits are enforceable, using either of approach:

1. Site-, process-, or pollutant-specific BMPs may be appropriate in the case of individual permits where DEQ is familiar with specific circumstances at the facility.

2. A BMP plan developed by the permittee may be more appropriate for a particularly complex or unique facility. The permittee is required to develop and submit to DEQ an approved BMP plan that includes appropriate BMPs based on circumstances at its facility.

IPDES permits require general types of discharges be controlled by BMPs including the following:

- Plant site runoff
- Spillage and leaks
- Sludge and hazardous waste disposal
- Loading and unloading operations, including transfer of materials to and from trucks or railcars but not in-plant transfers
- In-plant transfer, process, and material handling areas
- Fallout, resulting from the plant air emissions that settle on the plant site
- Storm water runoff or drainage from material storage area, including toxic and hazardous chemicals stored as raw materials, intermediates, final products, or by-products

BMP Plans

BMP plan development requires engineering experience with industrial manufacturing and treatment processes and knowledge of current laws and regulations applicable to IPDES permits, BMP plans, and spill, prevention, control and countermeasure (SPCC) plans (EPA 1981).

The general requirements of a BMP plan are as follows:

- Facility description (including the facility name)
- Facility or activity type, processes used, and the products manufactured
- Map showing the location of the facility and adjacent receiving waters
- Statement of the facility's BMP policy and specific objectives for controlling toxic pollutants and hazardous substances
- Publish date
- Review by and signature of the plant manager

Specific requirements depend on the facility's environmental policy, size, complexity, and location, among other factors. Each specific requirement contains important elements that should be considered in developing a BMP plan. All elements may not be applicable to all facilities. A permittee may add, delete, or modify the elements of the specific requirements where equivalent results can be attained. The following are specific requirements that may be necessary in a BMP plan:

- BMP committee
- Risk identification and assessment
- Reporting BMP incidents
- Materials compatibility
- Good housekeeping
- Preventive maintenance
- Inspections and records

- Security
- Employee training

Implementing BMPs for sector-specific permits is identified in Volume 2.

5.1.4.3 Compliance Schedules

Permits may contain schedules of compliance to provide additional time to achieve compliance with the IPDES rules, CWA, and applicable federal regulations.¹⁰¹ Schedules developed under this provision require compliance by the permittee as soon as possible but may not extend the date for final compliance beyond compliance dates established by CWA. Thus, compliance schedules in permits are not appropriate for every type of permit requirement.

For example, a permit may not establish a compliance schedule for TBELs because the statutory deadlines for meeting technology standards (i.e., secondary treatment standards and effluent guidelines) have passed. This restriction applies to both existing and new dischargers. Permittees should note that a new source or new discharger is allowed up to 90 days to start up its pollution control equipment and achieve compliance with its permit conditions.¹⁰²

Compliance schedules must also meet the following requirements:¹⁰³

- A facility's first IPDES permit may contain a compliance schedule when necessary to allow reasonable opportunity to attain compliance with requirements issued or revised after facility construction commenced, but less than 3 years before commencing the authorized discharge.
- For recommencing dischargers, a schedule of compliance is available only when necessary to allow opportunity to obtain compliance with requirements issued or revised less than 3 years before recommencing discharge.
- If a compliance schedule exceeds 1 year from the date the permit was issued, interim requirements and associated dates must be established.
 - The time between interim dates may not exceed:
 - One year, except
 - If associated with sludge use and disposal, then the time between interim dates may not exceed 6 months.
 - If the time needed to complete an interim requirement is more than 1 year, and it is not readily divisible into stages, then the compliance schedule will specify dates for submitting progress reports, which may define a date for project completion.
- Permittees must notify DEQ within 14 days, as specified in the permit, following each interim requirement whether compliance or noncompliance with the interim or final requirement has been attained.
- DEQ may establish interim effluent limits, as appropriate.
- DEQ may grant schedules of compliance longer than the term of the permit currently issued, as needed on a case-by-case basis.

If a permittee is considering terminating discharges from their facility during the term of the permit, it is recommended that they discuss this with DEQ. This action may warrant modifying the permit, or if known before permit issuance, the action may be included in the permit in an alternative compliance schedule.¹⁰⁴ Alternative compliance schedules are appropriate when a

permittee cannot comply with new effluent limits and may decide to cease discharge rather than continue to operate:

- Alternative compliance schedules must be within the term of the permit currently issued.
- Require interim deadline where permittee makes a final decision and notifies DEQ whether they will cease discharge or comply with applicable effluent limits no later than the specified date.

Special conditions that are applicable to specific sectors are addressed in Volume 2.

5.1.5 Conditions Applicable to all Permits¹⁰⁵

Some conditions apply to all IPDES permits and delineate the legal, administrative, and procedural requirements of the permit. Each permit must have a section outlining the specific conditions described below. The exact text and language for each section may vary depending on the type of permit, but the language should follow that used in the rules.

Duty to Comply—Reiterates the permittee's (operator's) obligation to adhere to the conditions and requirements specified in the permit. These duties include the obligation to operate the facility in an efficient manner, monitor and report stipulated pollutant quantities (mass, concentration, or both) and effluent discharge rates, report upsets, bypasses, or illicit discharges and spills in a timely manner, and comply with all of the requirements stipulated in the permit.

Duty to Reapply—Addresses the need for the permittee (operator) to create and submit a complete application in a timely manner. Applications should be completed and submitted early enough to allow DEQ time to determine the application is complete, begin the permit creation process, and issue the final permit before the current permit expires.

Duty to Halt or Reduce Activity—Addresses the permittee's (operator's) responsibility to reduce or cease discharging if they know that the discharge is violating or will violate the permit limits. This section effectively states that the permittee (operator) cannot rely on the argument that they would have to halt or reduce production to comply with their permit limits.

Duty to Mitigate—Requires the permittee (operator) to take all reasonable steps to prevent violating the effluent limits or sludge usage requirements if it would pose a threat to human health or the environment. The duty to mitigate requires the facility and its operators to follow all proper operating procedures and adhere to all applicable state and federal regulations.

Proper Operation and Maintenance—Requires that the permittee (operator) perform preventative maintenance as required, keep the unit processes and supporting equipment in good condition, and maintain the backup equipment in a state that can be quickly used, without the backup equipment being online. Systems required to have redundant operations and equipment must keep them functional so that they can be brought online quickly to address emergency situations, such as upsets or excessive peak flows. These O&M requirements extend to laboratory operations, if present, and to the required QAPPs.

Throughout all sample collection and analysis activities, permittees must prepare a QAPP consistent with the EPA-approved quality assurance/quality control (QA/QC) and chain-of-custody (COC) procedures (section 9.3.1.7.3) described in *EPA Requirements for Quality*

Assurance Project Plans (EPA 2001b) and *Guidance for Quality Assurance Project Plans* (EPA 2002b), or DEQ equivalent.

Permit Actions—Conveys to the permittee (operator) that the permit may be modified, revoked and reissued, or terminated for cause. Justifiable cause could include, but is not limited to, requests for modification or termination from the permittee, notification of facility upgrades or process changes, and repeated noncompliance with the current permit conditions.

Property Rights—Informs the permittee (operator) that the permit does not convey any property right or exclusion privilege to the permittee. The permit is more of a license to discharge, similar to a driver's license that allows the holder to operate a motor vehicle as long as they obey the laws.

Duty to Provide Information—Reiterates the obligation that the permittee (operator) must make available all required monitoring results, operational logs, and other information required to be collected and retained by the permit when requested from DEQ. These information requests may arise during inspections or permit renewal activities to assess compliance with the permit, or evaluate new permit limits during a permit renewal effort.

Inspection and Entry—Conveys to the permittee (operator) their obligation to provide DEQ representatives access to the facility, equipment, discharge location, land application fields, records repositories, or any other site affiliated with the permitted operation, when requested. Access allows DEQ representatives entry to the property and access to copy records that are required to be generated and retained by the permit. This access is required to support the compliance evaluation, which may include installing and maintaining DEQ's composite monitors at internal or distal monitoring points.

Monitoring and Records—Identifies who collected samples; dates samples were analyzed; who performed the sample analyses; analytical techniques and methods used; analytical results; and other information associated with the facility operation, maintenance, and discharge quantity and quality.

Records Retention—Informs the permittee (operator) how long the monitoring data records and reports must be retained and identifies the types of records (DMRs, calibration and maintenance records, and strip chart recordings); copies of reports; all application information.

Signatory Requirements—Informs the permittee (operator) that all required submittals must be signed by a certifying official or duly authorized representative. This section identifies that all applications, reports, and other permit required information must be certified as true and accurate. This section also conveys the penalties associated with submitting false information.

Reporting Requirements—Identifies the different requirements the permittee (operator) is obligated to submit to DEQ. These requirements to notify DEQ include, but are not limited to, the following:

- New introduction of toxic pollutants
- When the facility is planning to alter operations or equipment, which may change the facility's classification to a new source or new discharger
- When it may be sold to another party

- When monitoring occurs more frequently than required in the current permit
- When any permit noncompliance occurs that may endanger health or the environment
- When the permittee becomes aware that a failure to report information, whether in the application or any report, has occurred

This section in rule is lengthy, and DEQ recommends that the permittee (operator) read the rule to understand the breadth of reporting requirements that are included in the permit.

Bypass Terms and Conditions—Warns the permittee (operator) that bypasses are prohibited discharges, and DEQ may pursue enforcement if bypasses occur at the facility. This section also addresses what constitutes justification for bypassing the treatment works, and what reporting requirements are if a bypass does occur.

Upset Terms and Conditions—Similar to bypasses terms and conditions, upsets are strictly limited to discharges that are authorized under a TBEL. The burden of proof that an upset was justified still resides with the permittee (operator). The notification requirements (24-hour verbal) and remedial action requirements appear in this section. DEQ has discretion in implementing compliance assistance and enforcement related to upset events.

Penalties and Fines—Addresses the fine requirements stipulated in the rules.

5.2 Permit Denial

Instances may occur when a submitted application results in DEQ denying the facility a permit.¹⁰⁶ This situation may arise due to various reasons:

- Facility is in a sector that EPA does not currently issue permits for (section 3.2.6).
- Discharge would impair anchorage or navigation in the receiving water in the judgement of the Secretary of the Army.
- Facility receives chemical or biological warfare waste.
- Facility receives high-level radioactive waste.
- Facility does not have a WLA in a TMDL and the receiving water body does not have assimilative capacity.
- For a new application, TMDL for the receiving water body does not have adequate reserve capacity.
- Discharge violates water quality standards and cannot be mitigated by any level of effluent limits.

If DEQ reaches the point at which an NOI to deny a permit is issued, the applicant may still discuss alternative permitting programs, or alter the waste streams that are proposed to be discharged to surface waters. Hopefully, these situations do not arise, because during the preapplication meeting the applicant has the opportunity to discuss the applicability of an IPDES permit for their effluent (section 4.1). Alternatively, if DEQ arrives at this point and issues an NOI to deny, all NOIs are classified as a type of draft permit and must be processed through the public notification and comment process.¹⁰⁷

5.3 Permittee and Public Participation on the Draft Permit

The process for providing public participation on an IPDES permit (either individual or general permit) is identified in the IPDES rules and outlined in the *Public Participation in the Permitting Process Guidance* (DEQ 2016c). A brief overview of this process is outlined below.

Before formal public notice of a draft IPDES permit, DEQ will post the notice of a forthcoming draft permit on the DEQ website and provide a permit applicant 10 business days to review the preliminary draft permit, unless the review period is waived in part or in whole by the applicant. In some cases, DEQ may allow the applicant a longer preliminary draft review period for complex permits. While this is primarily intended for the applicant to review and discuss with DEQ any errors and omissions in the preliminary draft permit, it also provides the public notification that a draft permit will be made available for public review and comment after DEQ has addressed any errors and omissions identified in the preliminary draft.

Public notification of a draft permit initiates a minimum 30-day public review and comment period.¹⁰⁸ This public notice is provided by a combination of mailings or any other method that reasonably gives notice to the persons potentially affected, including press releases or use of any other forum or media to elicit public participation from the following:

1. Applicant
2. Any other agency that has issued or is required to issue a permit for the same facility or activity
3. Affected federal and state agencies with jurisdiction over fish, shellfish, wildlife, and other natural resources (including downstream states or Canada), state historic preservation offices (SHPO), and any affected Indian tribe
4. Any state agency responsible for plan development under CWA, USACE, US Fish and Wildlife Service, and National Marine Fisheries Service
5. Any user identified in the permit application of a privately owned treatment works
6. Any person who requested to be on a mailing list
7. Any local government having jurisdiction over the area where the facility is proposed to be located
8. Each state agency having any authority under state law with respect to the construction or operation of the facility

DEQ will ensure that if any written recommendations from a state or Indian tribe whose waters may be affected by issuing an IPDES permit are not accepted, DEQ will notify the affected state and EPA of its decision not to accept the recommendations and provide the rationale.

Requests for extending a public comment period must be provided to DEQ in writing before the last day of the comment period.

The permit application, draft permit, and fact sheet describing the terms of the permit will be available during the public comment period. DEQ may schedule a public meeting on the draft permit if there is significant public interest, an interested party requests in writing a public meeting within the first 14 days of the public comment period, or for another good reason.¹⁰⁹

As identified in the draft MOA between DEQ and EPA (DEQ and EPA 2016), EPA will review draft permits rather than proposed permits. EPA may choose to review a proposed permit instead of, or in addition to, review of the draft permit.

5.4 Proposed Permit

After the close of the minimum 30-day public comment period, DEQ considers information provided by the public, prepares a document summarizing the public comments received on the draft permit, and may make changes to the draft permit. After the public comment period and before issuing the final permit decision, DEQ will give the applicant an opportunity to provide additional information to respond to public comments. DEQ may request more information from the applicant to respond to public comments.¹¹⁰ However, new data and information provided by any party before issuing a proposed permit may necessitate another public comment period if it results in substantive changes to the draft permit. In such cases, the subsequent public comment period only pertains to those components of the draft permit that had changed.

DEQ may then develop a proposed permit. EPA may take up to 90 days to provide specific grounds for objection of a proposed permit. EPA will submit in writing to DEQ objections to, or recommendations on changes to the proposed general permit. EPA's review process is defined in the draft MOA (DEQ and EPA 2016). If EPA objects to a proposed permit, any state, interstate agency, or interested person may request EPA to hold a public hearing regarding the objection. If DEQ submits a revised permit instead of requesting a public hearing, EPA will review the revised permit to determine whether the EPA's objections have been met. If DEQ does not resolve EPA's objections within the time specified in the draft MOA (DEQ and EPA 2016), exclusive authority to issue the permit passes to EPA. Following the issuance of an EPA issued permit and its permit cycle, authority to reissue the permit reverts to DEQ.¹¹¹

5.5 Issue Final Permit¹¹²

After the public comment period closes on a draft permit and comments are received on the proposed permit from EPA, DEQ will issue a final permit decision and fact sheet. A final permit decision means a final agency order and the final permit action to issue, deny, modify, revoke and reissue, or terminate a permit.

DEQ will serve notice of the final permit to the permittee and each person who has submitted written comments or requested notice of the final permit. Service of notice for the decision will occur at the same time and using the same method for all parties, which may be by mailings or any other method reasonably determined to provide notice. DEQ will also provide the final permit to the permittee and post the final permit, response to comments, revised fact sheet, and associated permit documents on the DEQ web page. A final permit decision becomes effective 28 days after notice of the decision unless a later effective date is specified in the decision, or a Petition for Review is filed with DEQ¹¹³ (section 11).

DEQ will base final permit decisions on the administrative record,¹¹⁴ which consists of the administrative record for the draft permit and fact sheet, the proposed permit and associated information, and the following:

- All comments received during the public comment period
- The record and any written materials submitted as part of a public meeting
- The application or NOI to deny the application and any supporting data provided by the applicant
- Any other relevant correspondence and documents

The final permit, response to comments, revised fact sheet, and associated permit documents will be posted on DEQ's web page.

6 General Permit Development Process

A general permit is a single permit that authorizes multiple sources to discharge pollutants to waters of the United States in Idaho. This differs from an individual permit that authorizes an individual source to discharge pollutants. Like individual permits, general permits are issued for a term not to exceed 5 years. General permits use BMPs more frequently than individual permits to control water pollution. Facilities seeking coverage under a general permit are required to submit an NOI that complies with the information requirements specified in the general permit. The IPDES web interface provides access to NOIs so that the applicant can electronically submit the required information. This section provides an overview of the applicability of general permits, addressing what types of discharges are eligible for coverage under a general permit, the content of general permit sections, the permit development process, and obtaining and terminating coverage under a general permit.

Figure 7 presents the process for developing new and reissuing or modifying existing general permits. Information considered in developing permit conditions including the rationale behind all permit conditions is provided in each general permit's fact sheet. Appendix D provides an outline of the general permit and fact sheet development and issuance process.

General Permits Development Process



Figure 7. General permit development process flow chart.

This section provides an overview of the following:

- General permit and NOI development process
- Sectors covered by IPDES general permits
- Coverage areas
- Which permit attributes are sector specific and are covered in Volume 2
- How the public and permitted community may participate in developing new and renewed general permits
- Submitting NOIs and obtaining coverage under a general permit
- Avenues for IPDES coverage that exist if a potential discharger is denied coverage under a general permit

General permits may be written for activities that share similar wastewater constituents, facilities or activities that use the same or similar operations, activities that discharge to receiving waters that have similar restrictions imposing the same or similar effluent limits, and sources that may be more economically, or appropriately regulated under a general permit.

The following general permits have been developed to address various sources of discharge:

- CGP
- MSGP for industrial storm water requirements
- CAAP facility
- CAFO
- Ground Water Remediation General Permit (GWGP)
- Drinking Water Treatment Plant General Permit
- Small suction dredge mining
- PGP
- VGP

General permits are written to provide multiple dischargers coverage within a geographic area, and all waters of the United States in Idaho within that area may be subjected to receiving discharged effluent. The waters must be assessed for the ability to assimilate the pollutants being discharged without exceeding water quality standards. This large task may be simplified by categorizing surface waters into smaller groups based upon their current water quality, critical flow, or volume. Alternatively, the geographic area may be categorized based upon climatic conditions or ecoregions (e.g., southern Idaho's low precipitation climate versus northern Idaho's high precipitation climate).

Although many of the steps in developing a general permit are similar, the permit development and discharge authorization process may vary for each permit depending on specific circumstances. General permits may include different tiered effluent limits, permit conditions, or requirements based on a number of factors, including but not limited to, the following:

- Number and type of discharges and pollutants
- Condition or status of the receiving water bodies
- Results of antidegradation, RPA, mixing zone, and other analyses

Stakeholder Coordination

To the extent practicable, DEQ intends to coordinate with and inform applicants, permittees, and EPA throughout the general permit development process—beginning with the predevelopment notification, continuing through the issuance of the final general permit, as well as any compliance, inspection, and enforcement activities (sections 9 and 10). The general permit development coordination includes interpreting monitoring and reporting data, characterizing the effluent and receiving water bodies, developing effluent limits, monitoring and reporting requirements, and other permit conditions. This communication keeps the permittee (operator); DEQ IPDES permit writers and CIE personnel, and EPA well-informed of the general permit development. The goal is for DEQ personnel to develop complete, accurate, and enforceable permits.

6.1 Authority to Issue General Permits

General permits are one way to efficiently and effectively manage the permitting burden while still complying with the CWA regulatory requirements. EPA addressed questions concerning general permit validity in multiple court cases across the United States. The US Court of Appeals for the Ninth Circuit (2003) noted that “[g]eneral permitting has long been recognized as a lawful means of authorizing discharges.” The courts have determined that general permits are applicable media to control multiple dischargers in geographic or political areas. The court determined that CWA §402 does not limit the scope of NPDES permits to individual permits alone, as long as the permit complies with the limitations specified in CWA.

General permits have been used to address multiple point sources of similar classification operating in a geographic area that employ substantially similar operations and processes, discharge effluent with similar qualities, and would be restricted by individual permits with the same discharge limits or operating conditions. Consequently, general permits have not been restricted to storm water discharges alone.

6.2 Individual versus General Permits

The reason for issuing a general permit instead of multiple individual permits is that less time and resources are required. A general permit will define effluent limits, monitoring, sampling, reporting, and recordkeeping requirements for all activities covered under the general permit while having broader coverage than an individual permit.

Similar to an individual permit, a general permit's discharge limits are initially addressed by TBELs. BMPs are a subcategory of TBELs. The assumption is that a properly installed and maintained BMP will provide suitable effluent treatment before discharge to receiving waters. This assumption may not be valid when the facility or activity is proposing to discharge to an impaired water body. Receiving water body characteristics may require WQBELs be developed as well.

6.3 General Permit Development

Five criteria that a class or category of dischargers must meet before a general permit can be composed to address the discharges:

1. Class or category of discharger has the same or substantially similar types of operations.
2. Same types of pollutants are discharged.
3. Same effluent limits or operating conditions are applicable.
4. Sources require the same or similar monitoring where tiered conditions may be used for minor differences within a class (e.g., size or seasonal activity).
5. Discharges are more appropriately controlled under a general permit.

Once the five criteria have been verified for a particular class or category of discharger, the actual development of the general permit can proceed. The general permit development process does not differ significantly from that of an individual permit. A permit contains the conditions a permittee must meet, while information considered in development and the rationale for permit conditions is included in the supporting fact sheet for each permit.

6.4 Draft Permit and Fact Sheet Development

IPDES general permits consist, at a minimum, of the following sections:

- Cover Page (section 6.4.1)
- Permit Eligibility and NOI Requirements (section 6.4.2)
- Effluent Limit Development (section 6.4.3)
- Monitoring and Reporting Requirements (section 6.4.4)
- Special Conditions (section 6.4.5)
- Conditions Applicable to all Permits (section 6.4.6)

The fact sheet contains similar structure and content, but it also provides the reasoning behind the permit conditions and effluent limits found in the permit. The fact sheet also includes a general description of the wastewater sources, treatment systems and processes, and the receiving water's quality and resulting impacts.

IPDES fact sheets for general permits may also contain the following major components:

- Information on public comment and public meeting
- Description of the proposed eligible discharges
- NOI requirements
- List of the proposed effluent limits, and how the limits were established
- Information supporting the conditions found in the draft permit

6.4.1 Cover Page

The permit cover page includes information regarding authorized discharges and the applicable dates of the permit:

- IPDES general permit title and number
- Permit coverage statement

- Permit posting requirements
- Issuance date—Date the permit is signed by DEQ
- Effective date—Date permit conditions take effect
- Reapplication due date—Date by which a permittee must submit an NOI
- Expiration date—Date permit coverage terminates
- Signature—DEQ director or designee

The fact sheet cover page includes information about the permit development:

- General permit name and number
- DEQ technical contact information
- Public comment open date—Date on which a minimum 30-day public comment period for the draft permit begins
- Public comment close date—Date on which the public comment period for the draft permit ends
- Public meeting date (if applicable)—Date on which a public meeting for the draft permit is held
- Description of coverage

Submission Schedule

The submission schedule is a summary of items a permittee must complete and/or submit to DEQ during the term of this permit. This list includes a due date for each item and references to the section of the permit that requires the submission. Submission schedules may differ due to the unique nature of each permit, or they may not be required.

Examples of these items may include, but are not limited to, the following:

- NOI
- DMRs
- QAPPs
- O&M plans
- Permit coverage renewal
- Surface water monitoring reports
- BMP plan
- Storm water pollution prevention plan (SWPPP)
- Pollution management plans (e.g., nutrients and toxics)
- NMP
- Storm water management program (SWMP)
- Emergency response and public notification plans
- Twenty-four hour NONC reporting
- Ambient monitoring reports
- Temperature monitoring reports
- Outfall inspections
- Engineering studies
- Facility planning
- Sewage sludge (biosolids) annual reports

- Annual report
- Compliance evaluation reports
- NOT of discharge
- Other sector or permit-specific requirements

6.4.2 Permit Eligibility and NOI Requirements

This section of a general permit describes the facilities or activities that are authorized to discharge, the information that must be submitted in the NOI, and the process to obtain, modify, or terminate permit coverage.

6.4.2.1 Permit Coverage and Eligibility

This section of a general permit addresses the following:

- Eligibility criteria for authorized discharges
- Receiving waters covered by the general permit
- Required steps for obtaining authorization to discharge under the general permit
- Notification of coverage
- Conditions that may preclude coverage under the general permit and necessitate an application for an individual permit
- Transfer of authority to discharge (if appropriate)
- Termination or inactivation of authority to discharge (if appropriate)

6.4.2.2 Notice of Intent Requirements

An applicant seeking discharge coverage under an IPDES general permit must submit an NOI to obtain coverage for discharges to waters of the United States. The required contents of an NOI are unique for each general permit and are listed and described in the permit. This section outlines elements that a general permit may require for NOIs. All NOIs must include, but are not limited to,¹¹⁵ the following:

- Legal name and address of the owner or operator
- Facility or activity name and physical address
- Facility or discharge type
- Receiving water body

6.4.2.2.1 Owner and Operator Information

Information identifying the legal entity owning and operating the facility or activity is required on all applications:

- Owner's name (e.g., company, corporation, or municipality)
- Certifying signatory person's name and title
- Mailing address
- Phone number
- E-mail addresses
- Federally issued EIN

Similarly, information regarding the operator must be provided:

- Operator's name, (e.g., company, corporation, or municipality)
- Whether the operator is also the owner of the facility or activity
- Mailing address
- Phone number
- E-mail addresses
- Operator's EIN

Finally, if an annual fee is applicable for the general permit coverage sought, a billing address must be provided, including, but not limited to, the following:

- Name (company or municipal billing office) to which the bill need be submitted
- Billing address
- Contact person's name and title
- Phone number
- E-mail addresses, if available

6.4.2.2.2 Facility or Activity Location and Description

The facility's or activity's physical location and description must be identified and submitted as part of the electronic Notice of Intent (eNOI) information, including, but not limited to, the following:

- Facility location (latitude and longitude at the entrance)
- Outfall locations (latitude and longitude)
- Township, range, and section
- County
- Whether it lies on Indian lands
- Site-specific requirements identified in the permit (e.g., SIC codes)
- Type of discharge
- Expected nature of the discharge
- Potential for toxic and conventional pollutants in the discharges
- Expected volume of the discharges (if known)
- Other means of identifying discharges covered by the permit
- Estimated number of discharges to be covered by the permit
- Facility or activity status as federal, state, private, public, or other

A map of the area extending to one-quarter mile outside the facility's or activity's property boundary should be supplied with the application. This map should indicate the following:

- Area surrounding all unit processes (topographic if available) extending one-quarter mile past the property boundary
- Influent and effluent pipes and structures
- Springs or other surface water bodies
- Drinking water wells within 1 mile of the property
- Areas where waste sludge, manure, or other solid biologically degradable waste is produced, stored, treated, or disposed
- Areas assigned to receive, store, treat, or dispose of hazardous waste

6.4.2.2.3 Compliance with Permit Prohibitions

Some information is required by all applicants to help DEQ determine that the facility or activity discharges comply with permit prohibitions.¹¹⁶ Aspects applicable to all IPDES general permits and permittees involve information required by DEQ to determine whether the facility or activity complies with the antidegradation policy of Idaho's water quality standards.

6.4.2.2.4 Sector-Specific Requirements

Many sectors covered under a general permit will have specific plans that must be submitted concurrently with the NOI. Examples of these plans include, but are not limited to, the following:

- SWPPP
- SWMP
- NMP

6.4.2.2.5 NOI Submission Timeline

Each permit will specify deadlines for submitting an NOI for permit coverage. Permits will also clearly explain when a discharger, who has submitted a complete and timely NOI, is authorized to discharge under the permit. The permit will specify when and how the permittee (operator) will receive notification of permit coverage. Options include the following:

- Upon receipt of the NOI by DEQ
- After a specified waiting period
- On a date specified in the general permit
- Upon receipt of notification of coverage from DEQ

Under certain conditions, DEQ may choose not to require an NOI, where an NOI may not be necessary. For example, facilities covered under an individual permit may not be required to submit a NOI for future coverage under a general permit. Alternatively, DEQ may use the requirements of another agency's application permit process to cover a pollutant discharge activity under an IPDES general permit. DEQ will indicate, in the permit conditions and the public notice of the general permit, the reasons for not requiring an NOI. To determine whether an NOI is not necessary, DEQ will consider the information listed in sections 6.4.2 through 6.4.2.2.4.

The fact sheet for each general permit will describe facilities or activities authorized by the permit at the time the permit is generated. The fact sheet associated with each general permit includes facility or activity descriptions for discharges covered under the current permit that requested coverage under the reissued permit. For new general permits, NOIs and accompanying documents for discharges that gain coverage after the permit is issued will be accessible to the public via the web-based interface.

6.4.3 Effluent Limit Development

Effluent limits in a permit are the primary mechanism for controlling discharges of pollutants to receiving waters. The fact sheet explains how effluent limits included in the permit are developed (Figure 8) and outlines effluent limit development. Developing effluent limits in general permits may take on different forms depending on the types of discharge and the potential to impact the receiving water bodies.

When analyzing the impact of a discharge on the receiving water body, DEQ will assess whether TBELs, which include BMPs, will achieve the required effluent quality to prevent a violation, or contribute to the exceedance of a water quality standard. Since general permits provide discharge coverage to multiple facilities or activities that may be located in various watersheds across the state, the following are focal points for developing effluent limits:

- Identify pollutants of concern and then identify effluent concentrations representative of the facilities' or activities' treatment processes or BMPs.
- Assess how these pollutants impact the various receiving water bodies.

A tremendous amount of time and effort are required to evaluate these impacts on water bodies throughout the state. DEQ may simplify this process by assessing limited TBELs, including BMPs, appropriate for the facility or activity, and aggregating water bodies that share similar characteristics or beneficial uses or attributes (e.g., Tier I and Tier II). The process is presented in more detail in Volume 2 of this guide.

When TBELs alone are not enough to protect water quality, IPDES rules, CWA, and federal regulations require DEQ to develop WQBELs. WQBELs ensure that authorizing the discharge still meets the CWA objective of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters as well as providing for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water (fishable/swimmable). Water quality goals for a water body are defined by Idaho's water quality standards. Requirements more stringent than promulgated technology limits are included in a permit if they are necessary to achieve water quality standards; this includes narrative criteria and antidegradation provisions.

6.4.3.1 Technology-Based Effluent Limits and Standards

One of the major strategies of CWA in making "reasonable further progress toward the national goal of eliminating the discharge of all pollutants" is to require effluent limits based on the capabilities of the technologies available to control those discharges. TBELs aim to prevent pollution by requiring a minimum level of effluent quality that is attainable using demonstrated technologies for reducing discharges of pollutants into waters of the United States. BMPs are a subcategory of TBELs that use system configurations coupled with preventative maintenance practices.

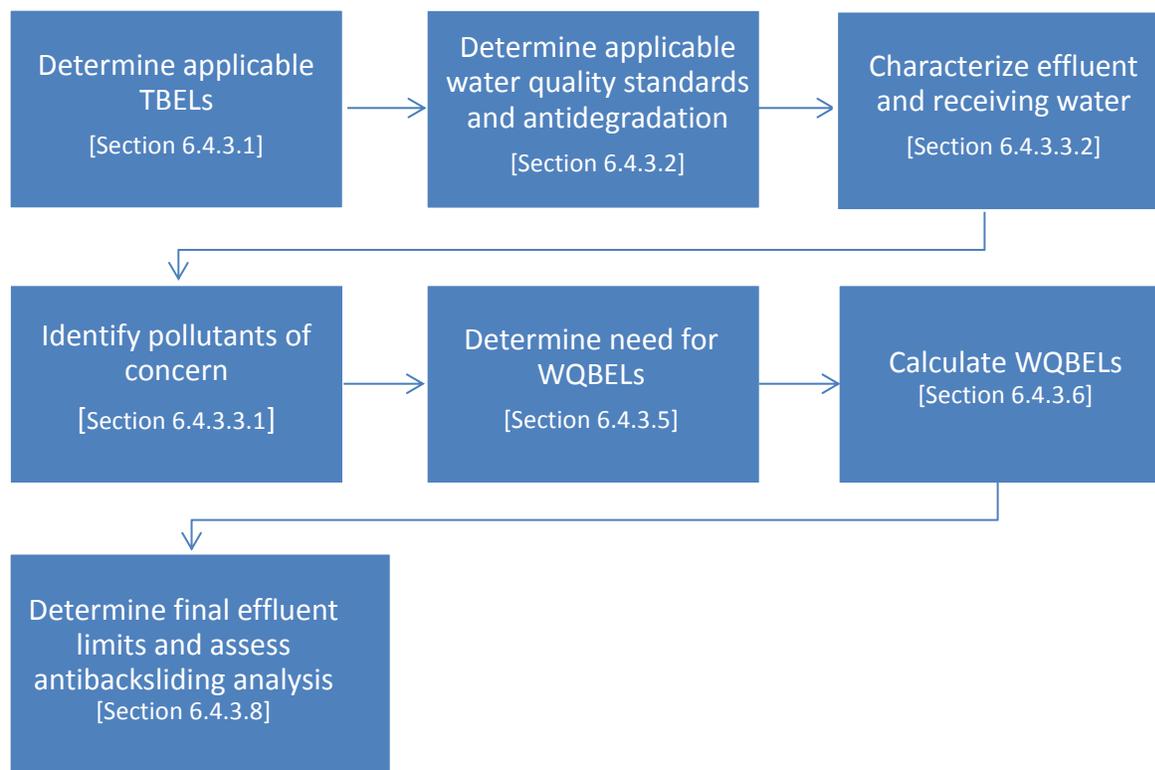


Figure 8. General permit effluent limits development.

ELGs and standards are developed at a national level and promulgated in CFR. DEQ develops TBELs for permits based on these ELGs and standards and determines how much of the pollutant can be removed from the effluent using available technology. Consequently, TBELs do not account for the potential impact of a discharge on the receiving water body. Any water quality impact is addressed through RPA and WQBEL development (sections 6.4.3.5 and 6.4.3.6).

The first step in identifying appropriate effluent limits is based on the facility and type of discharges authorized under a general permit and evaluating what, if any, TBELs are required, representing the minimum level of control that must be imposed in a permit. DEQ will determine which pollutants require TBELs. Necessary TBELs are based on the following:

- Standards promulgated under CWA §301
- New source performance standards, CWA §306
- Effluent limits determined on a case-by-case basis (including BPIs) under CWA §402(a)(1)(B)
- Combination of the three.¹¹⁷

The application of TBELs and BMPs may be different for each general permit. Volume 2 of this guide, DEQ's draft *Effluent Limit Development Guidance* (2017a), and the BMP manuals (DEQ

1997; 2005b) more fully address TBEL requirements specific to the various types of dischargers and permitted sectors.

6.4.3.2 Determine Applicable Water Quality Standards

CWA and implementing regulations require states to develop and, from time to time, revise water quality standards. Wherever attainable, water quality standards protect water quality to provide for the protection and propagation of fish, shellfish and wildlife, and recreation in and on the water (i.e., fishable/swimmable). In establishing standards, DEQ must consider the use and value of waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation. EPA reviews and approves, or disapproves new and revised water quality standards to ensure that the new and revised water quality standards meet the requirements of CWA and federal regulations.

When developing an IPDES general permit, DEQ will identify and implement the applicable water quality standards for the receiving waters. General permits offer a unique challenge when trying to address the applicable water quality standards. Because the general permit is specific to a defined area, the area may be constrained to those that have similar water quality (e.g., aquaculture facilities subject to WLA versus cold water aquaculture facilities not subject to WLA). The fact sheet will describe the applicable water quality standards and how they are supported by permit conditions.

Although many components make up water quality standards (e.g., mixing zones and variances), the following are the three primary components:

1. Beneficial uses
2. Water quality criteria
3. Antidegradation

Beneficial uses of the water include the ways in which humans and animals use the water. Criteria specify what water quality is needed to protect beneficial uses. Criteria can be numeric concentrations or narrative requirements. Antidegradation is a policy developed to maintain and protect water quality.

6.4.3.2.1 Beneficial Uses

The first part of the water quality standards is a classification system for water bodies based on the expected uses of those water bodies, which are called beneficial uses. A designated use is a beneficial use assigned to a specific water body in Idaho's water quality standards. CWA also requires Idaho to recognize existing uses, which are uses actually attained in a water body on or after November 28, 1975, whether or not they are designated uses. In some cases, a water body does not have uses designated. For these water bodies, DEQ applies a *presumed use* protection, meaning the water body will be protected for cold water aquatic life and contact recreation. DEQ must also consider and ensure the attainment and maintenance of the water quality standards of downstream waters when establishing designated uses.

6.4.3.2.2 Water Quality Criteria

The second part of the water quality standards is the set of water quality criteria sufficient to support the beneficial uses of each water body. While a water body may have multiple beneficial uses, the criteria must protect the most sensitive use. DEQ has adopted both numeric and narrative water quality criteria. Numeric water quality criteria are developed for specific parameters to protect aquatic life and human health and, in some cases, wildlife from the deleterious effects of pollutants. Narrative criteria are implemented where numeric criteria cannot be established, or to supplement numeric criteria.

Numeric criteria for protecting aquatic life are designed to protect aquatic organisms, including plants and animals, human health, or other categories (e.g., wildlife). Numeric criteria typically address both short-term (acute) and long-term (chronic) effects. Each numeric criterion generally consists of three components:

1. Magnitude—Level of pollutant (or pollutant parameter), usually expressed as a concentration, that is allowable.
2. Duration—Period (averaging period) over which the instream concentration is averaged for comparison with criteria concentrations.
3. Frequency—How often criteria may be exceeded.

Numeric criteria and effluent limits are often not expressed in the same way. For numeric criteria to protect aquatic life in a receiving water body for example, arsenic concentrations may not exceed 340 micrograms per liter (magnitude) as a 1-hour average (duration) more than once in 3 years (frequency). Effluent limits in IPDES permits are generally expressed as a magnitude in mass or concentration (e.g., milligrams per liter, micrograms per liter, or pounds per day) and an averaging period (e.g., maximum daily, average weekly, and average monthly). Typically, the components of the criteria are addressed in water quality models through the use of statistically derived receiving water and effluent flow values that ensure that criteria are met under critical conditions.

DEQ's water quality standards also include narrative water quality criteria to supplement numeric criteria. Narrative criteria describe the desired water quality goal for a water body. Narrative criteria in Idaho's "Water Quality Standards" (DEQ 2016d), for example, require that surface waters be "free from hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses" or be "free from toxic substances in concentrations that impair designated beneficial uses." DEQ can use narrative criteria as the basis for limiting specific pollutants for which numeric criteria do not exist or as the basis for limiting toxicity using WET requirements where the toxicity has not yet been traced to a specific pollutant or pollutants.¹¹⁸

6.4.3.2.3 Antidegradation

The third part of the water quality standards is the antidegradation policy. The draft *Idaho Antidegradation Implementation Procedures* (DEQ 2016a) is a set of procedures and guidance aimed at maintaining the existing quality of Idaho waters. Maintaining water quality better than the minimums set by water quality criteria is a primary objective of CWA. This objective is achieved by reviewing water quality-related permits for their effect on water quality. If the water receiving the discharge is of high quality (e.g., Tier II), proposed degradation in water quality is

evaluated closely to determine if it can be minimized or avoided. If significant degradation cannot be avoided, then the activity is evaluated to determine its necessity and importance both socially and economically to the affected public's health.

Effluent limits included in IPDES general permits must be consistent with Idaho's antidegradation policy,¹¹⁹ which establishes three tiers of water quality protection. DEQ will consider and address antidegradation during permit development. Depending on the circumstances of each general permit, DEQ's antidegradation review may be conducted as the permit is being developed or each time a discharger seeks coverage under a general permit.

Tier I maintains and protects existing uses and water quality conditions necessary to support such uses. Where an existing use is established, it must be protected even if it is not listed in the water quality standards as a designated use. Tier I requirements are applicable to all surface waters.

Tier II maintains and protects "high quality" waters—water bodies where existing conditions are better than necessary to support CWA "fishable/swimmable" uses. Water quality may be lowered in Tier II waters, but only with public review of the necessity for degradation based on the social and economic importance of the activity. In no case may water quality be lowered to a level that would interfere with existing or designated uses.

Tier III maintains and protects water quality in ORWs. Except for certain temporary changes, water quality cannot be lowered in such waters. ORWs generally include the highest quality waters of the United States. The ORW classification also offers special protection for waters of exceptional ecological significance, such as those that are ecologically important, unique, or sensitive. In Idaho, designation as an ORW requires legislative action.

6.4.3.3 Effluent and Receiving Water Characterization

After DEQ verifies the five criteria in section 6.3 for a particular class or category of discharger, including the same or substantially similar types of operations and pollutants, DEQ proceeds with characterizing the effluent and receiving waters for a general permit. DEQ uses the information from those characterizations to determine whether WQBELs are required (section 6.4.3.5) and, if so, to calculate WQBELs (section 6.4.3.6). The fact sheet supporting each general permit identifies and describes the following:

- Pollutants of concern in the discharge
- Critical conditions of the effluent and receiving waters
- Mixing zone applicability, analysis, and conditions (Volume 2 of this guide)

6.4.3.3.1 Identify Pollutants of Concern

Several sources of information and methods identify *pollutants of concern* for WQBEL development. These pollutants may not necessarily receive an effluent limit in an IPDES permit, but they do go through an RPA. Five categories identify pollutants of concern for potential WQBEL development:

Pollutants with TBELs

Any pollutant discharged from the class of facility or activity with a TBEL, including BMPs, may need more stringent limits necessary to support water quality standards. Pollutants subject to TBELs are addressed in state and federal regulations. Industries must meet ELGs.¹²⁰ If an industry does not have an ELG, the characterized effluent will be assessed and limits established, if necessary, using BPJ. Any pollutant with a TBEL may also need more stringent limits to support water quality standards.

Pollutants with a Wasteload Allocation from a TMDL

For any pollutant that a WLA has been assigned to the facility or activity through a TMDL, DEQ publishes a priority list (i.e., “§303(d) list”) of Category 5 impaired waters in Idaho’s Integrated Report. For waters identified on this list, DEQ must develop a TMDL for the pollutants, set at a level to achieve water quality standards (in some cases the impairment may be due to a nonpermitting issue such as flow or habitat alteration).

IPDES general permits must include effluent limits developed consistent with the assumptions and requirements of any WLA that has been assigned to the discharge as part of an approved TMDL. As a result, any pollutant for which a WLA has been assigned to the permitted facility through a TMDL is a pollutant of concern.

Pollutants with WQBELs in Previous Permit

Any pollutant for which DEQ determines WQBELs in the previous permit continue to apply, and where those conditions no longer apply, DEQ must complete an antibacksliding analysis to determine whether to remove the WQBELs from the reissued permit. In addition, DEQ may need to conduct an antidegradation analysis to determine if the revised limit would allow degradation of the quality of the receiving water.

Pollutants Identified as Present in Effluent through Monitoring

Any pollutant identified in effluent monitoring data is reported in the discharger’s IPDES general permit NOI, if required, or special studies. In addition, DEQ may collect data through compliance inspection monitoring or other special studies. DEQ can match information on which pollutants are present in the effluent to the applicable water quality standards to identify parameters that are candidates for WQBELs.

Pollutants Otherwise Expected to be Present in the Discharge

Any pollutant for which neither the discharger nor DEQ have monitoring data, but the discharger or DEQ expects that the pollutant could be present in the discharge (because of the raw materials stored or used, operational products or by-products, or available data and information on similar facilities). If no analytical data exist, DEQ will postpone general permit development to collect data or base the applicability of a WQBEL on other information, such as the effluent characteristics of a similar discharge.

Similarly, pollutants of concern include those that the Integrated Report has identified as contributing to the listing of a Category 5 impaired water body but for which a TMDL has not yet been developed.

6.4.3.3.2 Identify Critical Conditions of the Effluent and Receiving Water

An important part of characterizing the effluent and receiving water is identifying the critical conditions. This analysis presents a unique challenge when developing general permits. In this case, multiple data sources identifying receiving water body low flow conditions, discharge rates, and effluent concentrations are used to assess the need for and calculate WQBELs.¹²¹ Key effluent and receiving water conditions are described below:

Effluent Flow Rate

Depending upon the class of facility or activity the general permit will cover, DEQ may be able to obtain effluent flow data from DMRs, NOI, area rainfall intensity and frequency graphs, or water rights. However, DEQ will evaluate concerns about calculating limits based on actual flow, when possible, in case a change in the water body would not allow expansion of a discharge. DEQ will then specify which flow measurements and metrics for dilution and mass balance to use as the critical effluent values in WQBEL calculations. In some instances, multiple critical flows identified through flow tiering or seasonal flows may be appropriate. Effluent flow rates may not be applicable to all general permits (e.g., pesticide general permit incidental discharge). Effluent flow rates are addressed in the appropriate general permit sections in Volume 2 of this guide.

Effluent Pollutant Concentration

DEQ can determine the critical effluent concentration of a pollutant of concern by gathering representative effluent data (e.g., a concentration that represents the approximate pollutant maximum concentration over time). In many cases DEQ has a limited effluent data set to assess. Consequently, a high degree of uncertainty may exist that the data include the pollutant's maximum potential effluent concentration. DEQ must consider the variability of the pollutant in the effluent when determining the need for WQBELs.¹²²

DEQ's draft *Effluent Limit Development Guidance* (2017a) and Chapter 3 of EPA's technical support document (EPA 1991a) provide more details regarding critical conditions and other variables used in effluent limit calculations. Additionally, pollutants of concern may differ with each sector, facility, and activity covered under the general permits. Volume 2 of this guide provides additional information specific to each type of general permit.

Receiving Water Flow Rate and Nonflowing Water

For rivers and streams, an important critical condition is the streamflow upstream of the discharge. This information is typically gathered using state databases, US Geological Survey data, and other information. For most pollutants and criteria, the critical flow in rivers and streams is some measure of the stream's low flow; however, the critical condition could be different (e.g., a high flow, where wet weather sources are a major problem). DEQ may also need to account for any additional sources of flow or diversions between the point where a

critical low flow has been calculated or measured, and the point of discharge. If a discharge is controlled so that it does not cause water quality criteria exceedance in the receiving water at the critical flow condition, the discharge controls should be protective and ensure that water quality criteria and beneficial uses are attained under all receiving water flow conditions.

The water body will be considered nonflowing when the receiving water body has a mean detention time greater than 15 days. DEQ will assess nonflowing water bodies on a case-by-case basis. Volume 2 of this guide provides additional information on situations where the receiving water body is designated nonflowing.

Examples of typical critical hydrologically based design flows found in Idaho's water quality standards include the 7Q10 low flow applicable to chronic aquatic life criteria and the 1Q10 low flow applicable to acute aquatic life criteria. Other measures of critical flow are the biologically based design flows. Examples include the 1B3, 4B3, and harmonic mean flow applicable to human health criteria for carcinogen pollutants.

Receiving Water Background Pollutant Concentration

DEQ also needs the critical background pollutant concentration in the receiving water to ensure that any pollutant limits derived are protective of the beneficial uses and support the antidegradation policy and implementation.¹²³ When available, ambient data provide the most reliable receiving water background pollutant characterization. When data are not available, DEQ may include ambient monitoring requirements in the permit conditions.

Related Receiving Water Characteristics Necessary for Calculations

For water bodies other than free-flowing rivers and streams, critical environmental conditions might apply rather than flow (e.g., temperature and alkalinity). In addition, depending on the pollutant of concern, the effects of biological activity and reaction chemistry might be important in assessing the discharge's impact to the receiving water. These environmental attributes may include, but are not necessarily limited to, pH, temperature, hardness, or reaction rates.

6.4.3.4 Mixing Zone Applicability

A mixing zone is an area within a water body around the discharge point in which pollutant concentrations may exceed water quality standards. The boundary of the mixing zone is defined as that location where pollutant concentrations must meet water quality criteria, as described in the draft *Idaho Mixing Zone Implementation Guidance* (DEQ 2016b). Mixing zones are not applicable to all general permits and are addressed in Volume 2 of this guide.

6.4.3.5 Determine Need for WQBELs

Once the applicable water quality standards have been identified and the effluent and receiving waters characterized, DEQ uses the RPA process to determine whether WQBELs are required. This process determines if the pollutants of concern are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including narrative criteria for water quality.¹²⁴ An RPA uses effluent and receiving water data and modeling techniques to determine if the discharge has a reasonable potential to exceed water quality standards. DEQ will determine reasonable potential for an

exceedance of numeric water quality criteria in general by following the procedures in DEQ's draft *Effluent Limit Development Guidance* (2017a), consistent with EPA's technical support document (EPA 1991a).

6.4.3.6 Calculating WQBELs

If DEQ has determined that a pollutant or pollutant parameter is discharged at a level that will cause, have reasonable potential to cause, or contributes to an excursion above any water quality standard, DEQ must develop WQBELs for that pollutant, or take other action that protects the receiving water (e.g., remove the water body from the general permit's area of applicability, or restrict BMPs and BPJ to those capable of meeting discharge requirements). DEQ will follow procedures consistent with the draft *Effluent Limit Development Guidance* (2017a) and EPA's technical support document (EPA 1991a) to calculate WQBELs for pollutants that show reasonable potential.

DEQ will first determine WLAs that represent the level of effluent quality necessary to attain and maintain the applicable narrative or numeric water quality standards. WLA will be based on the applicable water quality standards, and implementation may account for dilution and background concentrations of the pollutant. DEQ may develop WLAs for acute, chronic, and human health criteria and long-term average values for each WLA, as appropriate. Finally, DEQ will use the most restrictive long-term average to establish effluent limits for a permit.

DEQ will then account for effluent variability to calculate the appropriate effluent limits (e.g., average monthly, average weekly, and maximum daily) to include in the permit, as appropriate. DEQ will calculate concentration limits for pollutants of concern and ensure compliance with antibacksliding and antidegradation requirements.

DEQ will also consult EPA and DEQ guidance, policy, regulations and rules, as follows:

- *NPDES Permit Writers' Manual*, Chapter 6, "Water Quality-Based Effluent Limits" (EPA 2010a)
- *Guidance on Water Quality-Based Effluent Limits Set Below Analytical Detection/Quantitation Limits* (EPA 2005)
- *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants* (EPA 1984b)
- *Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants* (EPA 1987a, 1987b)
- *Water Quality Standard Handbook: Second Edition* (EPA 1994b)
- Toxic Pollutant Effluent Standards and Prohibitions, 40 CFR 129.1–129.105, incorporated by reference at IDAPA 58.01.25.003.02.t.
- Criteria and Standards for Determining Alternative Effluent Limitations, 40 CFR 127.70–125.73, incorporated by reference at IDAPA 58.01.25.003.02.q.
- *Draft Idaho Antidegradation Implementation Procedures* (DEQ 2016a)
- *Water Body Assessment Guidance* (DEQ 2002b)

Some flexibility exists in calculating effluent limits for IPDES permits, as described in DEQ's draft *Effluent Limit Development Guidance* (2017a). However, effluent limits must adhere to the following:

- Ensure compliance with all water quality standards¹²⁵ (including antidegradation).
- Be consistent with assumptions used to develop TMDLs.¹²⁶
- Be enforceable.
- Be expressed as mass,¹²⁷ except
 - pH, temperature, radiation, or other pollutants that cannot be appropriately expressed by mass.
 - When applicable standards and limits are expressed in terms of other units of measurement.
 - Where permit limits are established on a case-by-case basis.¹²⁸
 - Where limits expressed in terms of mass are not feasible because the mass of pollutant discharged cannot be related to a measure of operation (e.g., discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.
- Be consistent with effluent limits from the current permit, unless backsliding is justified (section 6.4.3.8).

In addition, the following factors will be considered when developing permit effluent limits:

- Limits are calculated for each outfall, except
 - Discharge points for storm water, or other point sources, controlled by implementing BMPs.
 - When effluent limits imposed at the point of discharge are impractical or infeasible, and limits are more effective when imposed on internal waste streams before mixing with other waste streams or cooling water.¹²⁹
- Metals expressed as total recoverable,¹³⁰ unless
 - An applicable effluent standard or limit has been promulgated under CWA and specifies the limit for the metal in the dissolved, valent, or total form.
 - It is necessary to express the limit on the metal in the dissolved, valent, or total form to carry out the CWA provisions for permit limits established on a case-by-case basis.¹³¹
 - All approved analytical methods for the metal inherently measure only its dissolved form (e.g., hexavalent chromium).
- Type of discharge—continuous or noncontinuous.¹³²
- Mass limits.¹³³
- Internal waste streams.¹³⁴
- Disposal of pollutants other than to surface water.¹³⁵

6.4.3.7 Variances, Waivers, and Intake Credits

Variances, waivers, and intake credits provide unique exceptions to a particular effluent requirement, water quality standards, monitoring, or reporting requirement. DEQ does not expect to routinely receive such requests. Given the number of facilities covered under a general permit, it would be difficult to issue a general permit with a variance or intake credit. DEQ will likely issue an individual permit for facilities proposing a variance or intake credit. Variances, waivers, and intake credits are further discussed in section 8.

6.4.3.8 Antibacksliding and Determining Final Effluent Limits

After establishing applicable TBELs and QBELs, the effluent limits are compared and the more stringent effluent limits are included as new (draft) effluent limits in the draft IPDES general permit. For reissued permits, new effluent limits are also compared to current (existing) effluent limits to ensure the new effluent limits are consistent with the CWA antibacksliding provisions. This means new effluent limits that are less stringent than current effluent limits may have to be revised. When determining final effluent limits, DEQ ensures all applicable statutory and regulatory requirements, including CWA standards, technology, and water quality standards, are fully implemented (Figure 6).

6.4.3.8.1 Antibacksliding

CWA §402(o) expressly prohibits backsliding. Backsliding refers to the easing of effluent limits, permit conditions, or required standards from those established in the current permit. Certain exceptions to the backsliding prohibitions and a safety clause provide an absolute limitation on backsliding.

6.4.3.8.2 Prohibitions against Backsliding

CWA §402(o)(1) prohibits relaxing effluent limits established in the prior permit for two situations:

1. It is prohibited to revise an existing TBEL that was developed on a case-by-case basis using BPJ to reflect subsequently promulgated ELGs and standards that would result in a less stringent effluent limit (section 6.4.3.8.3).
2. It is prohibited to relax an effluent limit that is based on state standards, such as water quality standards or treatment standards, unless the change is consistent with CWA §303(d)(4) (section 6.4.3.8.4).

6.4.3.8.3 Exceptions for Case-by-Case TBELs

CWA §402(o)(2) outlines specific exceptions¹³⁶ to the first general prohibition (section 6.4.3.8.2) against revising an existing TBEL that was developed on a case-by-case basis using BPJ to reflect subsequently promulgated, less stringent effluent guidelines in a renewed, reissued, or modified permit. The following relaxed limits may be allowed:

- Material and substantial alternations or additions occurred to the permitted facility justifying the relaxation.
- New information (other than revised regulations, guidance, or test methods) is available that was not available at the time of permit issuance justifying a less stringent effluent limit. If the effluent limit was based on water quality standards, any changes must result in a decrease in pollutants discharged.
- Technical mistakes or mistaken interpretations of the law were made in issuing the permit under CWA §402(a)(1)(b).
- Good cause exists because of events beyond the permittee's control (e.g., natural disasters) and for which there is no reasonably available remedy.
- Permit was modified under CWA §301(c), 301(g), 310(i), 301(k), 301(n), or 316(a).

- Permittee installed and properly operated and maintained required treatment facilities but still cannot meet the effluent limits (relaxation may be allowed only to the treatment levels actually achieved).

6.4.3.8.4 Exceptions for Limits Based on State Standards

Alternatively, CWA §402(o)(1) allows relaxing WQBELs and effluent limits based on state standards if it is consistent with the provisions of CWA §303(d)(4), or if one of the exceptions in CWA §402(o)(2) is met (except that relaxing limits based on technical mistakes or mistaken interpretations are not allowed for WQBELs). The two provisions constitute independent exceptions to the prohibition against relaxing permit effluent limits, and if either is met, relaxation is permissible.

The two provisions are tied to the water quality of the receiving water body. One provision addresses water bodies where water quality standards are attained, while the other provision addresses water bodies where water quality standards are not attained.

Water Quality Standards Attained—If the permit's limit is based on a TMDL, WLA, other water quality standards, or any other permitting standard, less stringent effluent limits are allowed only if they comply with the antidegradation policy.

Water Quality Standards Not Attained—Less stringent permit limits will only be allowed if both of the following criteria are met:

1. Existing effluent limits are based on a TMDL or WLA.
2. Attainment of water quality standards will be ensured, or the designated use not being attained is removed according to the water quality standards.

6.4.3.8.5 Safety Clause

CWA §402(o)(3) is a safety clause that provides an absolute limitation on backsliding. This section prohibits relaxing effluent limits in all cases if the revised effluent limit would violate applicable effluent guidelines or water quality standards, including antidegradation requirements.

6.4.3.8.6 Final Effluent Limits

The final effluent limits are expressed in the permit and fact sheet with tables or conditions and clearly state the applicable flow tier or season. In addition, the permit's fact sheet explains how the final limits were determined and how those limits meet both technology and water quality standards (including antidegradation) and, where appropriate, how an antibacksliding analysis was applied to the final effluent limits.

6.4.4 Monitoring and Reporting Requirements

Monitoring and reporting requirements identified in a permit and fact sheet are used to characterize waste streams and receiving waters, evaluate wastewater treatment efficiency, and determine compliance with permit effluent limits and state water quality standards. Further, the fact sheet explains the justification for waivers of any application requirements or monitoring requirements, and if applicable, explains why the permit contains applicable conditions or waivers.¹³⁷

6.4.4.1 Monitoring

Some IPDES general permits include conditions about effluent and receiving water monitoring that allow DEQ to determine the impact of the effluent on the receiving water body. These conditions require the permittee to conduct routine or episodic monitoring of permitted discharges, ambient conditions, and, sometimes, internal operations. Monitoring data are necessary for several reasons:

- Assessing treatment efficiency
- Evaluating effluent and receiving water characteristics
- Determining compliance with effluent limits established in permits
- As a basis for enforcement actions

Typically, an IPDES general permit will provide recommendations for appropriate monitoring locations to determine compliance with the effluent limits and provide the necessary data to determine the impact on the receiving water. The permittee is responsible for securing approval to access the monitoring locations and obtaining any samples required in the permit.

DEQ considers several factors when determining monitoring requirements to be included in the permit. The following factors affect sampling location, frequency, and method:

- Applicability of effluent limit guidelines and standards (effluent guidelines)
- Waste stream and process variability
- Access to sample locations
- Pollutants discharged
- Effluent limits
- Discharge frequency (e.g., continuous versus intermittent)
- Effect of flow and pollutant load on the receiving water
- Characteristics of the pollutants discharged
- Receiving water analyses
- WET testing
- Sewage sludge (biosolids)
- Expanded effluent testing (priority pollutants)
- Permittee's compliance history

Considering the need for sufficient data and the potential cost to the permittee, the general permit will specify when, following coverage approval, monitoring should begin. To establish monitoring frequency, DEQ will consider the following:

- Variability of the effluent's pollutant concentration
- Design capacity of the treatment facility
- Treatment method
- Compliance history
- Monitoring cost
- Discharge location
- Sensitivity of receiving water
- Nature of pollutants
- Discharge frequency

- Number of samples used in developing effluent limits
- Tiered limits
- Site- or discharge-specific conditions

The decisions for setting monitoring frequency are described in the fact sheet.

For each pollutant with an effluent limit or monitoring requirement, the permit and fact sheet lists the unit of measure; monitoring type (e.g., temperature logger), interval, and frequency¹³⁸ (monthly, weekly, or daily); sample collection location; sample method¹³⁹ (grab, composite, and continuous); analytical methods;¹⁴⁰ and any required *reporting levels* or instrument sensitivity and capability. Certain sample collection and storage requirements are identified as part of the analytical methods specified in 40 CFR 136.

The permit also will specify the *minimum levels* or *method detection limits* for each pollutant (sector-specific details provided in Volume 2).

6.4.4.2 Reporting Requirements and Record Keeping¹⁴¹

Reporting conditions in a general permit may require the discharger to submit analytical results to DEQ along with information necessary to evaluate discharge characteristics and compliance with the effluent limits. This periodic monitoring and reporting establishes an ongoing record of a permittee's compliance status, and it creates a basis for compliance assistance and any necessary enforcement actions (section 10).

The IPDES regulations require the permittee to maintain records and periodically report on monitoring activities. The permittee must retain all monitoring information for at least 3 years, or as specified in the permit.

Where pollutants are limited by both mass and other units of measurement, the permittee is required to comply with and report both limits. The permit will also specify that if the permittee monitors any pollutant more frequently than required by the permit, using EPA-approved test procedures or as specified in the permit, the permittee must include the results of this monitoring in calculating and reporting the data submitted in the DMR. Additionally, upon request by DEQ, the permittee must submit results of any other sampling, regardless of the test method used.

DEQ will establish requirements to report monitoring results on a case-by-case basis with a frequency depending on the nature and effect of the discharge but in no case less than once a year.¹⁴² A general permit that does not require monitoring results reports at least annually must require the permittee to report, at least annually, all instances of noncompliance not reported.¹⁴³ However, IPDES regulations state that monitoring frequency and reporting should depend on the nature and effect of the discharge or sludge use or disposal. DEQ may require more frequent reporting.

6.4.4.3 Submitting DMR and Related Information

Facilities covered under a general permit may be required to submit DMRs using EPA's NetDMR, according to the frequency of submittal identified in the permit, unless provided a waiver according to federal regulations. EPA and the permittees are responsible for quality control checks to ensure data input accuracy and retain qualifiers on analytical results. EPA's

electronic reporting rule requires that NPDES-permitted facilities and activities submit data via NetDMR by December 21, 2016. Most IPDES permittees will already be using NetDMR when DEQ begins implementing the IPDES Program. DEQ will acquire data from NetDMR and/or ICIS-NPDES to effectively track IPDES permit compliance.

Although permittees must electronically submit DMRs directly to EPA's NetDMR, other reporting records (e.g., annual and other reports) must be submitted to DEQ, as specified in the permit. DEQ will then submit the appropriate data and records to ICIS-NPDES according to federal regulations.

6.4.5 Special Conditions

Special permit conditions may require the permittee to undertake activities to reduce the overall quantity of pollutants being discharged, to collect information that could be used in determining future permit requirements, or DEQ may restrict the number of discharges allowed to sensitive water bodies. Examples include, but are not limited to, additional monitoring activities, special studies, BMPs, and compliance schedules.

Many different reasons exist for including special conditions in the general permit:

- Address unique situations, such as facilities discharging pollutants for which data characterizing the assimilative capacity of a receiving water body or the effectiveness of treatment are absent or limited
- Incorporate preventive conditions, such as requirements to install process control alarms, containment structures, and good housekeeping practices
- Address foreseeable changes to discharges, such as planned changes to process, products, or raw materials that could affect discharge characteristics
- Incorporate compliance schedules to provide the time necessary to comply with permit conditions
- Incorporate other IPDES programmatic requirements (e.g., pretreatment and sewage sludge)
- Identify additional monitoring requirements that provide data to evaluate the need for future changes in permit limits
- Increase or decrease monitoring requirements, depending on monitoring results or changes in processes or products
- Impose requirements for special studies such as ambient stream surveys, toxicity identification evaluations and toxicity reduction evaluations, bioaccumulation studies, sediment studies, pollutant reduction evaluations, or other such information-gathering studies

The following subsections address several types of special conditions that may apply to facilities or activities covered under a general permit. Additional sector-specific permit special conditions are included in Volume 2 of this guide.

6.4.5.1 Additional Monitoring and Special Studies

Additional monitoring requirements and special studies, beyond those required under the effluent limits section of the permit, are useful for collecting data previously unavailable to DEQ during

permit development. These generally are used to supplement numeric effluent limits or support future permit development activities. The types of special studies below could be required in an IPDES permit:

- **Treatability studies**—May be required in a permit when insufficient treatability information for a pollutant or pollutants would hinder DEQ from developing defensible TBELs. Treatability studies can also be required when DEQ suspects that a facility might not be able to comply with an effluent limit.
- **Toxicity identification evaluation/toxicity reduction evaluation**—Could be required in a permit when wastewater discharges are found to be toxic using WET tests. These evaluations identify and control the sources of toxicity in an effluent. Further guidance related to EPA-recommended procedures and requirements are found in the following:
 - *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA 1999): www.epa.gov/npdes/pubs/tre.pdf
 - *Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program* (EPA 2001a): www.epa.gov/npdes/pubs/owmfinaltretiie.pdf
 - *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA 1989a) (see endnote 3 in EPA Permit Writers Manual [EPA 2010] for ordering instructions)
 - *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA 1991b): www.epa.gov/npdes/pubs/owm0330.pdf
 - *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I* (EPA 1992b): www.epa.gov/npdes/pubs/owm0255.pdf
 - *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA 1993a): www.epa.gov/npdes/pubs/owm0343.pdf
 - *Methods for Aquatic Toxicity Identification Evaluations: Phase III Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA 1993b): www.epa.gov/npdes/pubs/owm0341.pdf
- **Sediment monitoring**—Could be included in a permit if pollutants contained in wastewater discharges may accumulate in the sediments of the receiving water.
- **Bioaccumulation studies**—May be required in a permit to determine whether pollutants contained in discharges bioaccumulate in aquatic organisms (e.g., fish and invertebrates). Such studies could be required when water quality criteria are expressed in terms of fish tissue levels. Additional guidance related to evaluating the bioaccumulation potential of a pollutant is found in *Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors* (EPA 1994c).

When establishing additional monitoring or special studies, DEQ will ensure that any requirements related to the study (e.g., special sampling or analytical procedures) are specified in the appropriate permit condition. In addition, DEQ will establish a reasonable schedule for study completion or monitoring program and submission of the compiled report. If the anticipated schedule is greater than 1 year, an interim progress report during the study is advisable.

6.4.5.2 Best Management Practices¹⁴⁴

IPDES general permits may include BMPs to control or abate the discharge of pollutants for the following:

- Authorized under CWA §304(e) for the control of toxic pollutants and hazardous substances from ancillary industrial activities.
- Authorized under CWA §402(p) for the control of storm water discharges.
- Numeric effluent limits are infeasible.
- Practices are reasonably necessary to achieve effluent limits and standards or to carry out the purposes and intent of CWA.

Permits may include BMP requirements, which like all permit effluent limits are enforceable, using either of two approaches:

1. Site-, process-, or pollutant-specific BMPs.
2. A BMP plan developed by the permittee may be more appropriate for a particularly complex or unique facility. The permittee is required to develop and submit to DEQ an approved BMP plan that includes appropriate BMPs based on circumstances at its facility. Section 5.1.4.2 discusses the necessary components of a BMP plan.

BMP implementation for sector-specific permits is identified in Volume 2.

6.4.6 Conditions Applicable to all Permits

Some conditions apply to all IPDES permits and delineate the legal, administrative, and procedural requirements of the permit. Each permit must have a section outlining the specific conditions described below. The exact text and language for each section may vary depending on the type of permit, but the language should follow that used in the rules.

Duty to Comply—Reiterates the permittee's (operator's) obligation to adhere to the conditions and requirements specified in the general permit. These duties include the obligation to operate the facility or activity in an efficient manner, monitor and report stipulated pollutant quantities (mass, concentration, or both) and effluent discharge rates, report upsets, bypasses, or illicit discharges and spills in a timely manner, and comply with all of the requirements stipulated in the permit.

Duty to Reapply—Addresses the need for the permittee (operator) to create and submit a complete NOI as stipulated in the general permit in a timely manner. NOIs should be completed and submitted before the current permit expires, allowing enough time for DEQ to determine whether the facility or activity qualifies for coverage under the general permit, or whether it is more appropriate to address in an individual permit.

Duty to Halt or Reduce Activity—Addresses the permittee's (operator's) responsibility to reduce or cease discharging if they know that the discharge is violating or will violate the permit limits. This section effectively states that the permittee (operator) cannot rely on the argument that they would have to halt or reduce production to comply with their permit limits.

Duty to Mitigate—Requires the permittee (operator) to take all reasonable steps to prevent violating the effluent limits or sludge usage requirements if it would pose a threat to human

health or the environment. The duty to mitigate requires the facility and its operators to follow all proper operating procedures and adhere to all applicable state and federal regulations.

Proper Operation and Maintenance—Requires that the permittee (operator) perform preventative maintenance as required, keep the infrastructure, unit processes, and supporting equipment in good condition. Systems required to have redundant operations and equipment must keep them functional so that they can be brought online quickly to address emergency situations, such as upsets or excessive peak flows. These O&M requirements extend to laboratory operations, if present, and to the required QAPPs.

Throughout all sample collection and analysis activities, permittees must prepare a QAPP consistent with the EPA-approved QA/QC and COC procedures described in *EPA Requirements for Quality Assurance Project Plans* (EPA 2001b) and *Guidance for Quality Assurance Project Plans* (EPA 2002b), or DEQ equivalent.

Permit Actions—Conveys to the permittee (operator) that their coverage may be terminated for cause. Justifiable cause could include, but is not limited to, requests for termination from the permittee, notification of facility upgrades or process changes, and repeated noncompliance with the current permit conditions.

Property Rights—Informs the permittee (operator) that the permit does not convey any property right or exclusion privilege to the permittee. The permit is more of a license to discharge, similar to a driver's license that allows the holder to operate a motor vehicle as long as they obey the laws.

Duty to Provide Information—Reiterates the obligation that the permittee (operator) must make available all required monitoring results, operational logs, and other information required to be collected and retained by the general permit when requested from DEQ. These information requests may arise during inspections or permit renewal activities to assess compliance with the permit.

Inspection and Entry—Conveys to the permittee (operator) their obligation to provide DEQ representatives access to the facility, equipment, discharge location, land application fields, records repositories, or any other site affiliated with the permitted operation, when requested. Access allows DEQ representatives entry to the property and allows access to copy records that are required to be generated and retained by the permit. This access is required to support the compliance evaluation, which may include installing and maintaining DEQ's composite monitors at internal or distal monitoring points.

Monitoring and Records—Informs the permittee (operator) about the requirements for record content and retention:

- How long the monitoring data records and reports must be retained.
- Identifies the types of records (DMRs, calibration and maintenance records, and strip chart recordings).
- Who collected samples, the dates samples were analyzed, and who performed the sample analyses.
- Analytical techniques and methods used.
- Analytical results.

- Other information associated with the facility operation, maintenance, and discharge quantity and quality.

Signatory Requirements—Informs the permittee (operator) that all required submittals must be signed by a certifying official or duly authorized representative. This section identifies that all applications, reports, and other permit required information must be certified as true and accurate. This section also conveys the penalties associated with submitting false information.

Reporting Requirements—Identifies the different requirements the permittee (operator) is obligated to submit to DEQ. The requirements to notify DEQ include, but are not limited to, the following:

- New introduction of toxic pollutants
- When the facility is planning to alter operations or equipment, which may change the facility's classification to a new source or new discharger
- When it may be sold to another party
- When monitoring occurs more frequently than required in the current permit
- When any permit noncompliance occurs that may endanger health or the environment
- When the permittee becomes aware that a failure to report information, whether in the application or any report, has occurred

This section in rule is lengthy, and DEQ recommended that the permittee (operator) read the rule to understand the breadth of reporting requirements that are included in the permit.

Bypass Terms and Conditions—Warns the permittee (operator) that bypasses are prohibited discharges, and DEQ may pursue enforcement if bypasses occur at the facility. This section also addresses what constitutes justification for bypassing the treatment works, and what reporting requirements are if a bypass does occur.

Upset Terms and Conditions—Similar to bypass terms and conditions, upsets are strictly limited to discharges that are authorized under a TBEL. The burden of proof that an upset was justified still resides with the permittee (operator). The notification requirements (24-hour verbal) and remedial action requirements appear in this section. DEQ has discretion in implementing compliance assistance and enforcement related to upset events.

Penalties and Fines—Addresses the fine requirements stipulated in the rules.

6.5 Permittee and Public Participation

The process for providing public participation on an IPDES permit (either individual or general permit) is identified in the IPDES rules and outlined in the *Public Participation in the Permitting Process Guidance* (DEQ 2016c). An overview of this process is outlined below.

As discussed in section 5 under Stakeholder Coordination, DEQ will work with current and prospective general permittees and keep them informed during the general permit development process, including developing the NOI requirements for a general permit. Before formal public notice of a draft IPDES permit, DEQ will post the notice of a forthcoming draft general permit on DEQ's website. After completing a draft general permit and associated NOI requirements, DEQ will issue a public notification, which initiates a minimum 30-day public review and

comment period.¹⁴⁵ This public notice is provided by a combination of mailings or any other method that reasonably gives notice to the persons potentially affected, including press releases or use of any other forum or media to elicit public participation to the following:

- Applicants
- Any other agency that has issued or is required to issue a permit for the same facility or activity
- Affected federal and state agencies with jurisdiction over fish, shellfish, wildlife, and other natural resources (including downstream states or Canada), SHPO, and any affected Indian tribe
- Any state agency responsible for plan development under CWA, USACE, US Fish and Wildlife Service, and National Marine Fisheries Service
- Any user identified in the permit application of a privately owned treatment works
- Any person who requested to be on a mailing list
- Any local government having jurisdiction over the area where the facility is proposed to be located
- Each state agency having any authority under state law with respect to the construction or operation of the facility

DEQ will ensure that if any written recommendations from a state or Indian tribe whose waters may be affected by issuing an IPDES permit are not accepted, DEQ will notify the affected state and EPA of its decision not to accept the recommendations and provide the rationale.

Requests for extending a public comment period must be provided to DEQ in writing before the last day of the comment period. The draft permit and fact sheet describing the terms of the permit will be available during the public comment period. DEQ may schedule a public meeting on the draft permit if there is significant public interest, an interested party requests in writing a public meeting within the first 14 days of the public comment period, or for another good reason.¹⁴⁶

Public participation and comment on individual NOI submittal for obtaining coverage under a general permit is discussed in section 6.9.8.

6.6 DEQ Coordination with EPA Regarding General Permits

Upon gaining authorization for general permits in Idaho, current or administratively continued EPA-issued general permits are transferred to DEQ, unless a permit is being challenged. DEQ assumes permit compliance and enforcement obligations for permits upon transfer. Current and administratively continued permits will remain in effect until DEQ issues an IPDES permit to replace it. At the time authority is transferred from EPA to DEQ, DEQ will transmit, to the permittees covered under the general permit, an IPDES general permit cover sheet or certificate of coverage. The cover sheet will include the name of the permit, permit effective date, and DEQ telephone number and address for inquiries and where to send information. At reissuance, a state-issued IPDES general permit will replace the transferred NPDES general permit.

When drafting a general permit, DEQ will consider applicability of current permit conditions and ensure the new draft permit is consistent with water quality standards and federal regulations including antidegradation and antibacksliding provisions. At the time a draft general permit is

available for public review, DEQ will provide EPA a copy of the public notice, draft general permit, and the fact sheet for formal review.

As identified in the draft MOA between DEQ and EPA (DEQ and EPA 2016), EPA will review draft permits rather than proposed permits. EPA may choose to review a proposed permit instead of or in addition to reviewing the draft permit.

6.7 Proposed Permit

After the close of the minimum 30-day public comment period, DEQ considers information provided by the public, prepares a document summarizing the public comments received, and may make changes to the draft general permit. However, new data and information provided by any party before issuing a proposed permit may necessitate another public comment period if it results in substantive changes to the draft general permit. In such cases, the subsequent public comment period only pertains to those components of the draft permit that had changed.

DEQ may then develop a proposed general permit. EPA may take up to 90 days to provide specific grounds for objection of a proposed general permit. EPA will submit in writing to DEQ objections to, or recommendations on changes to the proposed general permit. EPA's review process is defined in the draft MOA between EPA and DEQ (DEQ and EPA 2016). If EPA objects to a proposed permit, any state, interstate agency, or interested person may request EPA to hold a public hearing regarding the objection. If DEQ submits a revised general permit instead of requesting a public hearing, EPA will review the revised permit to determine whether the EPA's objections have been met. If DEQ does not resolve EPA's objections within the time specified in the draft MOA (DEQ and EPA 2016), exclusive authority to issue the permit passes to EPA. Following the issuance of an EPA issued general permit and its permit cycle, authority to reissue the permit reverts to DEQ.¹⁴⁷

6.8 Issue Final Permit

After the public comment period closes on a draft permit and comments are received on the proposed permit from EPA, DEQ will issue a final permit decision and fact sheet. A final permit decision means a final agency order and the final permit action to issue, deny, modify, revoke and reissue, or terminate the general permit.

DEQ will provide service of notice of the final permit to permittees that have already applied for coverage, and each person who has submitted written comments or requested notice of the final permit decision. The service of notice for the decision will occur the same time and using the same method for all parties, which may be by mail or any other method that reasonably provides notice. DEQ will also post the final permit, response to comments, revised fact sheet, and associated permit documents on DEQ's web page. A final permit decision becomes effective 28 days after notice of the decision unless a later effective date is specified in the decision, or a Petition for Review is filed with DEQ (section 11). New dischargers interested in coverage under the general permit may apply once the final permit is issued.

DEQ will base final general permit decisions on the administrative record, which consists of the draft permit and fact sheet, the proposed permit and associated information, and the following:

- All comments received during the public comment period
- The record and any written materials submitted as part of a public meeting
- Any other relevant correspondence and documents

The final permit, response to comments, revised fact sheet, and associated permit documents will be posted on DEQ's web page. The final general permit decision is not subject to the appeals process.

6.9 Obtaining Coverage under General Permits

The required NOI content and the submittal process are described in the applicable general permit section of Volume 2.

6.9.1 Who Must Submit the NOI

Rules regulating the IPDES Program stipulate that the operator must obtain the IPDES permit. Additionally, the eNOI must be signed by a certified official.¹⁴⁸ Any operator who will discharge pollutants to waters of the United States in Idaho, and whose discharge or activity is eligible for coverage by the general permit must apply unless the discharge is covered under an individual permit.¹⁴⁹ Under certain conditions, DEQ may choose not to require an NOI,¹⁵⁰ and dischargers eligible for coverage will be automatically covered by the general permit. If this condition exists, it must be indicated in the permit conditions. In this case, permittees must still meet all conditions in the general permit.

6.9.2 NOI Submittal Timeliness

In the event that DEQ is unable to issue the renewed general permit before its expiration date, those permittees who complied with the renewal notification, specified in the permit, will remain covered under the existing general permit until it is replaced by the renewed general permit. Permittees who do not comply with the renewal notification will not be covered under the administratively continued general permit; any future discharge will be considered unauthorized after the termination date of the general permit and may be subject to an enforcement action.¹⁵¹ Additionally, any new discharges or expanding facilities or activities seeking coverage under an administratively continued general permit will be denied coverage and redirected to apply for an individual permit.

6.9.3 NOI Content

Information required in an NOI is specific to the sector and each general permit. Examples of the type of information required are listed in section 6.4.1 under Submission Schedule and section 6.4.2.2. Sector-specific requirements are outlined in Volume 2 of this guide.

6.9.4 Web-Based Interface for NOI Submittal

DEQ is developing web-based tools that will support submittal of eNOI along with all necessary supporting documentation (e.g., reports and maps). This system will interface with the IPDES CRIPS database. The web-based tools and database are integral to DEQ providing new and renewed permits that are accurate, thorough, and issued in a timely manner. The eNOI system

will also allow DEQ to efficiently evaluate submitted information and documents, such as NMP, SWPPP, and SWMP, and determine whether or not the facility or activity qualifies for coverage under the specific general permit.

Operators must submit their new or renewal eNOI using the web-based tools, which will speed up the application submittal by eliminating the hard-copy mailing and DEQ data entry and associated errors. DEQ will provide support to those facilities and activities that are unable to submit their applications using the web-based tool. However, the applicant must contact DEQ and request paper copies of all pertinent eNOI forms and instructions well in advance. Read Section 6.4.2.2.5, “NOI Submission Timeline,” for additional information on timely application submittal and the risks associated with application submission delays.

Applicants must keep records of all data used to complete an NOI and any supplemental information submitted for a period of at least 3 years from the date the NOI is signed.¹⁵²

6.9.5 Trade Secrets or Confidential Information

If the applicant believes that some information is a trade secret and should be held confidential, DEQ requires that each page describing the confidential information have a notification employing such language as *trade secret*, *proprietary*, or *confidential*.¹⁵³ Be aware that information **required** by Idaho rules and supporting a general permit NOI cannot be held confidential. The applicability of a confidential designation for IPDES permitting purposes is addressed in Volume 2.

In contrast to the status of information and documentation evaluated at the preapplication meeting, as noted in section 4.1, all information submitted as specified in the general permit to obtain coverage under an IPDES general permit may not be classified as confidential.¹⁵⁴ This information includes the following:

- Name and address of the permittee and operator
- Content of the IPDES general permit
- IPDES general permit NOI, and information required to be submitted for coverage under general permits
- Information submitted in any attachments used to supply information required by the applications
- Effluent data¹⁵⁵

6.9.6 Determining General Permit Eligibility

DEQ will evaluate a submitted NOI to determine whether the facility or activity qualify for coverage under the applied for general permit. An NOI is complete when the NOI form and any required supplemental information are completed and submitted to DEQ's satisfaction,¹⁵⁶ allowing DEQ to determine that the conditions of the general permit will control the discharge and support all applicable water quality standards.

Within 30 days after receipt of an NOI for coverage under a general permit, DEQ will ensure all required information is transmitted to ICIS-NPDES. DEQ will approve or deny coverage according to the current general permit conditions.

Payment of the application fee and any other applicable fee is due with the NOI for coverage under a general permit (section 3.3.3.2).

6.9.7 Permittee Notification of Permit Coverage

Each general permit will specify when a discharger who has submitted a complete and timely NOI is eligible for coverage under the permit. Options available include the following:

- Upon DEQ's receipt of the NOI
- After a specified waiting period
- On a date specified in the general permit
- Upon receipt of a notification of coverage letter from DEQ

In some cases, DEQ may notify a discharger that it is covered by a general permit, even if the discharger has not submitted an NOI.¹⁵⁷ A discharger authorized by a general permit may request to be excluded from coverage of the general permit by applying for an individual IPDES permit.¹⁵⁸

6.9.8 Public Notification of Permit Coverage

NOIs are similar to individual permit applications and are a public record. After the NOI content is evaluated and the discharge is approved for coverage under the general permit, the NOI and supporting documents are accessible to the public through the web interface or through a public records request. If there is opportunity for public review or comment period for NOIs, it will be specified in the general permit. Additionally, each general permit will specify the public notification process for NOIs and the process for interested persons to petition DEQ to terminate, revoke, or deny coverage under a general permit and require the discharger or applicant to apply for an individual permit.¹⁵⁹

Any sector-specific public notification requirements are described in Volume 2 of this guide.

6.10 General Permit Coverage Denial

DEQ may terminate, or deny coverage under a general permit and require the discharger or operator to apply for and obtain an individual IPDES permit. Any interested person may petition DEQ to deny general permit coverage for a discharge or activity. Cases where an individual permit¹⁶⁰ may be required include, but are not limited to, the following:

- Discharge is not in compliance with the conditions of the general permit.
- A change occurs in the availability of a pollutant control technology or practices for the discharge.
- New effluent limit guidelines are promulgated for sectors covered by the general permit.
- A TMDL or other water quality management plan containing requirements applicable to the discharge is approved.
- Circumstances have changed since the NOI was submitted, and the discharge is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary.
- Standards for sewage sludge use or disposal have been promulgated for the sludge use and disposal practice covered by the general IPDES permit.

- Discharge is a significant contributor of pollutants. In making this determination, DEQ may consider, but is not limited to, the following factors:
 - Location of the discharge with respect to waters of the United States.
 - Size of the discharge.
 - Quantity and nature of the pollutants discharged.

Refer to section 4 for the individual permit application process and section 5 for the individual permit development process.

Any owner or operator authorized by a general permit may request to be excluded from the coverage of the general permit by applying for an individual permit.¹⁶¹ When an individual IPDES permit is issued, the applicability of the general permit to the individual IPDES permittee is automatically terminated on the effective date of the individual permit.¹⁶² Alternatively, a source covered by an individual permit that is otherwise eligible for coverage under a general permit may request the individual permit be revoked and covered by the general permit. Upon revocation of the individual permit, the general permit shall apply to the source.¹⁶³

6.11 General Permit Termination

Coverage termination under a general permit is required when the potential for discharge ceases. The covered entity is required to submit an NOT on DEQ's interface. DEQ may inspect the facility or activity to verify that permit coverage is no longer necessary.

DEQ may also notify facilities or activities covered under a general permit that coverage will be terminated. If this occurs, DEQ will provide specific reasons for this action and provide directions on how to secure coverage under an individual permit, if applicable.

7 Permit Modification, Revocation, Reissuance, Termination, and Transfer

DEQ may need, or be requested to transfer, modify, or terminate a permit. In these situations, DEQ will select the appropriate level of permit modification. The appropriate level of permit modification includes minor or major modifications, revoking and reissuing, and termination. Reasons for performing permit modifications are listed in the IPDES rules and presented below.

When DEQ receives information that permit conditions may require modification several options for action are available:

Permit Modification¹⁶⁴—DEQ may modify a permit before its expiration date only for causes specified in section 7.1.1 or section 7.1.2. A permit modification can either be a *minor modification* or a *major modification*.

Revoke and Reissue¹⁶⁵—Substantial permit modifications or permit transfers may require that the permit be revoked and reissued and the permittee submit a new application.

Permit Transfer¹⁶⁶—A permit may be transferred by the permittee to a new owner or operator if the permit is modified, revoked and reissued, or automatically transferred.

Permit Termination¹⁶⁷—DEQ may terminate a permit at the request of the permittee or other interested person, or by DEQ's own initiative.

A permit modification or revocation and reissuance may involve many of the same processes and timelines as developing a new or reissued individual or general permit (sections 5 and 6). If DEQ decides that a request to modify, revoke and reissue, or terminate a permit is not justified, a written response will be sent to the requester giving the reason for the decision.¹⁶⁸ DEQ will not provide public notice for a decision to deny a request to modify, revoke and reissue, or terminate a permit. The applicability and process for permit modification, permit revocation and reissuance, permit transfer, and permit termination are described in the sections below.

7.1 Permit Modification

DEQ may decide to modify a permit based on a review of new information received, an inspection of the facility, the results of a file review, or a request by the permittee or another interested party. For example, a permit may be modified to change the addresses, discharge locations, discharge limits, BMPs, compliance schedules, or other permit requirements. A permittee or other interested party may send a written request and rationale for permit modification to DEQ at any time they become aware of current or expected changes in a treatment process, changes in effluent or receiving water quality compared to the quality used to derive permit conditions, changes in discharge conditions, or errors in a permit. All permit modification requests must be submitted to DEQ in writing. DEQ will evaluate the request to determine if the permit modification request is reasonable and applicable.

Permits may be modified only for the reasons listed in sections 7.1.1.1 and 7.1.2.1. When a permit is undergoing modification, the permit conditions remain in effect until replaced by the new permit.¹⁶⁹

If a permit has been administratively continued, it is not eligible for modification. Requests for modification received related to an administratively continued permit will be evaluated for inclusion in the new permit under development.

7.1.1 Minor Permit Modification

7.1.1.1 Applicability

When an existing permit modification satisfies the criteria of a *minor modification*, DEQ may modify the permit without preparing a draft permit and fact sheet. Changes to a permit that are considered minor permit modifications may include the following:¹⁷⁰

- Correct typographical errors.
- Require more frequent monitoring or reporting by the permittee.
- Change an interim compliance date in a compliance schedule. This change may occur only if the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attaining the final compliance date requirement.
- Allow for a change in ownership or operational control of a facility where DEQ determines that no other change in the permit is necessary. This change may occur only if a written agreement containing a specific date for transfer of permit responsibility,

coverage, and liability between the current and new permittee has been submitted to DEQ.

- Change the construction schedule for a new source discharger. The change does not affect the obligation to have all pollution control equipment installed and in operation before discharge.
- Terminate the discharge from an outfall, which does not result in the discharge of pollutants from other outfalls that violate permit limits.
- Incorporate conditions of a POTW pretreatment program that has been approved according to state and federal regulations.
- Incorporate changes to the terms of a CAFO's NMP that have been revised according to federal requirements.¹⁷¹

Minor modifications to a permit may not result in the following:

- An actual or potential increase in the discharge of a pollutant or pollutants into the environment
- A reduction in permit monitoring requirements, unless it does not affect DEQ's ability to determine compliance with applicable statutes and regulations

7.1.1.2 Procedure for Minor Permit Modification

A minor permit modification does not require developing a draft permit and fact sheet, or public notification and comment period. Rather, DEQ prepares a written response that is sent to the requester and all interested parties. This response identifies changes authorized in the permit and rationale for the permit modification. The written correspondence and modified permit conditions are incorporated in the permit, fact sheet, and administrative record and permit conditions are effective upon posting on the DEQ website. A minor modification does not change the expiration date of the permit. All other aspects of the permit remain in effect for the original duration of the permit.¹⁷²

7.1.2 Major Permit Modification

7.1.2.1 Applicability

When DEQ has information indicating that permit conditions are not appropriate, or receives a request to modify a permit and the proposed modification does not qualify for a minor permit modification as described in section 7.1.1, DEQ may determine cause exists for a major permit modification. The causes for major permit modification are provided below. When the permittee requests or agrees, these causes may also apply to permit revocation and reissuance (section 7.2.1).

- **Alterations**—Material and substantial alterations or additions to the permitted facility or activity occurred after permit issuance, which justify permit conditions that are different or absent in the existing permit.¹⁷³
- **New Information**—New information is received that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods). This information would have justified applying different permit conditions at the time of permit issuance including the following:¹⁷⁴

- Development and EPA approval of TMDLs that include WLAs for a permitted facility and DEQ-approved water quality trading plans associated with EPA-approved TMDLs
- For IPDES general permits, any information indicating that cumulative effects on the environment are unacceptable¹⁷⁵
- For a new source or new discharge IPDES permit,¹⁷⁶ any significant information derived from effluent testing required by the permit¹⁷⁷
- **New Regulations**—The standards or regulations on which the permit was based have been changed (1) by promulgation of amended standards or regulations, or (2) by judicial decision after the permit was issued. Permits may be modified during their terms for this cause only as follows:¹⁷⁸
 - For promulgation of amended standards or regulations, when
 - The permit condition requested to be modified was based on a promulgated ELG, EPA-approved or promulgated water quality standards, or the Secondary Treatment Regulations under 40 CFR 133.
 - EPA has revised, withdrawn, or modified that portion of the regulation or ELG on which the permit condition was based, or has approved a DEQ action with regard to a water quality standard on which the permit condition was based.
 - A permittee requests modification according to IPDES rules¹⁷⁹ within 90 days after notice of the action on which the request is based.
 - For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA or Idaho promulgated regulations or effluent limit guidelines, if the remand and stay concerns that portion of the regulations or guidelines on which the permit condition was based and a request is filed by the permittee according to IPDES rules¹⁸⁰ within 90 days of the judicial remand.
- **Compliance Schedules**—Permits may be modified to adjust compliance schedule tasks or interim requirements. However, in no case may an IPDES compliance schedule be modified to extend beyond an applicable CWA statutory deadline. Circumstances where compliance schedules may be changed through a permit modification include the following:
 - When DEQ determines good cause exists for modifying a compliance schedule over which the permittee has little or no control and no reasonably available remedy exists¹⁸¹
 - To modify a compliance schedule to reflect the time lost during construction of an innovative or alternative facility, in the case of a POTW that has received a loan under the Rules for Administration of Water Pollution Control Loans¹⁸²
- **Request for Variance**¹⁸³—When the permittee has filed a request for a variance under CWA §301(c), 301(g), 301(i), 301(k), or 316(a), or for fundamentally different factors (FDF) within the time specified in IPDES rules.¹⁸⁴ A request for variance is an acceptable justification for modifying, or revoking and reissuing a permit (section 8).
- **Toxics**¹⁸⁵—When required to incorporate a more stringent effluent limit for applicable CWA §307(a) toxic effluent standards or prohibitions.
- **Sewage Sludge and Pretreatment**—When a permit condition requires the permit to be modified to address sewage sludge or pretreatment program requirements.¹⁸⁶

- **Net Limits**—Upon request of a permittee who qualifies for effluent limits on a net basis, or when a discharger is no longer eligible for net limits.¹⁸⁷
- **Pretreatment**¹⁸⁸—When required to include permit conditions for developing a pretreatment program by a POTW.
- **Downstream State Impacts**—If DEQ fails to notify another state whose waters may be affected by a discharge from the approved state, as required by CWA §402(b)(3).¹⁸⁹
- **Nonlimited Pollutants**—When the level of discharge of any pollutant, which is not limited in the permit, exceeds the level that can be achieved by the technology-based treatment requirements appropriate to the permittee.¹⁹⁰ DEQ will modify the permit to include effluent limits and a compliance schedule to achieve the new limits if appropriate.
- **Notification Levels**—To establish a notification level as provided in IPDES rules.¹⁹¹
- **Small MS4s**—To include an effluent limit that requires implementing minimum control measures, when¹⁹²
 - The permit does not include such measures based upon the determination that another entity was responsible for implementing the requirements.
 - The other entity failed to implement the measures that satisfy the requirements.
- **Technical Mistakes**—To correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions.¹⁹³
- **Inability to Achieve Limits**¹⁹⁴—When properly installed and maintained treatment technology fails to meet effluent limits DEQ considered appropriate at the time of permit issuance. In this case, the limits in the modified permit may reflect the level of pollutant control actually achieved but cannot be less stringent than required by a subsequently promulgated ELG.
- **Incorporation of Land Application or Sludge Disposal Plan Conditions**¹⁹⁵—When required by a permit condition to incorporate a land application or sludge disposal plan for beneficial reuse of sewage sludge, revise an existing land application or sludge disposal plan, or add a land application or sludge disposal plan as required by the Wastewater Rules¹⁹⁶ and IPDES rules.¹⁹⁷

7.1.2.2 Procedure for Major Permit Modification

DEQ may initiate a major permit modification only for causes identified in section 7.1.2.1. If the permittee or another interested person wishes to have a permit modified, the request must be submitted in writing to DEQ. The written request for modification must provide facts supporting the rationale for the request.¹⁹⁸ DEQ may proceed with the modification as requested, or deny the request. If the request is denied, DEQ prepares a written response and sends it to the requester identifying the rationale for not modifying the permit. DEQ may request that the permittee submit a new application with all pertinent updated information. When DEQ proceeds with a major modification of a permit, the permittee is informed of expected changes to the permit and the timeline for modification.

For any permit modification not processed as a minor modification, DEQ must prepare a draft permit and fact sheet to document the rationale for changing the permit and to allow a public review period.¹⁹⁹ Only conditions proposed for the modification are eligible for public comment and appeal. All other aspects of the permit remain in effect while the permit is being modified,²⁰⁰ and the permit expiration date is not eligible for modification. The public review period for a

permit modification and the process to issue the modified permit are the same as specified for individual or general permits (sections 5.3–5.5 and sections 6.5–6.8).

7.1.3 Permit Modification Fees

All minor or major permits modifications will not include any additional fees beyond the required application or annual fee payments, which must be current (Section 3.3, “IPDES Fee Schedule”).

7.2 Permit Revocation and Reissuance²⁰¹

7.2.1 Applicability

Revoking and reissuing a permit follows a process similar to generating a new permit. The reasons for revoking and reissuing a permit include those listed in section 7.1.2.1, when the permittee requests or agrees. DEQ may also revoke and reissue a permit for the following reasons:²⁰²

- DEQ determines that justification for permit termination exists, but substantive permit modifications are more appropriate.
- DEQ receives a request for permit modification, but the extent or impact of the modification warrants revoking and reissuing the permit.
- DEQ has received notification of a proposed transfer²⁰³ of a permit.

When justification for permit termination exists, including noncompliance with permit conditions, but the necessity for the facility to discharge outweighs terminating the permit,²⁰⁴ DEQ may revoke and reissue the permit. An example of this type of situation may include a small POTW that experienced operating problems resulting in permit noncompliance. DEQ would likely revoke and reissue the permit with additional or more restrictive permit conditions, such as new compliance schedules that protect human health and the environment, or ensure the operator's ability to operate and maintain the facility. If revoking and reissuing the permit was due to permit noncompliance, then enforcement action, accompanied by appropriate penalties, may be imposed on the operator.

During the period when the reissued permit is being developed, the facility would be required to comply with the existing permit's conditions. In this situation DEQ oversight will be increased, which may include more frequent inspections, increased monitoring and reporting, or periodic technical assistance depending on the facility's needs.

Revoking and reissuing a general permit, while possible, is improbable. Instead, if a facility or activity has coverage under a general permit and does not comply with the permit conditions, that facility's or activity's coverage may be terminated, and the discharger directed to submit an application for an individual permit.

7.2.2 Procedure for Permit Revocation and Reissuance

If the permittee or another interested person believes a permit should be revoked and reissued, they must submit their request to DEQ in writing. The request must provide facts supporting the rationale for the request.²⁰⁵ DEQ may proceed with revoking and reissuing the permit as

requested, or deny the request. If DEQ decides to revoke and reissue the permit, the permittee will be required to submit a new application.

When a permit is revoked and reissued, the entire permit is reopened as if the permit has expired and is being reissued. The permittee must comply with all conditions of the existing permit until it is replaced with a reissued permit.²⁰⁶

DEQ prepares a draft permit incorporating the proposed changes²⁰⁷ and a fact sheet documenting rationale for changes to the permit. The new draft permit and fact sheet are subject to the same public participation and approval process as described in sections 5 and 6. A reissued permit will have a new termination date with the permit duration limited to 5 years.

7.2.3 Permit Revocation and Reissuance Fees

Revoking and reissuing a permit may include fees. DEQ notifies the permittee and requires submission of a new application and payment of any applicable fees, which will be assessed for reissuing the permit (section 3.3). Individual permits do not have application fees, but the new permittee will be assessed an annual fee that is prorated based on months of permit coverage. DEQ will mail the annual fee assessment on or before July 1 of each year. The annual fee must be paid by October 1.

7.3 IPDES Permit Transfers

7.3.1 Applicability

Permit transfers may be accomplished in one of four ways; the method chosen to transfer the permit will depend upon multiple factors, including the new owner's or operator's past compliance with discharge permits issued in other states or by EPA:

1. When the permitted facility or activity is simple and an owner is transferring operation to a new operator, a minor modification may be warranted.
2. When the owner is contracting a new operator to run a more complex facility or activity, a major modification may be appropriate.
3. When a facility or activity is being sold to a new owner, who may or may not operate the facility or activity, the permit may need to be revoked and reissued.
4. When a contractual transfer between permittees occurs it is called an automatic transfer.

7.3.2 Permit Transfer Procedure

Except through the automatic transfer process, a permit may be transferred from the permittee to a new owner or operator only if it has been modified or revoked and reissued, as outlined in sections 7.1 and 7.2.

An automatic transfer requires that the parties prepare a written agreement between the existing permittee and new permittee. This agreement must contain the specific date of transfer of permit responsibility, coverage, and liability between the current and new permittee. In an automatic transfer, all of the conditions of the permit must transfer. The agreement must be provided to DEQ at least 30 days before the date of permit transfer. During these 30 days, DEQ will

investigate the new permittee. Specific items of interest may include the new permittee's operating history (e.g., level of experience, financial ability to comply with permit conditions, or other pertinent information) and licensure of the associated responsible charge operators and substitute responsible charge operators, if the facility requires these operators. If DEQ does not notify the permittee that the permit will be modified, or revoked and reissued, then the transfer occurs automatically as stipulated in the agreement between the original and new permittees.

Conditions of a general permit may address coverage transfers. A discharging facility or activity covered under a general permit may be sold, but the general permit coverage may be terminated, and the new owner directed to submit the appropriate NOI. Alternatively, if an industrial facility was being sold and had both an individual permit (e.g., discharge) and coverage under a general permit (e.g., MSGP), DEQ may consider transferring the general coverage concurrently with the individual permit's transfer. These permit transfer incidences will be assessed on a case-by-case basis. Additional information on permit transfers is presented in Volume 2 of this guide.

7.3.3 Fees for Permit Transfers

If permit transfer occurs through a minor or major modification, no fee will be assessed as long as the permit required application or annual fee payments are up to date. Alternatively, if the permit transfer requires the permit be revoked and reissued, the appropriate application fee will be assessed for reissuing the permit. Individual permits do not have application fees, but the new permittee will be assessed an annual fee, and DEQ will mail the annual fee assessment on or before July 1 of each year. The annual fee must be paid by October 1.

If the permit transfer occurs through an automatic permit transfer, and DEQ does not interfere, DEQ will not assess an application fee. If the permit is an individual permit, DEQ will assess the fee and expect payment from the new permittee by October 1 as if the permit transfer had not occurred. DEQ will not intrude in any contractual fee transfers between the permittees involved in an automatic transfer.

7.4 Termination of Permits and Coverage under a General Permit

7.4.1 Applicability

DEQ's decision to terminate a permit may be at the request of any interested person (including the permittee) or upon DEQ's own initiative. All permit termination requests must be submitted to DEQ in writing and must clearly state the facts and rationale for the request.²⁰⁸ An existing permit may only be terminated for the following reasons:²⁰⁹

- Permittee does not comply with all conditions of the permit.
- Permittee fails to fully disclose relevant information in the application or misrepresents the information.
- Discharge endangers human health or the environment and can only be controlled by permit termination.
- Change in facility or activity conditions requires either a temporary or permanent reduction or elimination of any discharge (e.g., project completion, plant closure, or termination of the surface water discharge).

DEQ's decision to terminate coverage under a general permit may also be at the request of any interested person (including the permittee) or upon DEQ's initiative. All general permit coverage termination requests must be submitted to DEQ in writing, and they must clearly state the facts or reasons supporting the request. The reasons listed above are equally valid for terminating coverage under a general permit.

Typically, an individual permit or coverage under a general permit is terminated upon request of the permittee due to project completion that results in ceasing discharge to surface waters. This may mean the permitted facility or activity has connected to a permitted municipal wastewater collection and treatment system; the facility or activity has obtained an alternate permit for discharge to a subsurface drainfield or injection well, or to the land surface under a reuse permit; or the facility or activity is closing or ending and the discharge will no longer be generated. If DEQ decides that the permit or coverage under a general permit should be terminated, DEQ will generate an NOI. Requests for terminating a general permit will be evaluated, and DEQ will provide a response to the party submitting the request.

7.4.2 Process and Timeline for Permit Termination

If the permit or coverage under a general permit termination is initiated by DEQ, DEQ will prepare an NOI to terminate and describe DEQ's rationale. An NOI to terminate is a type of decision that follows the same procedures as any draft permit. The notice will be sent to the permittee, EPA, and anyone else upon request. The notice will be available for public comment and, depending on the reasons for termination and public interest, a public meeting may be held. DEQ will respond to comments received and issue a final decision after the public comment period ends. If the decision is to terminate the permit, termination will be effective 28 days after publishing the final decision, unless a later date is specified in the permit decision.

If the final decision is to not terminate a permit, then DEQ will document its decision and send a copy to the permittee, EPA, anyone who commented during the public review period, and anyone else upon request. The final decision will be posted on DEQ's web page.

An expedited process for terminating a permit may be used if the discharge is permanently eliminated (e.g., facility connects to a POTW's collection system, eliminates discharge to surface water, or the facility closes or activity ends). In this case DEQ will provide termination by notice that will be effective 30 days after the termination notice is sent, unless the permittee objects within that time. If the permittee objects to the termination, then DEQ will follow the procedures for permit termination stated above.

Expedited permit termination procedures are not available to permittees that secure an alternative method of disposing of the facility's or activity's waterborne waste, such as authorization to land apply the waste, or to discharge the waste into an injection well or drainfield. Additionally, expedited permit termination is not available to permittees subject to pending state and/or federal enforcement actions including citizen suits brought under federal law.

7.4.3 Permit Termination Fees

Fees are not associated with permit termination.

7.4.4 Permit Termination Consequences

Possible consequences exist for either submitting a permit termination request or allowing the facility's or activity's permit to lapse. For example, if an application or NOI is submitted after a previously issued individual permit or coverage under a general permit was terminated or allowed to lapse, the facility or activity may be subject to reclassification as a new discharger.

If the facility wishes to discharge in the future and they are considered a new source (e.g., changes occur at the facility that would cause the facility to be defined as a new source.), the discharge is subject to any applicable NSPSs. More information about NSPS is found in sections 2.2, 5.1.2.1, 6.4.3.1, and Volume 2.

The discharge is also subject to an antidegradation review to determine whether the effluent can be discharged to the receiving water body, even if the facility or activity has discharged to the water body in the past. The classification (tier) of the receiving water will impact the level of protection the water body receives under the antidegradation policy.²¹⁰ The level of effort required of an applicant seeking a new permit, after a previously terminated permit, depends on whether the receiving water body is considered impaired (Tier I), high quality (Tier II), or an outstanding resource water (ORW, which is Tier III). Receiving water body tiers are described in sections 5.1.2.2.3 and 6.4.3.2.3. Implementing the antidegradation policy for a water body that receives Tier II protection includes an alternatives analysis, a socioeconomic justification, and other source control assessments in the watershed. DEQ will assess other source controls and evaluate the efficacy of BMPs implemented in the watershed to determine whether the discharge can be allowed. Tier III protection for a water body maintains and protects water quality in an ORW. Additional information about antidegradation implementation is found in the water quality standards²¹¹ and the draft *Idaho Antidegradation Implementation Procedures* (DEQ 2016a).

Additional risks associated with permit termination may include the loss of WLA granted to the facility or activity in the receiving water's TMDL. No guarantees exist that WLA will be available when a permit is sought. WLA may have been returned to the reserve for growth and still available to the proposed discharge, or reallocated to another discharge, retired, or otherwise unavailable. An opportunity may be available for the proposed discharge to find water quality trading credits in the watershed that are obtained by nonpoint sources upstream from the proposed discharge location.

If a proposed discharger seeks a new permit after a permit termination, the operator for a proposed discharge will submit an individual permit application, or an NOI for coverage under a general permit, with the associated application and annual fees. Because a discharge cannot commence before receiving an authorizing permit, the facility or activity may be significantly delayed by the required permit development and public comment process.

8 Variances, Waivers, and Intake Credits

The IPDES rules, CWA, and federal regulations provide limited mechanisms allowing DEQ to modify or waive the generally applicable effluent limit requirements or CWA deadlines for an IPDES-permitted discharger. Two mechanisms are *variances* and *waivers*.

Alternatively, some dischargers might be unable to comply with TBELs or WQBELs because of pollutants in their intake water. Under certain circumstances, the IPDES regulations allow pollutant credits for intake water.

Variances, waivers, and intake credits provide unique exceptions to a particular effluent requirement, water quality standards, monitoring, or reporting requirement. DEQ does not expect to routinely receive such requests. This section addresses the major types of variances, waivers, and intake credits, and the basic requirements for each.

In the permit fact sheet, DEQ will explain the reasons for any decision on requested variances or alternatives to required standards.

Initial requests for variances and waivers must include, but are not limited to, the following:

- Name of the discharger
- Permit number
- Outfall
- Applicable effluent guideline, IDAPA reference, or CFR reference allowing the variance, waiver, or intake credit
- Specific issue and pollutant for which the variance, waiver, or intake credit would be applied, and the reasoning that supports the request

An IPDES permit applicant must meet specific data and application deadline requirements before a variance, waiver, or intake credit may be granted (Table 5). The terms and conditions for implementing approved variances, waivers, or intake credits will be specified in each permit. No additional fee is required for a variance, waiver, or intake credit request outside of the appropriate application or annual fees (section 3.3).

Table 5. Available variances, waivers, and intake credits for IPDES permits.

| Request Type | Eligible | CWA | Regulation | Application Deadline ^a | Granting Authority ^b |
|---------------------------------------|-----------|--------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Economic | Non-POTWs | 301(c) | IDAPA 58.01.25.310 40 CFR 122.21(m) | Initial request to DEQ ≤ 270 days after promulgation of effluent limit guideline. A completed request by close of the draft permit comment period. | EPA ^c |
| Nonconventional pollutant | Non-POTWs | 301(g) | IDAPA 58.01.25.310 40 CFR 122.21(m) | Initial request to DEQ ≤ 270 days after promulgation of effluent limit guideline. A completed request by close of the draft permit comment period. | EPA ^c |
| Fundamentally different factors (FDF) | Non-POTWs | 301(n) | IDAPA 58.01.25.310 40 CFR 125.30–32 | A request from BPT by the close of the public comment period. A request from BAT or BCT by no later than 180 days after an effluent limit guideline is published in the Federal Register. | EPA ^c |
| Thermal discharge | All | 316(a) | IDAPA 58.01.25.310 40 CFR 125.70–73 | With a permit application if based on an effluent guideline. By close of the draft permit comment period if based on a WQBEL. | DEQ |
| Water quality standards | All | N/A | IDAPA 58.01.02.260 40 CFR 131.10(g)(1)–(6) | With a permit application (not specified in rules, necessary to ensure timely permit issuance). | DEQ ^d |
| Waivers | All | N/A | IDAPA 58.01.25.105 IDAPA 58.01.25.106 IDAPA 58.01.25.302.03 | With a permit application. | DEQ |
| Intake credits | All | N/A | IDAPA 58.01.25.303.07 | By close of the draft permit comment period | DEQ |

^a Permittees are advised to contact DEQ 1 year in advance if considering applying for a variance. The 180-day requirement to submit a complete application for a new permit or permit renewal may not be sufficient to also complete a variance and receive EPA approval. Dischargers must submit all requests to DEQ.

^b Any approved variance, waiver, or intake credit is effective for up to 5 years or the life of the IPDES permit. After 5 years or the permit expiration, the discharger must meet the standard or must reapply for the variance, waiver, or intake credit. In considering a reapplication, DEQ requires the discharger to demonstrate reasonable progress toward meeting the standard. DEQ's decisions may be appealed to the Board of Environmental Quality²¹² (section 11).

^c CWA §§301(c), 301(g), and 301(n) variances—If DEQ concurs with the variance request, the request must be forwarded with written concurrence to EPA for review and approval.

^d Variance from water quality standards—EPA must approve all changes to water quality standards, including variances from water quality standards.

8.1 Variances Applicable to Non-POTWs

8.1.1 Economic—CWA §301(c)

CWA §301(c), state, and federal regulations may allow dischargers an economic variance for nonconventional pollutants from BAT effluent guidelines if they can show that the modified requirement will fulfill the following:²¹³

- Represent the maximum use of technology within the economic capability of the owner or operator.
- Result in reasonable further progress toward eliminating the discharge of pollutants.

This effluent limit modification based on a discharger's economic inability to comply is restricted to BAT limits. The cost tests for evaluating this variance request are the same as given in the BPJ permitting for BAT. The applicant must pass these cost tests and, in addition, show compliance with BPT limits and water quality standards.

Requests for a CWA §301(c) variance must be submitted by an initial request to DEQ no later than 270 days after promulgation of the applicable ELG, followed by a completed request no later than the close of the public comment period for the draft permit (EPA 1982; 1984c). DEQ will review the variance request to ensure that it complies with the requirements and, if DEQ concurs, will forward the request to EPA with a written concurrence.

If a discharger wants both a CWA §§301(g) and 301(c) variance, the requests must be submitted and considered together.

8.1.2 Nonconventional Pollutant—CWA §301(g)

CWA §301(g), state, and federal regulations may allow dischargers a variance from new or revised BAT effluent guidelines for certain nonconventional pollutants because of local environmental factors.²¹⁴ To be eligible for this variance, the discharger must demonstrate the following:

- It is meeting BPT.
- The discharge does not prevent attainment of water quality standards.
- The discharge would not result in additional requirements on other point or nonpoint sources.

The pollutants eligible for this variance are restricted to ammonia, chlorine, color, iron, and phenols (as measured by the colorimetric 4-aminoantipyrine method).

In addition to meeting the application deadline, the discharger must submit a variance application to DEQ that meets the following requirements:

- Modified limits must result in compliance with BPT and water quality standards of the receiving water body.
- No additional treatment will be required of other point or nonpoint source dischargers as a result of the variance approval.

- The modified requirements will not interfere with attaining or maintaining water quality to protect public water supplies, or protecting and propagating a balanced population of shellfish, fish, and wildlife, and will allow recreational activities in and on the water.
- The modified requirements will not result in quantities of pollutants that can reasonably be anticipated to pose an unacceptable risk to human health or the environment, cause acute or chronic toxicity, or promote synergistic properties.

Requests for a CWA §301(g) variance must be submitted by an initial request to DEQ no later than 270 days after promulgation of the applicable ELG, followed by a completed request no later than the close of the public comment period for the draft permit (EPA 1982). DEQ will review the variance request to ensure that it complies with the requirements and, if DEQ concurs, will forward the request to EPA with a written concurrence.

This variance request can involve a great deal of water quality assessment, including aquatic toxicity, mixing zones and dilution model analysis, and possible site-specific criterion development. In addition, this variance request requires the discharger to perform water quality monitoring for toxicity, human health effects, and dilution. DEQ may need to assess many complex human health effects, including carcinogenicity, teratogenicity, mutagenicity, bioaccumulation, and synergistic propensities. Existing guidance includes EPA's *Draft Technical Guidance Manual for the Regulations Promulgated Pursuant to Section 301(g) of the Clean Water Act of 1977 40 CFR Part 125 (Subpart F)* (EPA 1984d).

If a discharger wants both a CWA §§301(g) and 301(c) variance, the requests must be submitted and considered together.

8.1.3 Fundamentally Different Factors—CWA §301(n)

CWA §301(n), state, and federal regulations provide for a variance from the otherwise applicable requirements in effluent guidelines, known as a FDF variance. New sources subject to NSPS are not eligible for an FDF variance.

Federal regulations authorize the EPA to establish alternative limits and standards and criteria used to evaluate FDF variance requests for direct dischargers.²¹⁵ The conditions for approval of a request to modify applicable pretreatment standards and factors considered are the same as those for direct dischargers. Six factors are considered in determining if a facility is fundamentally different:

1. Nature or quality of pollutants contained in the raw process wastewater.
2. Volume of the process wastewater and effluent discharged.
3. Nonwater quality environmental impact of control and treatment of the raw wasteload.
4. Energy requirements of applying the control and treatment technology.
5. Age, size, land availability, and configuration of discharger's equipment or facilities, and processes employed, process changes, and engineering aspects of applying the control technology.
6. Cost of compliance with required control technology.

The burden is on the applicant to show that the factors relating to the discharge controlled by the permit, which are claimed to be fundamentally different, are in fact, fundamentally different from those factors considered by EPA in establishing the applicable effluent guidelines.

Applicants must submit all FDF variance applications to DEQ no later than 180 days from the date the limits or standards are published in the Federal Register.²¹⁶ DEQ will review the variance request to ensure that it complies with the requirements and, if DEQ concurs, will forward the request to EPA with a written concurrence. EPA may authorize this type of variance if an individual facility is fundamentally different with respect to factors considered in establishing the limits or standards otherwise applicable to that facility's industrial category.

DEQ must determine whether, on the basis of one or more of those six factors, the applicant is fundamentally different from the facilities and factors considered by EPA in developing the nationally applicable effluent guidelines.

The following factors may not provide a basis for an FDF variance:

- Infeasibility of installation within the time allowed by CWA.
- Assertion that the national limits cannot be achieved with the appropriate waste treatment facilities installed (if the assertion is not based on one or more of the six FDF factors above).
- Discharger's ability to pay for the required water treatment.
- Impact of a discharge on local receiving water quality.

In addition, a request for limitations less stringent than the national limit may be approved only if complying with the national limits would result in either of the following:

- Removal cost wholly out of proportion to the removal cost considered during national limits development
- Nonwater quality environmental impact (including energy requirements) fundamentally more adverse than the impact considered during national limits development

8.2 Variances Applicable to POTWs and Non-POTWs

8.2.1 Thermal Discharge—CWA §316(a) Variance²¹⁷

CWA §316(a), state, and federal regulations provide for variances from thermal effluent limits in NPDES permits (EPA 2008a). Alternative limits developed consistent with a CWA §316(a) variance and applicable regulations will be consistent with applicable water quality standards.

Alternative thermal effluent limits may be included in permits if the discharger demonstrates that effluent limits are more stringent than necessary to ensure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the water body into which the discharge is made. The cumulative impact of its thermal discharge must be considered with all other significant impacts on the species affected.

Existing dischargers may base their demonstration on the absence of prior appreciable harm in place of predictive studies. Such demonstrations must show the following for the water body into which the discharge is made:

- No appreciable harm has resulted from the normal component of the discharge
- Despite the occurrence of previous harm, the desired alternative effluent limits will ensure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife.

In determining whether prior appreciable harm has occurred, DEQ will consider the length of time in which the applicant has been discharging and the nature of the discharge.

8.2.1.1 CWA §316(a) Applications²¹⁸

Dischargers must submit to DEQ a request for a thermal discharge variance concurrent with its permit application if the thermal effluent limit is based on an effluent guideline, or at the end of the permit comment period if the thermal effluent limit is based on a WQBEL.²¹⁹

An initial application for a CWA §316(a) variance must include the following early screening information:

1. Description of the alternative effluent limit requested
2. Description of the method the discharger proposes to demonstrate that the otherwise applicable thermal discharge effluent limits are more stringent than necessary
3. Description of the type of data, studies, experiments, and other information the discharger intends to submit for the demonstration
4. Data and information that may be available to assist DEQ in selecting the appropriate representative important species

Upon filing an application, the applicant must request a ruling on a CWA §316(a) variance if they desire a CWA §316(a) ruling before DEQ issues a ruling on any other permit term and condition. DEQ will use its discretion to grant or deny the CWA §316(a) ruling request.

After submitting the early screening information, the discharger must consult DEQ within 30 days after the application is filed to discuss the early screening information. Within 60 days after the application is filed, the discharger must submit, for DEQ's approval, a detailed study plan supporting its CWA §316(a) demonstration. The plan must specify the nature and extent of information, including the following:

- Biological, hydrographical, and meteorological data
- Physical monitoring data
- Engineering or diffusion models
- Laboratory studies
- Representative important species
- Other relevant information

In selecting representative important species, special consideration must be given to those species identified in applicable water quality standards. After the discharger submits its detailed study plan, DEQ will either approve the plan or specify any necessary revisions. The discharger must provide any additional information or studies that DEQ subsequently determines necessary to support the demonstration, including studies or inspections needed to select representative important species, or to support the demonstration.

An application for renewing a CWA §316(a) variance must include the information described above, if requested by DEQ within 60 days after receipt of the permit application. When the permit expires, a discharger holding a CWA §316(a) variance should be prepared to support continuing the variance with studies based on the actual operation experience.

8.2.1.2 CWA §316(a) Public Notices²²⁰

Regulations contain specific public notice requirements for permits requesting a CWA §316(a) thermal variance. Public notice requirements for permits requesting a CWA §316(a) thermal variance must contain the following elements:

1. Statement that the thermal component of the discharge is subject to effluent limits under CWA §301 or 306 and a brief description, including a quantitative statement, of the thermal effluent limits proposed under CWA §301 or 306
2. Statement that a CWA §316(a) request has been filed and that alternative less stringent effluent limits may be imposed on the thermal component of the discharge and a brief description, including a quantitative statement, of the alternative effluent limits included in the request, if any
3. Statement that the applicant has submitted an early screening request (if an early screening request was filed)

8.2.2 Water Quality Standards Variances²²¹

If a discharger believes it is not possible to meet the current water quality standards immediately, but the standards ultimately may be attained, they may apply for a variance from the water quality standards. This type of variance temporarily modifies and serves as the applicable water quality standard for the IPDES permit and is discharger and pollutant specific. Idaho's water quality standards have specific procedures for granting water quality standard variances with similar substantive and procedural requirements as those required to remove a designated use. Unlike use removal, water quality standard variances are time-limited and do not permanently remove the current designated use of a water body.

Before granting a variance, DEQ publishes notice of the tentative determination to grant a variance, including a clear description of the impacts of the variance upon the receiving water body, along with minimum 30-day written comment period (and oral comment period, if applicable).

To be eligible for a variance, the discharger must submit documentation to DEQ that the treatment required to meet TBELs has been implemented and alternative effluent control strategies have been evaluated. To obtain a variance, the discharger must demonstrate that meeting the standard is unattainable based on one or more of the following:

- Naturally occurring pollutant concentrations prevent attaining the standard.
- Natural, intermittent, or low flow conditions or water levels prevent attaining the standard.
- Human-caused conditions or sources of pollution prevent attaining the standard and cannot be remedied or would cause more environmental damage to correct than to leave in place.
- Dams, diversions, or other types of hydrologic modifications preclude attaining the standard, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attaining the standard.
- Physical conditions related to the natural features of the water body, unrelated to water quality, preclude attaining the standard.
- Controls more stringent than TBELs would result in substantial and widespread economic and social impact.

EPA must approve all changes to water quality standards, including variances from water quality standards.

8.2.3 Economic Guidance for Water Quality Standards

EPA developed the *Interim Economic Guidance for Water Quality Standards* (EPA 1995a). In addition, other guidance and tools for evaluating financial affordability and capability have been developed (Conference of Mayors et al., 2013). EPA guidance is presented to assist states in understanding the economic factors that may be used and to provide a framework for determining the following:

- When designated use cannot be attained
- When variance for an individual discharger should be granted
- When degradation of high-quality water is warranted

In making such evaluations, it is also important to recognize the following under Idaho's water quality standards:

- In revising a designated use or obtaining a variance from water quality standards, dischargers may demonstrate that meeting the standard would result in substantial and widespread economic and social impacts.²²²
- DEQ may allow degradation of surface water quality that is better than assigned criteria only if it is determined to be necessary to accommodate important economic or social development.²²³

8.3 Waivers

8.3.1 Monitoring, Testing, and Reporting Waivers

DEQ may waive some monitoring, testing, and reporting requirements for industrial permits (including new sources or new dischargers) if the applicant requests a waiver with the permit application or earlier. The applicant must also demonstrate that the information can be obtained through less stringent requirements.²²⁴

DEQ may waive some application requirements for POTWs and TWTDS (sewage sludge) facilities if DEQ has access to substantially identical information, or if the information is not of material concern for a specific permit. DEQ must submit a waiver request, including DEQ's justification for the waiver, to EPA for approval. EPA's disapproval of a proposed waiver does not constitute final agency action but does provide notice that EPA may object to an IPDES-issued permit that does not have the required information.²²⁵

DEQ will not consider a permit application to be complete if DEQ has waived any application requirements but EPA disapproved DEQ's granting of the waiver.²²⁶ However, if an applicant required to reapply for a permit submits a waiver request to DEQ more than 210 days before the existing permit expires, and EPA does not disapprove the waiver request at least 181 days before the permit expires, DEQ will consider the permit application to be complete without the information that is the subject of the waiver request.²²⁷ Applicants are encouraged to discuss any potential waiver requests with DEQ at the preapplication meeting.

Approved waivers are typically discharger and sector specific, although some waivers may apply to multiple dischargers covered under a general permit (e.g., low erosivity waivers and certificates of no exposure). These sector- and permit-specific waivers are discussed in Volume 2 of this guide.

8.3.2 Technology-Based Effluent Limit Waivers²²⁸

DEQ may authorize a discharger in an IPDES permit, subject to TBEL guidelines and standards, to forego sampling of certain pollutants. The discharger must have demonstrated the following through sampling and other technical factors:

- Pollutant is not present in the discharge.
- Pollutant is present only at background levels from intake water and without any increase in the pollutant due to the discharger's activities.

This waiver is good only for the term of the permit and is not available during the term of the first NPDES or IPDES permit issued to a discharger.

An applicant must submit a request for this waiver when applying for a reissued permit or modifying a reissued permit. If DEQ grants this monitoring waiver, the condition is included in the permit, and the reasons supporting the waiver will be documented in the permit's fact sheet.

8.3.3 Waivers from Electronic Reporting²²⁹

IPDES permittees, facilities, and entities must electronically submit DMRs to EPA's NetDMR and electronically submit other required data and information to DEQ unless a waiver is granted according to state and federal regulations.

8.3.3.1 Temporary and Permanent Waivers

DEQ may grant temporary or permanent waivers from electronic reporting in compliance with federal regulations. The owner, operator, or duly authorized representative must apply for a temporary or permanent waiver; DEQ cannot grant a waiver without first receiving a waiver request. An approved temporary waiver is not transferrable.

Permanent waivers are only available to facilities owned or operated by members of religious communities that choose not to use certain modern technologies (e.g., computers and electricity). DEQ cannot grant a permanent waiver to an IPDES-regulated entity without first receiving a permanent waiver request.

A temporary waiver cannot extend beyond 5 years; however, IPDES-regulated entities may reapply for a temporary waiver.

To apply for a temporary or permanent waiver, the owner, operator, or duly authorized representative must submit the following information to DEQ:

- Facility name
- IPDES permit number (if applicable)
- Facility address
- Name, address, and contact information for the owner, operator, or duly authorized facility representative

- Brief written statement regarding the basis for claiming such a temporary waiver
- Any other information required by DEQ

DEQ will determine whether to grant a temporary or permanent waiver and must provide notice to the owner, operator, or duly authorized representative.

IPDES permittees that have received a temporary or permanent waiver must continue to provide, in hard-copy format to DEQ or EPA, the minimum set of IPDES DMRs, data, and required information in compliance with statutes, regulations, IPDES permit, another control mechanism, or enforcement order.

8.3.3.2 Episodic Waivers

DEQ or EPA (e.g., submittal of DMRs) may grant episodic waivers from electronic reporting in compliance with federal regulations. The following conditions apply to episodic waivers:

- No waiver request is required to obtain an episodic waiver from electronic reporting.
- Episodic waivers are not transferrable.
- Episodic waivers cannot last more than 60 days.

DEQ will decide if the episodic waiver provision allows facilities and entities to delay their electronic submissions or to send hard-copy (paper) submissions. Episodic waivers are only available to facilities and entities in the following circumstances:

- Large-scale emergencies involving catastrophic circumstances beyond the control of the facilities, such as forces of nature (e.g., hurricanes, floods, fires, and earthquakes) or other national disasters. DEQ will determine if an episodic waiver is warranted in this case and must receive the hard-copy (paper) submissions.
- Prolonged electronic reporting system outages (i.e., outages longer than 96 hours). DEQ or EPA (e.g., DMR submittals) will determine if an episodic waiver is warranted in this case and must receive the hard-copy (paper) submissions.

8.4 Intake Credits²³⁰

Some facilities might be unable to comply with effluent guidelines because of pollutants in their intake water. Under certain circumstances, the IPDES permits allow credit for pollutants in intake water.

Determinations for intake credits will be made on a pollutant-by-pollutant and outfall-by-outfall basis. Effluent limits must be consistent with assumptions and requirements of TMDLs. An *intake pollutant* must be from the same water body that receives the discharge to be eligible for credit, which is established by the following:

- Background concentration of the pollutant in the receiving water is similar to the intake water.
- A direct hydrological connection exists between intake and discharge points.
- The water quality characteristics (e.g., temperature, pH, and hardness) are similar in the intake and receiving waters.

DEQ may also consider site-specific factors relevant to the transport and fate of the pollutant if it had not been removed by the permittee.

An intake pollutant from ground water may be considered to be from the same water body if DEQ determines that the pollutant would have reached the outfall point in the receiving water within a reasonable period of time had the water not been removed by the permittee. Intake credits are not available if the pollutant is present in ground water partially or entirely due to human activity, such as industrial, commercial, or municipal operations, disposal actions, or treatment processes. DEQ may determine the applicability of intake credits for the same water body depending on additional factors such as spatial and temporal differences between the intake and discharge, type of constituents, and receiving water low flow.

Applicants must submit a request for intake credits to DEQ by the close of the public comment period for the draft permit.

8.4.1 Intake Credits for TBELs²³¹

The discharger may request that TBELs be adjusted to reflect intake pollutant credits in the following circumstances:

- Applicable effluent limits and standards²³² are applied on a net basis.
- Discharger demonstrates that the properly installed and operated control system it proposes or uses would meet the limits and standards in the absence of pollutants in the intake waters.

The following requirements establish TBELs that incorporate intake pollutant credits:

- Credits for conventional pollutants, such as BOD or TSS, are available when the permittee demonstrates that the constituents in the effluent are substantially similar to those in the intake water (unless appropriate additional limits are placed on process water pollutants at the outfall or elsewhere).
- Credit can be granted to allow the permittee to meet the applicable limit or standard, up to a maximum value equal to the influent concentration.
- Additional monitoring may be necessary to determine eligibility for credits and compliance with permit limits.
- Credit can be granted only if the discharger demonstrates that the intake water is drawn from the same water body into which the discharge is made. DEQ may waive this requirement if they determine that no environmental degradation will result.
- Intake pollutant credits do not apply to the discharge of raw water clarifier sludge generated from the treatment of intake water.

8.4.2 Intake Credits for WQBELs²³³

If an RPTE exists, then DEQ may establish WQBELs that reflect intake credit for pollutants as long as the discharge would not cause greater impacts than if the intake water had not been removed from the water body, and where a discharger demonstrates that the following conditions are met:

- Facility removes the intake water from the same water body that it is discharged.
- Ambient background concentration of the pollutant does not meet the most stringent applicable water quality criterion for that pollutant.
- Facility does not alter the intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not happen if the pollutants had been left in the water body.

- Timing and location of the discharge would not cause adverse water quality impacts.
- Pollutant concentration at the point of discharge does not increase compared to the intake water concentration.
- Discharger may add mass of the pollutant to its waste stream if an equal or greater mass is removed before discharge, so no net addition of the pollutant occurs in the discharge compared to the intake water.

Where intake water for a facility is provided by a municipal water supply system, and the supplier provides treatment of the raw water that removes an intake water pollutant, the concentration of the intake water pollutant will be determined at the point where the water enters the water supplier's distribution system.

Where a facility discharges intake pollutants from multiple sources that originate from the receiving water body and from other water bodies, DEQ may derive an effluent limit reflecting the flow-weighted amount of each pollutant source provided that conditions are met and adequate monitoring to determine compliance can be established and is included in the permit.

The permit specifies how compliance with mass and concentration-based limits for the intake water pollutant will be assessed. Compliance may be accomplished by setting the effluent limit based on background concentration data. Alternatively, DEQ may determine compliance by monitoring the pollutant concentrations in the intake water and effluent. This monitoring may be supplemented by monitoring internal waste streams or by DEQ evaluating the implemented BMPs.

Effluent limits developed using pollutant intake credits will be established to comply with all other applicable state and federal laws and regulations including technology-based requirements and antidegradation policies.

When determining whether WQBELs are necessary, information from chemical-specific, whole effluent toxicity and biological assessments will be considered independently.

8.5 Public Participation for Variances, Waivers, and Intake Credits

8.5.1 Public Notice of Preliminary Decision

Upon receipt of a complete request for an applicable variance, waiver, or intake credit, and after making a preliminary decision regarding the request, DEQ will notify the public. Public notification of a request and preliminary decision initiates a minimum 30-day public review and comment period. This public notice is provided by a combination of mailings or any other method that reasonably gives notice to the persons potentially affected. Public notice may be satisfied by including the supporting information for the preliminary decision in the public notice of a draft IPDES permit.

8.5.2 Final DEQ Decision

DEQ will issue the final decision on a request within 90 days after the public comment period closes. If DEQ approves all or part of the request, the decision will include all permit conditions needed to implement those parts of the request approved. DEQ will establish and incorporate into the IPDES permit all conditions needed to implement the request.

DEQ will deny a request if the permittee fails to meet the required elements for the variance, waiver, or intake credit.

8.5.3 Renewals

In renewing an application for an IPDES permit and request for variance, waiver, or intake credit, the permittee must again demonstrate meeting the required elements. The application must contain information concerning its compliance with the conditions incorporated into its permit as part of the original request. DEQ may deny a request for renewal if the permittee did not comply with conditions of the original variance, waiver, or intake credit.

8.5.4 EPA Review

Within 30 days of DEQ's final decision to concur with a variance, waiver, or intake credit request that requires EPA approval, DEQ will submit the request and supporting information to EPA Region 10 for review according to the draft MOA (DEQ and EPA 2016). This information may include the following:

- Variance, waiver, or intake credit requests
- Public comments and records of any public meetings
- DEQ's final decisions
- IPDES permits issued

EPA will review DEQ's submittal for compliance with the CWA requirements and federal regulations.²³⁴

9 Compliance Monitoring Activities

IPDES permits require permittees to conduct periodic evaluations of compliance with established effluent limits and report these to DEQ. Sections 5.1.2.7.1 and 6.4.4 discuss the factors permit writers consider when determining the specific requirements to be included in an IPDES individual or general permit.

Required monitoring may be used to characterize effluents and receiving water bodies or to assess treatment efficiency. Inappropriate or incomplete monitoring requirements may lead to inaccurate compliance determinations. This monitoring data may also be used to establish a basis for enforcement actions.

IPDES permits will specify the pollutants and operational parameters to monitor and the monitoring type, schedule, and analyses sufficient to yield data that represent the activity. The section discusses the following:

- Representative sampling a permittee may be required to collect
- Responsibilities of the permittee
- Compliance monitoring activities DEQ will perform

9.1 Representative Sampling

Samples and measurements must represent the volume and nature of the monitored discharge. DEQ may require a permittee to collect additional samples when reason exists to believe that a

violation would otherwise not be detected during routine sampling. The analysis of additional samples should be conducted on those constituents likely to be affected by the discharge.

A permit may require daily, weekly, monthly, annually, seasonally, or some combination of these sample collection frequencies; the permit may also require collection at a particular time of day, week, or year. These samples may be collected as either a grab or composite sample where grab samples may be sequential and composite samples may be continuous or based on flow. Both sample types may be tiered so that more or less frequent monitoring may be required depending on benchmark concentrations. Continuous monitoring may be suitable for ancillary parameters representative of the effluent discharged or the receiving water body (e.g., temperature). Parameters monitored continuously require appropriate monitoring equipment, data acquisition system, supervisory control, or a combination of these.

9.1.1 Grab Samples

Grab samples are individual, discrete samples collected during a period of time not to exceed 15 minutes. These samples are appropriate when flow and characteristics of a waste stream are relatively constant. Grab samples may be sequential to provide a better understanding of a waste stream over a given period of time.

Grab samples are appropriate for the following circumstances:

- Monitor an effluent that does not discharge on a continuous basis.
- Provide information about instantaneous concentrations of pollutants at a specific time.
- Allow collection of a variable sample volume.
- Corroborate composite samples.
- Monitor parameters not amenable to compositing (e.g., temperature).

9.1.2 Composite Samples

Composite samples are collected over time, either by continuous sampling or by mixing discrete samples. The samples represent the average characteristics of the waste stream. Composite samples are appropriate when any of the following are true:

- A measure of the average pollutant concentration during the compositing period is needed.
- A measure of mass loads per unit of time is needed.
- Wastewater characteristics are highly variable.

9.1.3 Additional Monitoring Requirements

A variety of discharges other than traditional POTW or industrial wastewater discharges, including biosolids (sewage sludge), CSO and SSO, and storm water, are regulated under the IPDES permit program, which may include monitoring and requirements for WET monitoring.

9.1.3.1 Biosolids (Sewage Sludge)

Sewage sludge is monitored to ensure safe use or disposal of the sludge. Sewage sludge regulations require monitoring of sewage sludge that is applied to land, placed on a surface disposal site, or incinerated.²³⁵ Monitoring frequency is based on the annual amount of sewage

sludge that is used or disposed of by those methods. More frequent monitoring for any of the required or recommended parameters is appropriate when the POTW has any of the following:

- Highly variable influent load of toxics or organic solids
- Significant industrial load
- History of process upsets due to toxics, or adverse environmental impacts due to sludge use or disposal activities

9.1.3.2 Storm Water

Storm water monitoring requirements identified as IPDES permit conditions vary according to the type of permit regulating the storm water discharge and the activity:

- Large MS4 permittees will be required to monitor.
- Small Phase II MS4s may be required to monitor to evaluate measurable goals.
- Industrial facilities with storm water discharges will be required to monitor specific pollutants based on the type of industrial activity.

Operators of a construction activity regulated under the CGP are typically not required to conduct water quality monitoring. DEQ may require monitoring if the construction activity will discharge to a water body impaired by sediment or if other pollutants of concern are known to be present in the discharge.

9.1.3.3 CSOs and SSOs

Any monitoring associated with CSSs will assist a facility with developing a long-term control plan and demonstrate compliance with permit requirements. SSO monitoring requirements may be developed on a case-by-case basis and included in a facility's permit. SSOs should be addressed in the municipality's emergency response and notification plan.

9.1.3.4 WET Monitoring

A permit with WET monitoring conditions will specify the particular biomonitoring test to be used, the test species, required test endpoints, and QA/QC procedures. EPA developed guidance on WET methodology and testing procedures (EPA 2000). WET testing samples could be composite or grab samples. Twenty-four hour composite samples are appropriate except when any of the following are true:

- Effluent is expected to be more toxic at a certain time of day.
- Toxicity may be diluted during compositing.
- Size of the sample needed exceeds the composite sampler volume.

Factors that DEQ will consider when establishing appropriate WET monitoring frequencies include, but are not limited to, the following:

- Type of treatment process
- Environmental significance and nature of the toxicity
- Past compliance record or history
- Cost of monitoring relative to financial capabilities
- Number of monthly samples used in developing the permit limit
- Frequency of intermittent discharges

Inspectors will review the procedures for conducting WET testing, including process controls and may collect effluent samples for analysis at the time of inspection to verify compliance with WET testing requirements.

9.2 Permittee Responsibilities

A permittee must comply with all conditions of a permit including any compliance monitoring and reporting requirements, including the following:

- Conduct routine or episodic self-monitoring of permitted discharges and internal operations (where applicable).
- Report the analytical results to DEQ with the information necessary to evaluate discharge characteristics and compliance status.

All required monitoring must be conducted according to EPA-approved test procedures unless another procedure is specified in the permit or approved by DEQ.²³⁶ Periodic monitoring and reporting establish an ongoing record of the permittee's compliance status. Any permit noncompliance constitutes a violation and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.²³⁷ The following subsections provide a general overview of typical reporting requirements.

9.2.1 Reporting of Monitoring Results

All monitoring reporting must be submitted electronically; DMRs must be submitted through EPA's NetDMR; and other monitoring information must be reported to DEQ through the IPDES web interface. Standard information, like parameter specific effluent data, will be submitted directly to EPA using NetDMR. Any supplemental data that cannot be entered into NetDMR in tabular form will be submitted electronically to DEQ. Examples of supplemental data that must be reported to DEQ include WET testing and any additional monitoring associated with limits established in a permit that the permittee elects to conduct. IPDES permit conditions will identify the collection type and frequency of data to be submitted to DEQ.

DEQ may request submittal of data the facility has previously collected, regardless of the test method used, including process testing data. For example, DEQ may request the facility submit process testing data that may be useful for developing future permit conditions or when technical assistance is offered.

Monitoring records must include the following:

- Date, exact place, and time of sampling or measurements
- Names of individuals who performed the sampling or measurements
- Dates analyses were performed
- Names of individuals who performed the analyses
- Analytical techniques or methods used
- Results of such analyses

Records of all monitoring information, including calibration and maintenance records, except biosolids monitoring and reporting, must be retained for a minimum of 3 years or as stipulated in the permit. Biosolids records must be retained for a minimum of 5 years, or as stipulated in the permit. Unless otherwise stated in a permit, all routine monitoring reports (e.g., DMRs) are

required to be submitted no later than 20 days after completing the monitoring period. All reports must be duly signed by an authorized representative of the permittee.²³⁸ By signing the report, that individual is certifying the information provided is accurate and complete.²³⁹

Permittees should contact DEQ immediately when they become aware of inaccurate effluent exceedances listed on EPA's ECHO website or NetDMR. DEQ will work with EPA to correct any errors due to data entry or automated flagging of significant noncompliance (SNC).

9.2.2 Twenty-Four Hour Notice of Noncompliance Reporting

POTW and industrial wastewater permits require the permittee to report certain noncompliance events to DEQ by telephone within 24 hours of becoming aware of the circumstances. On a case-by-case basis, DEQ will evaluate whether 24-hour reporting is an appropriate requirement for other permitted activities. The following are examples of the events to be reported:

- Noncompliance that may endanger human health or the environment
- Unanticipated bypass or upset resulting in an effluent limit exceedance
- Violation of a maximum daily discharge limit
- Overflow (spill, release, or diversion) of wastewater before entering the treatment works

Permittees must also submit a written report electronically to DEQ describing the event reported in the 24-hour notification, through the CRIPS web interface within 5 days (Section 1.4, "Time Computation").²⁴⁰ IPDES CIE staff may waive the written report requirement on a case-by-case basis if the oral report was received within 24 hours of the permittee becoming aware of the noncompliance, and the cause, impact, and corrective action are clearly and completely reported.

At a minimum, the written submission must include the following:

- Description of the noncompliance event and its cause
- Period of noncompliance, including exact dates and times
- Estimated time noncompliance is expected to continue if it has not been corrected
- Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance

If the noncompliance event involves an overflow, the written submission must contain additional information:

- Location of overflow
- Receiving water (if it reached waters of the United States)
- Estimate of the volume of the overflow
- Description of the sewer system component from which the release occurred (e.g., manhole, constructed overflow pipe, or crack in pipe)
- Estimated date and time when the overflow began and stopped or will be stopped
- Cause or suspected cause of the overflow
- Schedule of major milestones for those steps
- Estimate of the number of persons who came into contact with wastewater from the overflow
- Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps

Permittees must submit, with routine monitoring reports, all other noncompliance not identified in a permit as requiring 24-hour notification. For example, a permittee must notify DEQ when it becomes aware of the following:

- New introduction of pollutants to the waste stream
- Substantial change in the volume or character of pollutants in the waste stream

9.2.3 Public Notification

The permittee will be required to immediately notify the public, health agencies, and other affected entities when an overflow, bypass, or upset under their operational control endangers human health. Notifications of unanticipated bypasses or upsets that exceed any effluent limit in a permit must follow those procedures outlined in the facility's emergency response and public notification plan.

9.3 DEQ Responsibilities

Specific compliance monitoring activities are described in the *IPDES Compliance Monitoring Strategy* (DEQ 2016e). Generally, DEQ will use compliance evaluation inspections to determine whether a permittee is operating consistent with the IPDES permit and rule requirements. Nothing precludes EPA from conducting an inspection independent of DEQ. Routine compliance evaluation inspections will follow the annual plan of inspections developed consistent with the IPDES compliance monitoring strategy. DEQ will initiate an appropriate enforcement action consistent with the *IPDES Enforcement Response Guide* (DEQ 2017b) if a noncompliance event is identified through other oversight activities (e.g., annual report review).

9.3.1 Inspection Process

Inspections are designed to verify permittee compliance with applicable permit self-monitoring requirements, effluent limits, and compliance schedules. Inspectors will review records, make visual observations, and evaluate treatment facilities, laboratories, effluents, and receiving waters. The inspector will also examine both chemical and biological self-monitoring.

9.3.1.1 Preinspection Preparation

Before initiating the inspection, the inspector reviews the records on file:

- General facility information (including safety and construction)
- Current DEQ permit and fact sheet (reporting and documentation requirements)
- Previous inspection documentation
- Permittee submitted reporting (DMRs and annual reports)
- Recent correspondence between DEQ and permittee
- Complaints and enforcement actions (ICIS and CRIPS)

This records review is not considered an off-site desk audit (a noncomprehensive inspection type) as defined in the *IPDES Compliance Monitoring Strategy* (2016e). Rather, the records review allows the inspector to become familiar with the facility, historical performance, authorized representatives, and associated activities. Based on the file review, some questions may be answered before initiating an inspection.

While DEQ has the authority to conduct unannounced inspections, DEQ intends to schedule routine inspections with the facility or permitted activity. Scheduling ensures the necessary personnel will be present during the inspection, and the inspection will not unnecessarily disrupt permittee operations. The inspector will contact the facility via phone and attempt to schedule the inspection within a reasonable time frame (typically within 2 weeks). A follow-up e-mail may be appropriate when the inspector is unable to reach a permittee representative. If the permittee remains unresponsive to voice messages and e-mails, an unannounced inspection may be an appropriate course of action.

When the facility is not notified in advance, the inspector has an opportunity to observe normal facility operations, rather than a facility being prepared for an inspection; however, the inspector may find that announced inspections are valuable when inspecting large or complex permitted activities.

Other advantages of notifying a permittee include a facility's ability to prepare for the inspection and allow unfettered access and entry. Prior notification is not appropriate if the inspection team suspects the facility has an illegal discharge and is concealing or altering evidence of noncompliance, including-maintaining records improperly.

After reviewing the necessary information, the inspector will consider the following:

- Type of inspection and tasks to be conducted (i.e., comprehensive or noncomprehensive)
- Information to be collected and records to be reviewed
- Permittee procedures (including safety and personal protection equipment)
- Necessary personnel and equipment resources
- Schedule and timing
- Coordination with third party entities (e.g., sample submittal to laboratory)

All sampling performed during the inspection by DEQ staff must be consistent with an approved DEQ QAPP.

9.3.1.2 Entry

The inspector will document the exact time of entry onto facility grounds on the inspection report form and locate the facility agent or owner. DEQ staff will present a state-issued identification badge and attempt to visibly display the badge throughout the inspection. Consent to inspect the premises must be given by the owner or operator at the time of the inspection. As long as the inspector is allowed to enter, entry is considered voluntary and consensual, unless the inspector is expressly told to leave the premises.

Whenever there is a difficulty in gaining consent to enter, the inspector will document the relevant facts (including statements made), promptly leave the premises, and immediately consult their supervisor for guidance. Every attempt will be made to address a permittee's concerns or to resolve any problems with entering the facility to determine compliance. In unusual circumstances, obtaining a court-issued search warrant may be necessary. If entry is denied, it is legal for the inspector to photograph areas of the facility exposed to public view.

9.3.1.3 Opening Conference

Once the appropriate facility contact is located, the inspector will begin with an opening conference to outline the inspection plan:

- Statement of the objectives and scope of the inspection
- Order of inspection (records review and site tour)
- Meeting schedule with key personnel
- List of records to be reviewed
- Accompaniment
- Permit verification
- Safety requirements
- Closing conference
- New requirements
- Photography and video recording

9.3.1.4 Documentation

The inspector will attempt to record all conditions, practices, and other observations electronically on a field tablet. As a back-up, the inspector may use a bound field notebook and waterproof permanent ink to record observations. Photographs and video taken during an inspection are used to supplement the inspection record.

9.3.1.5 Physical Inspection of Facility

During the facility walk-through, the inspector will also ask questions about and document the following operational factors:

- Influent characteristics
 - Appearance (e.g., color and odor)
 - Combined sewer loads
 - Infiltration and inflow
 - Industrial contributions
 - Diurnal and seasonal load variations
- Process control
- Unit operations including supply of treatment chemicals
- Equipment condition
- Maintenance and operation staff
- Safety controls and equipment
- Effluent characteristics
 - Appearance of discharge
 - Receiving stream appearance including any staining, deposits, or eutrophication
 - Evidence of toxicity of the discharge

At the point of discharge, the inspector will verify that the number and location of discharges are as described in the permit and that all discharges are permitted according to the general provisions of the permit. Discharge should not exhibit the following:

- Noxious odors
- Visible entrained solids in discharge

- Deposits at or downstream of the outfall
- Color change in the receiving stream
- Fish or vegetation kills near the outfalls

The physical inspection may determine the following:

- Substantial facility design problem may require an engineering solution.
- Problems can be solved by properly operating and maintaining the treatment facilities.
- Periodic equipment malfunctions the facility needs to address by complete overhaul or replacing equipment.

9.3.1.6 Onsite Records Review

The inspector will conduct a review of facility records to assess whether recordkeeping requirements are being met. The inspector will review all documents required by permit or rule and answer the following questions:

- Is the facility verifying data being collected as required by the permit?
- Is all required information available?
- Is the information current?
- Is the information being maintained for the required time period?
- Do the records reviewed indicate areas needing further investigation?
- Are the records organized?
- Do the records show compliance?

Facility records an inspector will review include, but are not limited to, the following:

- Operations and maintenance manual/plan
 - Operator training
 - Equipment owner's manuals (calibration frequencies)
 - Housekeeping
 - Maintenance schedules and required periodic maintenance records
- Emergency response and public notification plans
- QAPPs
- BMPs
- DMRs
- Annual reports
- Laboratory records
 - Bench sheets
 - Calibration
 - Operating procedures

9.3.1.7 Laboratory Procedures Review

In evaluating laboratory analytical procedures, the inspector will verify that the lab adheres to the following:

- Follows analytical methods specified in the most current 40 CFR 136 and properly performs any deviations allowed by 40 CFR 136.
- Uses a QC system that conforms to the system specified in the permit.

- Maintains a QC record on reagent preparation, instrument calibration and maintenance, incubator temperature, and purchase of supplies.
- Conducts QC checks on materials, supplies, equipment, instrument calibration and maintenance, facilities, analyses, and standard solutions.
- Maintains documentation of any EPA-approved deviation from specified test procedures.

The inspector may ask the responsible analyst to describe each procedure to verify the proper analytical procedures are being followed. The inspector will observe general housekeeping, supplies, and the overall lab safety.

Neither DEQ nor EPA performs laboratory accreditation on in-house or contracted labs. Instead, facilities are expected to comply with EPA's DMR-QA project, which ensures the integrity of data submitted by the permittee for DMR reporting requirements. DMR-QA studies use proficiency testing to determine if an analysis is (1) acceptable or (2) statistically different from the national average (generally at a 95% confidence level), as determined by appropriate statistical techniques.

EPA uses CWA §308 information requests to notify the selected facilities of their required participation in the program.

9.3.1.7.1 Permittee Sampling Evaluation

When evaluating the permittee sampling program, the inspector will verify that the permittee's sampling program complies with the permit and established national sampling methods:

- Sampling and analysis
- Preservation technique
- Sample holding time
- Sample container requirements

In addition, sampling conducted by inspectors will meet the following objectives:

- Verify compliance with effluent limits
- Verify accuracy of reports and program self-monitoring
- Support enforcement action
- Support permit development reissuance and/or revision
- Determine the quantity and quality of effluent

Compliance inspections may include sampling of physical and chemical parameters, as well as biomonitoring. In most cases, before the inspection, the inspector will inform the facility of the type of sampling to be conducted. Sample collection types may be field duplicates or split samples. Field duplicates are collected simultaneously from the same source at selected locations on a random time frame. They may be grab samples or samples from two sets of field equipment installed at the site. Duplicate samples verify analytical precision and evaluate the representativeness of the sample. Split samples identify discrepancies in a permittee's analytical techniques and procedures. These samples may also be used by the permittee to validate DEQ sampling findings. DEQ will encourage split sampling whenever possible and practicable.

9.3.1.7.2 Flow Measurement

The inspector will check both the permittee's flow data and the flow measurement system to verify the permittee's compliance with IPDES permit requirements. When evaluating a flow measurement system, the inspector will consider and record findings on the following:

- Whether the system measures the entire discharge flow.
- System's accuracy and good working order, which may include a thorough physical inspection of the system and comparison of system readings to actual flow or those obtained with calibrated portable instruments
- Need for new system equipment
- Existence or absence of a routine calibration and maintenance program for flow measurement equipment

Four steps are involved in evaluating a permittee's flow measurement system:

1. Physical inspection of the primary device
2. Physical inspection of the secondary device and ancillary equipment
3. Flow measurement using the primary/secondary device combination of the permittee
4. Certification of the system using a calibrated, portable instrument

Most flow measurement errors result from inadequate calibration of the flow totalizer and recorder. If the inspector determines that the primary device has been installed properly, verifying the permittee's system is relatively simple. The flow determined from the inspector's independent measurement is compared to the flow of the permittee's totalizer or recorder. The inspector's flow measurements should be within 10% of the permittee's measurements to certify accurate flow measurement. Optimally, flow comparisons will be made at various flow rates to check system accuracy. A verification process should be established by the permittee for inline meters that do not require frequent calibration (e.g., electromagnetic meters). The verification should follow the manufacturer's recommendations including maintenance.

9.3.1.7.3 Chain of Custody

The inspector will review COC forms used to document the persons in possession of the samples from the time the samples are collected until the samples are relinquished to the laboratory. It is recommended that COC forms and each sample container tag document the following:

- Entity collecting and submitting the samples for analysis
- Names of the samplers
- Project name or sampling location (e.g., Outfall 001, 002 downstream monitoring location)
- IPDES permit number (if applicable)
- Sample identification number
- Date and time of sample collection
- Type of sample (e.g., wastewater or surface water)
- Type of preservation (including temperature when necessary)
- Type of analysis to be performed (e.g., TSS or metals)

Additionally, the COC form should document the following:

- Total number and type of sample containers being submitted for analysis

- Names of the person relinquishing and receiving the samples
- Date and times samples were relinquished

COC tape seals should be applied to the containers cap if samples are relinquished to a third party, or concerns exist about the potential for tampering. All samples collected during an inspection or investigation by an IPDES inspector will bear COC seals.

9.3.1.8 Closing Conference

A closing conference or meeting will provide an opportunity to discuss the preliminary inspection findings. The inspector will describe any potential deficiencies and identify areas of concern. During this meeting or conference, inspectors can answer any questions, provide information about the IPDES Program, and request the compilation and submittal of data that were not available at the time of the inspection. The conference also presents an opportunity to deliver compliance assistance materials. Inspectors will discuss follow-up procedures, such as how inspection results will be used and what further communications between DEQ and the facility may be expected or necessary.

9.3.2 Postinspection Correspondence

DEQ will provide written correspondence documenting an inspection to every permitted entity that is inspected. Documentation will include the following:

- An inspection cover letter providing basic information about the inspection (e.g., type of inspection conducted, persons present, and areas of concern)
- An inspection report providing a narrative of what was reviewed and discussed during the inspection, photographs from the inspection, and areas of concern or noncompliance that may be determined through the inspection

All known noncompliance will also be documented in an additional informal or formal enforcement letter as well as any necessary corrective actions. Any informal or formal enforcement letter will be separate from the inspection cover letter and inspection report. The letter will include an appropriate timeline to gain compliance for each action item. In most cases, the letter will require a written response from the permittee that states the actions taken and the date the facility has completed the corrective action.

The *IPDES Enforcement Response Guide* (2017b) and sections 10.4.1 and 10.4.2 provide a description of the types of written correspondence DEQ may send after the inspection. Where an inspection does not identify any areas of concern or noncompliance issues, the inspection cover letter will document this determination. Once a facility returns to compliance after the inspection, DEQ will send a letter acknowledging that no further action is required by the facility regarding the inspection findings.

9.3.3 Multimedia Inspections

Multimedia inspections will primarily be deployed to investigate complaints. One or more inspectors with expertise in other environmental program areas may coordinate investigations with IPDES inspectors. The team will consist of a team leader and conduct a detailed compliance evaluation for each of the target programs. Multimedia inspections identify problems that might

otherwise be overlooked. Special attention will be given to pollutants that change media (e.g., air pollutants that are scrubbed into wastewaters).

10 Enforcement

When a discharger does not comply with the requirements of the IPDES Program, they are considered to be in violation and may face one of several types of enforcement actions. DEQ's enforcement response may be informal or formal and will be based on the severity, duration, and frequency of a noncompliance event. DEQ's enforcement authority provides that any person who violates any permit condition, filing or reporting requirement, duty to allow or carry out inspections, entry or monitoring requirements, or any other provision in IPDES rules will be subject to administrative, civil or criminal enforcement including without limitation, civil and criminal penalties.²⁴¹ This section explains two categories of violations and provides an overview of enforcement responses DEQ may initiate to address these noncompliance issues.

IPDES staff is available to assist the regulated community in complying with program requirements. Whether this assistance is provided during the permit development phase or after permit issuance, permittees should view DEQ as a resource for helping to maintain permit compliance.

10.1 Single-Event Violations

Single-event violations are violations of IPDES requirements documented during a compliance inspection, reported by the facility, or determined through other DEQ compliance monitoring methods. They are not related to permit compliance schedules or effluent limits. Examples of single-event violations include the following:

- Failure to obtain a required permit
- Sampling wastewater in an unauthorized location
- Unauthorized wastewater bypass or discharge

In the case of unpermitted facilities, single-event violations may be documented in response to violations of IPDES regulations. Single-event violations include one-time events and long-term violations. Discovery of a deficiency in a well-established BMP at the time of inspection is an example of a long-term violation that may be classified as a single-event violation. In some instances, single-event violations may also include violations of certain IPDES permit conditions or an enforcement order.

Single-event violations are used by DEQ to maintain and report the compliance status of a facility for violations that are not automatically flagged by the database. The following are methods of finding single-event violations:

- Inspections
- Information collection requests
- State and tribal referrals
- DMR comments
- Annual reports, noncompliance reports, and other reports required under the permit, enforcement order, or regulation
- Facility self-audits

- Citizen complaints

Repeat violations may lead DEQ to escalate or reclassify the violation (i.e., designate a reportable noncompliance event as SNC). Additionally, a single-event violation (or a reportable noncompliance violation) may be escalated to SNC, where a regulated entity fails to return to compliance in a reasonable amount of time.

Single-event violations do not include violations generated automatically (e.g., effluent limit violation from a DMR, or compliance schedule violations) by the ICIS-NPDES (EPA 2008b). Those automated noncompliance events that ICIS-NPDES flags as violations will be evaluated by DEQ (on an individual basis) to determine the correctness of the violation and, where appropriate, the type of enforcement action. This evaluation will include a review of information submitted by the permittee and may also include discussions with the permittee to clarify and substantiate the alleged violation. Violations identified automatically are termed reportable noncompliance violations in ICIS-NPDES and are documented on NPDES noncompliance reports (NNCRs) submitted to EPA.²⁴² ICIS-NPDES uses detection coding to determine whether the single-event violation is deemed significant noncompliance (section 10.2).

DEQ will enter all known violations into the IPDES-CRIPS database to track a permittee's compliance history. Tracking single-event violations is important because it creates an electronic record of historical compliance monitoring findings and determinations. Tracking inspection results can impact future enforcement decisions, particularly when a permittee continues to exhibit the same violation over the course of several years.

10.2 Significant Noncompliance

DEQ is required to report noncompliance to the EPA on a quarterly and annual basis. While the majority of these reports have historically focused on permittees classified as major, DEQ will document and track all permitted entities similarly. DEQ will continue to report noncompliance to EPA until the issue has been resolved and the permittee has returned to compliance.

EPA has established SNC criteria:

- To promote both national consistency and flexibility in NPDES program management and implementation
- To focus resources to the most critical programmatic and environmental areas

The SNC criteria are defined by EPA as “those alleged violations where the NPDES authority, using its enforcement discretion and applying best professional judgment and the criteria described in policy for the specific program area, has determined that the relevant criteria for SNC have been met” (EPA 1995b; EPA 1996b; EPA 2007b). The criteria that DEQ will use to determine SNC for the various types of effluent violations, noneffluent violations, indirect dischargers, and other unauthorized discharges are outlined in sections 10.2.1 through 10.2.4. These criteria are different depending on the situation and the discharge type.

DEQ will address SNC using the following steps:

1. Conduct compliance monitoring and evaluation activities and determine whether an alleged violation occurred or was reported.
2. Determine SNC.
3. Identify and undertake a timely and appropriate response.

4. Document resolution of noncompliance.

DEQ will take appropriate follow-up action against dischargers with SNC violations no later than the reporting deadline associated with the third consecutive quarter after the violation is identified as SNC (Step 1). In most cases, DEQ will initiate formal enforcement actions to address SNC violations. DEQ will consult the *Interim Clean Water Act Settlement Penalty Policy* (EPA 1995c) and supplemental guidance documents to determine whether a penalty is appropriate and the penalty amount.

Most facilities will receive penalties for violations that rise to the level of SNC (sections 10.5 and 10.6). In determining the penalty, DEQ will consider the violator's past history of compliance and/or recalcitrance when determining whether a penalty is appropriate. A pattern of violations (e.g., failure to obtain permit coverage at multiple sites, similar violations at multiple sites owned or operated by the same entity, or history of similar violations at one site) will also be considered.

For example, if a violator has a poor compliance history, multiple violations, or a single violation resulting in extreme adverse impacts (e.g., a fish kill), DEQ may initiate a formal enforcement action, with an appropriate penalty. In some circumstances, such as a first-time violator that promptly implements corrective measures, DEQ may address SNC through an informal enforcement action.

Sections 10.2.1 and 10.2.2 discuss criteria relevant to direct dischargers, and SNC criteria in sections 10.2.2 and 10.2.3 are applicable to indirect dischargers (pretreatment standards).²⁴³ SNC criteria in section 10.2.4 apply to unauthorized discharges and wet weather discharges.

10.2.1 SNC Criteria for Effluent Violations

Effluent violations of monthly average limits may be either technical review criteria (TRC) violations or chronic violations. For direct discharges, TRC violations apply to two groups of pollutants: conventional and toxic (Table 6). DEQ must report to EPA TRC violations that occur any 2 months within a 6-month period. A TRC violation for conventional pollutants is a 40% (or more) effluent exceedance (i.e., \geq effluent limit \times 1.4); for toxic pollutants limit a 20% (or more) exceedance (i.e., \geq effluent limit \times 1.2) is considered a TRC violation.

Table 6. Technical review criteria pollutant list.

| Conventional Pollutants | | |
|--------------------------------------------|-----------------------------------|---------------------------------------------------------------------------|
| TRC = 1.4 | | |
| Oxygen Demand | Solids | Nutrients |
| Biochemical oxygen demand | Total suspended solids (residues) | Inorganic phosphorus compounds |
| Chemical oxygen demand | Total dissolved solids (residues) | Inorganic nitrogen compounds |
| Total oxygen demands | Other | Other |
| Total organic carbon | | |
| Other | | |
| Detergents and Oils | Minerals | Metals |
| methylene blue active anionic substances | Calcium | Aluminum |
| Nitilotriacetic Acid | Chloride | Cobalt |
| Oil and grease | Fluoride | Iron |
| Other detergents or algaecides | Magnesium | Vanadium |
| | Sodium | |
| | Potassium | |
| | Sulfur | |
| | Sulfate | |
| | Total alkalinity | |
| | Total hardness | |
| | Other minerals | |
| Toxic Pollutants | | |
| TRC = 1.2 | | |
| Metals (all forms) | Inorganic | Organics |
| Other metals not specifically listed above | Cyanide | All organics are Group II except those specifically listed under Group I. |
| | Total residual chlorine | |

DEQ must report chronic violations in the NNCR if the monthly average permit limits are exceeded any 4 months within a 6-month period. These criteria apply to all pollutants listed in Table 6. Chronic violations of any monthly effluent limit of the pollutants listed in Table 6 at a given outfall for any four or more months during the two consecutive quarter review periods is SNC.

Effluent violations of nonmonthly average limits (e.g., average daily) are SNC if they meet the TRC and chronic violations conditions. However, when a parameter has both a monthly average and a nonmonthly average limit, a facility would only be considered in SNC for the nonmonthly average limits if the monthly average is also violated to some degree but less than SNC.

Other effluent violations that cause or have the potential to cause a water quality or human health problem are SNC. In the case of POTWs implementing approved pretreatment programs, failure to implement or enforce those programs results in SNC (section 10.2.3).

10.2.2 SNC Criteria for Noneffluent Violations

SNC may also occur for violations other than an exceedance of effluent limits. These noneffluent violations (such as any unauthorized bypass, unpermitted discharge, or pass through of pollutants) can potentially cause a water quality problem (e.g., fish kills and oil sheens) or health problems (e.g., beach closings, fishing bans, or other restrictions of beneficial uses) and are treated as significant.

The SNC criteria for noneffluent violations are as follows:

- Permit (compliance) schedule violations are SNC when there is any failure to start construction, end construction, or attain final compliance within 90 days of the scheduled date. All pretreatment schedule milestones missed by 90 days or more are SNC.
- Permit reporting violations (e.g., DMR, annual report submittal, and pretreatment performance reports) are not submitted or are submitted 30 or more days late.
- Any judicial enforcement order.
- An administrative order (e.g., consent order), when any violation of an effluent limit (or other water quality and health impact) is established in the administrative order. However, when a limit is established in an administrative order that is as stringent as the applicable permit limit, the facility is in SNC only if the permit effluent limit SNC criteria described above are met (section 10.2.1).
- Any schedule or reporting violations, as well as any violation of narrative requirements established in the administrative order.

10.2.3 SNC Criteria for Indirect Dischargers Subject to Pretreatment Standards

In addition to those criteria discussed in section 10.2.2, the following criteria apply to all indirect discharges subject to pretreatment standards and requirements (EPA 1989b).

Subsequent to the end of each calendar quarter each POTW (or control authority) must document SNC calculations for all criteria (EPA 1997).²⁴⁴ Of the eight SNC criteria that must be evaluated, only two are evaluated based on a 6-month rolling window: TRC violations and chronic effluent violations. All other criteria are evaluated strictly on a calendar quarter.

TRC violations for indirect discharges are defined as those in which 33% or more of all of the measurements taken for the same pollutant parameter during a 6-month period equal or exceed the product of the numeric pretreatment standard or requirement including instantaneous limits multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil, and grease, and TRC = 1.2 for all other pollutants except pH).²⁴⁵

Chronic effluent violations of wastewater discharge limits are those in which 66% or more of all of the measurements taken for the same pollutant parameter during a 6-month period exceed (by any magnitude) a numeric pretreatment standard or requirement, including instantaneous limits.²⁴⁶

In addition to TRC violations and chronic effluent violations, the following noncompliance events are SNC:

- Any other violation of a pretreatment standard or requirement (e.g., daily maximum, long-term average, instantaneous limit, or narrative standard) that the POTW or control authority determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public)²⁴⁷
- Any discharge of a pollutant that has caused imminent endangerment to human health and welfare or to the environment, or has resulted in the POTW's or control authority's exercise of its emergency authority to halt or prevent such a discharge²⁴⁸
- Failure to meet, within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance

- Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on complying with compliance schedules
- Failure to accurately report noncompliance
- Any other violation or group of violations, including BMP violations, the POTW (or control authority) determines will adversely affect operating or implementing the local pretreatment program

10.2.4 Significant Unauthorized Discharge/Wet Weather SNC

The IPDES Program considers several factors when determining whether a significant unauthorized discharge or wet weather SNC has occurred (EPA 2007b). The determination is based on the impact to human health or the receiving water body, condition, or quality of the receiving water body, and any impairment of the beneficial uses of the receiving water body. Factors include the following:

- Discharge has caused or contributed to an exceedance of any applicable water quality standard.
- Discharge or overflow is weather-related.
- Discharge has caused or contributed to a fish kill, fish advisory, or beach closing.
- Discharge impacts an area identified as being disproportionately impacted by pollutants from multiple environmental pathways.
- Water body impacted by the discharge
 - Is a drinking water source, has drinking water intakes, or is in a source water protection area.
 - Is a high-quality habitat (Tier II water body) for aquatic organisms, fish, or wildlife.
 - Is an outstanding resource (Tier III) water body.
 - Is designated for primary or secondary contact recreation.

10.2.4.1 Combined Sewer Overflows

While there are no known CSSs in Idaho, if DEQ discovers such a system, the following CSO violations may constitute SNC:

- Multiple significant unauthorized discharges or multiple unauthorized significant overflows
- Substantial failure to implement nine minimum controls as required in a permit or in an administrative or judicial order
- Failure to report unauthorized overflows or discharges as required
- Failure to submit an approvable long-term control plan as required in a permit or in an administrative or judicial order, or the submittal is late by 90 days or more
- Failure to meet the major milestones (including long-term control plan milestones) required in an administrative or judicial order or in a permit (where expressly allowed by state water quality standards) by 90 days or more
- Failure to submit required (e.g., by permit, enforcement order, or information request) report or report is late by 30 days or more.

The term *multiple* includes repeated or recurring overflows at a single location, or overflows at different locations. The criteria for SNC include "multiple significant discharges or multiple significant overflows" (EPA 2007b). DEQ may use discretion and designate an isolated

discharge or overflow as SNC if it involves a substantial volume, or has a significant adverse impact on human health or the environment. Important considerations include the duration, frequency, and volume of any unpermitted discharge. An isolated discharge or overflow generally does not elevate noncompliance to the level of SNC unless indicative of a broader problem.

10.2.4.2 Sanitary Sewer Overflows

SSOs include those overflows that reach waters of the United States, as well as overflows out of manholes onto city streets, sidewalks, parks and other locations, and backups into buildings caused by conditions in the sewer system (excluding backups in the service line). SSOs that reach waters of the United States are point source discharges and are prohibited under CWA §301. SSOs that do not reach waters of the United States may indicate improper operation and maintenance of the sewer system and may violate IPDES permit conditions requiring proper operation and maintenance per IPDES requirements.²⁴⁹

The following types of alleged SSO violations may constitute SNC:

- Multiple significant unauthorized discharges or multiple significant overflows
- Failure to report overflows or discharge events as required
- Failure to meet the major milestones required in an administrative or judicial order or in a permit by 90 days or more
- Failure to submit required (e.g., by permit, enforcement order, or information request) report, or report is late by 30 days or more

The term *multiple* includes repeated or recurring discharges or overflows at a single location, or discharges or overflows at different locations. DEQ will use discretion in designating an isolated discharge or overflow as SNC if the discharge or overflow involves a substantial volume, or has a significant adverse impact on human health or the environment. Important considerations include the duration, frequency, and volume of any unpermitted discharge. An isolated discharge or overflow generally does not elevate noncompliance to the level of SNC unless indicative of a broader problem.

10.2.4.3 Storm Water Point Sources

For alleged storm water violations, DEQ will make a SNC determination by assessing available information and evaluating the significance of noncompliance, and the associated potential significant impacts to the environment and/or human health.

Each of the following types of alleged storm water violations may constitute SNC:

- Significant unauthorized discharge
- Significant unauthorized discharge at a site with a small construction waiver or conditional exclusion for no exposure
- Significant violations of permit requirements. Examples of such violations include, but are not limited to, the following:
 - Lack of or a substantially inadequate SWPPP or SWMP
 - Substantial failure to implement or maintain BMPs
 - Substantial failure to perform required monitoring
 - Substantial failure to implement the MS4 requirements

- Failure to obtain permit coverage as required where there is a discharge
- Failure to meet the major milestones required in an administrative or judicial order or in a permit by 90 days or more
- Failure to submit required report (including failure to respond to an information request), or report is late by 90 days or more

10.2.4.4 Concentrated Animal Feeding Operations

For alleged CAFO violations, DEQ will make a SNC determination using BPJ by assessing available information and evaluating the significance of noncompliance, including the associated impacts on the environment and/or human health. Factors specific to CAFOs include the following:

- Discharge from the production area that is not in compliance with or occurs in the absence of an IPDES permit
- Nonprecipitation-related discharge (i.e., dry weather discharge) of manure, litter, process wastewater, or other pollutants from the land application area to waters of the United States

Each of the following alleged CAFO violations may constitute SNC:

- Any significant unauthorized discharge.
- No NMP when one is required.
- Multiple discharges without an NPDES permit (and the failure to apply for an IPDES permit, when one is required) and/or multiple violations of permit requirements. Multiple deficiencies in implementing the permit and NMP include failure to:
 - Maintain adequate storage capacity and containment.
 - Implement buffer and setback requirements.
 - Properly manage chemicals and other contaminants handled on site.
 - Properly manage mortalities.
 - Conduct proper operation and maintenance.
 - Properly handle manure, including land application according to NMP.
 - Test soils and manure, as required.
 - Meet recordkeeping requirements.
 - Keep the NMP up-to-date.
- Failure to meet the major milestones required in an administrative or judicial order or in a permit by 90 days or more.
- Failure to submit annual report or other required report (including failure to respond to an information request), or report is late by 90 days or more.

The term *multiple* includes repeated or recurring violations or deficiencies. The CAFO criteria for SNC include "multiple violations of permit requirements" or "multiple deficiencies in implementing the permit and NMP." DEQ will use its discretion when determining an isolated violation or deficiency as SNC if the potential exists for a significant adverse impact on human health or the environment. Important considerations include type, duration, frequency, and outcome of any violation or deficiency. An isolated violation or deficiency generally does not rise to the level of SNC unless it is indicative of a broader problem.

10.2.4.5 Discretionary Wet Weather SNC

As with traditional national SNC criteria, DEQ has the discretion to designate any alleged wet weather violation of concern as SNC, even if it does not meet any of the specific criteria above. DEQ also has discretion to interpret and apply the criteria. For example, for alleged violations related to CSOs and SSOs, DEQ has discretion to determine how many violations constitute *multiple* significant overflows. Similarly, for alleged storm water violations, DEQ has discretion to determine the number of violations that constitute significant violations of permit requirements.

DEQ also has the discretion to not designate alleged wet weather violations that meet the above criteria to account for unusual circumstances that result in SNC violations beyond a facility's control.

10.3 Enforcement Escalation

DEQ will respond in a timely manner to every known noncompliance event. The magnitude (severity), frequency, and duration of a noncompliance event determine whether DEQ's response is formal or informal or requires immediate action. As previously discussed, events resulting in known harm to public health or the environment will prompt a formal enforcement action. Harmful events are those events that create a nuisance or render surface waters detrimental or injurious to public health, safety, or welfare; fish and wildlife; or beneficial uses of the water body (e.g., swimming beach closures or fish kills).

For those noncompliance events identified as not significant, DEQ may offer compliance assistance and may deploy an escalating informal response process to bring permittees back into compliance. Figure 9 provides an example of an escalating response. DEQ reserves discretion when initiating enforcement so that a response may begin with the highest level (i.e., NOI to enforce).

DEQ's initial informal response to an isolated single noncompliance event may be to contact the facility via phone or e-mail. If the permittee is unresponsive or fails to return to compliance expeditiously, then DEQ may escalate the informal response by sending the permittee a written notification. As the severity (magnitude) of the violation increases, a formal enforcement response becomes more likely. Where frequent unrelated noncompliance events persist, DEQ may inform the permittee in writing that a formal enforcement action is imminent.

SNC violations identified on a quarterly NNCR as unresolved or recurring violations similar in nature (e.g., chronic reporting deficiencies) trigger a formal DEQ enforcement action. When establishing enforceable schedules (timelines) for achieving compliance, DEQ will strive to set realistic expectations of the permittee.

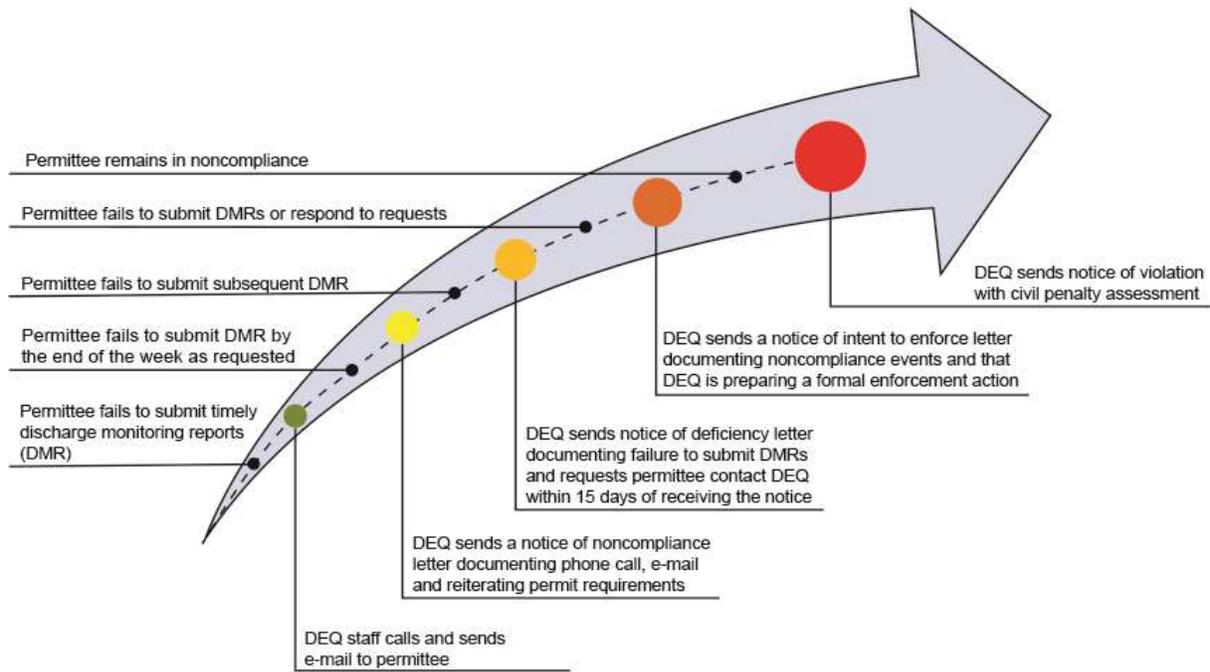


Figure1. Example of an Escalating Enforcement Response

Figure 9. Example of an escalating enforcement response.

10.4 Types of Enforcement Actions

10.4.1 Informal Responses

Informal enforcement actions are intended to address those noncompliance events that are categorized as not significant. In rare cases, DEQ may use its discretion to initiate an informal action to address noncompliance identified as significant where no known harm to human health or the environment is identified.

The two types of informal responses are compliance assistance and written noncompliance notification. Compliance assistance is a continuous process that DEQ uses broadly and impartially, whereas DEQ uses informal noncompliance letters as equivalent to warning letters to correct a specific noncompliance event. Noncompliance letters are used to raise awareness and to provide an opportunity and reasonable amount of time to return to compliance.

10.4.1.1 Compliance Assistance

DEQ uses verbal or electronic notifications or requests (phone call or e-mail) to inform a permittee of a problem and to informally explain regulatory requirements (e.g., surface water quality standards and environmental statutes and rules) and permit conditions or to provide guidance on how to comply with or satisfy a particular permit condition. For example, DEQ may explain the purpose of a SWPPP or QAPP and provide resources to assist in completing these types of documents.

DEQ uses permittee education and outreach when noncompliance is identified statewide or by sector (e.g., storm water). As reporting data are reviewed and inspections conducted, DEQ will analyze noncompliance trends and address these issues through education and outreach, including publication of online IPDES resources, permittee file reviews, workshops, conferences, and newsletters.

Any person with questions concerning compliance with environmental regulations should contact their local DEQ regional office as soon as possible. DEQ regional office staff is available to answer questions and explain regulatory requirements. When noncompliance is identified, the regulated entity should notify DEQ immediately. A list of regional offices is found on DEQ's website at www.deq.idaho.gov/regional-offices-issues/.

DEQ prefers to assist the regulated community with compliance that requires fewer resources than pursuing formal enforcement remedies, and often deters noncompliance or encourages a prompt return to compliance. For example, an operator may become aware of an established process that is inconsistent with the facility's QAPP. The operator believes the process is correct but is uncertain whether to change the process or the plan. Through discussions with IPDES Program staff, a revision to the plan may be determined as the appropriate course of action. The operator would submit notification to DEQ that the plan has been updated, thereby avoiding noncompliance.

DEQ personnel will log any compliance assistance offered to a permittee into the CRIPS database. Public access to this information may be limited due to the ongoing nature of compliance assistance but may be obtained through a public records request. Information on public records requests is provided at www.deq.idaho.gov/contact-us/public-records-request/.

10.4.1.2 Noncompliance Letters

10.4.1.2.1 Notice of Noncompliance

DEQ issues a NONC letter when compliance assistance efforts have proven ineffective or when noncompliance issues by first-time violators that do not cause actual harm to human health or the environment are identified. Violators are given an opportunity to rectify the situation within a realistic time frame (typically within 30–60 days). A NONC is best suited for addressing paperwork-related noncompliance, not including failure to develop a plan as required by a permit condition. For example, a permittee may miss a deadline for notifying DEQ that a particular plan has been updated; DEQ may attempt to contact the facility, and where the permittee developed the plan but neglected to notify, DEQ may issue a NONC.

10.4.1.2.2 Notice of Deficiency

DEQ issues a notice of deficiency (NOD) letter to inform the permittee that a noncompliance event has occurred and requires corrective action. This letter provides the responsible party an opportunity to correct the situation within a specified period of time. The NOD should stipulate the appropriate corrective action required to achieve compliance and the type of response required of the permittee. A NOD is best suited for addressing noncompliance events with no known harm to public health or the environment.

10.4.1.2.3 Notice of Intent to Enforce

DEQ may issue a notice of intent to enforce (NOIE) letter when noncompliance issues persist beyond a previously established amount of time or when noncompliance nears the threshold for initiating a formal enforcement response. This letter is often issued after a NONC or NOD letter and before a notice of violation (NOV). In some instances, DEQ may issue a NOIE after a NOV where the NOV did not stipulate a monetary penalty amount and the permittee has yet to gain compliance. This letter is the most serious form of an informal enforcement action. The NOIE follows the format of a NOV to facilitate the transition from an informal response to a formal enforcement action:

- Cite DEQ's authority to pursue administrative or judicial enforcement actions.
- Cite the statute, rule, or permit condition allegedly violated.
- State the facts supporting DEQ's position that a violation occurred.
- Provide a final offer for compliance assistance.
- Specify a reasonable timeline to achieve compliance.
- Require a written response that corrective action has been completed, or a schedule for returning to compliance.
- Identify the individual to whom correspondence and inquiries should be directed.

While NONC, NOD, and NOIE are all informal responses, the IPDES NOIE is most similar to EPA's NOV informal enforcement action.

10.4.1.3 Notice of No Further Action

DEQ will issue a notice of no further action (NONFA) once it has been determined that a facility has adequately addressed the documented noncompliance. This notice documents that the documented noncompliance has been adequately addressed by the facility. Issuance of a NONFA by DEQ does not preclude the agency from taking further enforcement action regarding those specific noncompliance events up to the statute of limitations.

10.4.2 Formal Enforcement Actions

All investigation, inspection, and enforcement authorities set forth in statute are available to DEQ with respect to the IPDES Program.²⁵⁰ DEQ has discretion when initiating enforcement. Formal enforcement actions are primarily reserved for those events deemed significant noncompliance. Active formal enforcement actions prohibit a third party's involvement (i.e., file a grievance with the court) to correct a noncompliance event. Rather, the public will be given the opportunity to comment on all proposed enforcement action settlements.

10.4.2.1 Administrative Actions

10.4.2.1.1 Notice of Violation

The majority of enforcement work starts with an NOV. An NOV is a notice that documents a violation.²⁵¹ An NOV is not an order, and no requirement exists to issue an NOV every time a violation is observed. The NOV must include an opportunity for the discharger to confer with DEQ within 20 days of receiving the notice, unless a later date is agreed to. This meeting, or compliance conference, provides the violator an opportunity to explain the circumstances of the alleged violation and propose a remedy for returning to compliance.

The NOV may also require a written response within 15 days of receipt of the notice. NOVs may precede other formal administrative or civil/judicial enforcement actions and may include a civil penalty. An NOV is not required before filing a civil enforcement action. If an NOV is issued, civil action may not be filed until the recipient has been afforded an opportunity for a compliance conference and to enter into a consent order.

*Compliance Conference*²⁵²

The optional compliance conference provides both parties the opportunity to meet to discuss the alleged violations cited in the NOV. Additionally, the compliance conference provides an opportunity for the recipient of an NOV to explain the circumstances of the alleged violation and, where appropriate, to present a proposal for remedying damage caused by the alleged violation and for ensuring future compliance.²⁵³ If the recipient and DEQ agree on a plan to remedy damage caused by the alleged violation and to ensure future compliance, they may enter into a consent order formalizing their agreement. The consent order may include a provision for payment of any agreed civil penalty and a scheduled time frame for compliance.

Once the recipient receives an NOV, they have 15 days in which to contact DEQ by phone or in writing to request and schedule a compliance conference. When a recipient of an NOV does not request a compliance conference within 15 days of receiving the notice, DEQ may pursue civil action anytime thereafter.²⁵⁴ An attempt by the alleged violator should be made to schedule the compliance conference within 20 days of receiving an NOV. DEQ will provide written confirmation if a conference date is agreed upon. Once the compliance conference date is scheduled, IPDES Program staff may send a letter confirming the date, location, and any special considerations that have been made. IPDES Program staff may offer to hold the meeting at the DEQ regional office nearest the facility. Compliance conferences also may be held via telephone or video conference calls.

The compliance conference will achieve the following:

- Provide the alleged violator the opportunity to explain any circumstances surrounding the alleged violations.
- Identify, discuss, and negotiate terms and conditions of a consent order that will result in resolving the alleged violations cited in the NOV.
- Explain that the negotiation process will result in an agreement on the final civil penalty.

The recipient may choose to be represented by an attorney at the conference. The recipient must inform DEQ that they will have an attorney attend the conference so DEQ can arrange for representation from the Office of the Attorney General (AG). Typically, the AG's role at the compliance conference is to present DEQ's case. The recipient may present any additional information needed to resolve the alleged violations and any good faith efforts taken to resolve the noncompliance issues. The IPDES Program staff who observed the noncompliance may be present to provide background information and clarification, and to take notes on the compliance conference.

At the conclusion of the compliance conference, each party will provide a position summary. Sometimes the alleged violator will need to provide additional information to DEQ to support the response to the NOV. The alleged violator may also request DEQ provide additional information. Time frames for submittal of additional information will be agreed upon. By the end

of the compliance conference, a determination will be made on whether the alleged violator is willing to enter into a consent order agreement.

Each compliance conference presents unique situations that must be dealt with as they arise. A compliance conference may last a few hours or a few days, depending on the number of alleged violations and the complexity of the issues involved. If it appears the alleged violator is not willing to enter into a consent order or is not negotiating in good faith, and an agreement will not be reached within 60 days of receiving the NOV, DEQ may pursue a civil action in district court to compel compliance (section 10.4.2.3.1).²⁵⁵

If the alleged violator is negotiating in good faith and making satisfactory progress towards achieving compliance by resolving the alleged violations, the compliance officer may, using discretion, continue to negotiate beyond the standard 60-day time frame.

10.4.2.1.2 Compliance Agreement Schedule

A compliance agreement schedule is an enforceable schedule that establishes actions necessary to maintain or come into compliance as expeditiously as practicable.²⁵⁶ The term of the agreement is not to exceed 10 years. Annual meetings between DEQ and the permittee will be included in the schedule when agreements last longer than 1 year.

10.4.2.2 Consent Order

Occasionally circumstances may result in a consent order being negotiated without the prior issuance of a noncompliance letter or NOV. DEQ has discretion to negotiate a consent order in these cases. The consent order may still provide for payment of penalties, stipulated penalties, performance of supplemental environmental projects (SEPs), and/or other sanctions, even though penalties were not imposed first through use of a NOV.

Situations that warrant the immediate negotiation of a consent order may occur when there is substantial immediate or potential imminent threat to human health or the environment. Negotiating a consent order directly without prior issuance of an NOV can result in corrective measures being agreed to that immediately address or stabilize the situation. This results in minimizing the threat to the public and the environment. In instances where the facility is willing to commit necessary resources to immediately address the noncompliance issues and where immediacy is an issue, retaining the flexibility to move directly to a negotiated consent order may prove effective in resolving the matter expeditiously and to the benefit of all.

DEQ typically will draft a consent order that includes the conditions agreed to by the parties during the compliance conference and any changes that may affect the assessed penalty. The facility will have the opportunity to review, comment on, and factually correct the draft consent order. Negotiations may continue until both parties agree on the terms and conditions of the consent order within a 60-day period.

Once the consent order is signed by the DEQ director, it is legally effective. The DEQ regional office with jurisdiction is then responsible for monitoring the facility's compliance with all of the conditions agreed to in the consent order. When the DEQ regional office has determined all of the conditions and terms of the consent order have been completed in a satisfactory manner, DEQ may recommend terminating the consent order.

Typically, consent orders include specific language on termination, requiring the facility to request a letter from DEQ that acknowledges the order's termination. In this example, DEQ would send a termination letter to the owner/operator of the facility specifically stating the terms and conditions of the consent order have been met, and DEQ considers the facility's regulatory status as "returned to compliance" with respect to the violations identified in the initial action. Once DEQ sends the termination letter to the facility, the enforcement case is considered resolved and the case is closed.

10.4.2.3 Judicial Actions

A judicial action will be pursued when DEQ and the AG have determined a violation of IPDES Program requirements is best settled in Idaho district court. Judicial actions may be required in the following circumstances:

- Noncompliance persists beyond a reasonable time or violations are alleged to have caused known harm to public health or the environment (civil suit).
- DEQ has considered and exhausted all other enforcement options (civil suit).
- Violator demonstrates a willful disregard to the IPDES Program requirements or water quality standards (criminal prosecution).

10.4.2.3.1 Civil Remedies

A civil suit is an enforcement action that seeks prosecution of a violator to be liable to the state for a sum assessed by the court.²⁵⁷ A civil suit is filed in district court by the AG in consultation with DEQ. Sufficient evidence must be available to prove the case in court. DEQ is not required to initiate or prosecute an administrative action before initiating a civil enforcement action.

10.4.2.3.2 Criminal Prosecution

It is a criminal offense for any person to do the following:

- Falsify, tamper with, or knowingly render inaccurate any monitoring device or method required to be maintained under an IPDES permit. In addition to any other remedy available to DEQ, such a violation is punishable by a fine.²⁵⁸
- Knowingly make any false statement, representation, or certification in any record or other document submitted or required to be maintained under an IPDES permit, including monitoring reports or reports of compliance or noncompliance. In addition to any other remedy available to DEQ, such a violation is punishable by a fine.²⁵⁹

Generally, criminal enforcement is reserved for only the most grievous violations of environmental statutes, regulations, and rules. In Idaho, criminal enforcement actions are rare. Criminal cases may be distinguished from civil ones by their greater magnitude, willfulness, negligence, and/or fraudulence. The decision as to whether criminal or civil proceedings should be pursued is made by the AG, in consultation with DEQ. The AG may delegate prosecution of criminal actions to the prosecuting attorney of the county in which such a criminal action may arise.²⁶⁰

In some situations, it may be possible to pursue both a civil or administrative environmental enforcement action and a criminal action against a violator based on the same set of facts. A case-by-case decision must be made by the prosecuting attorney whether to pursue the two types

of proceedings concurrently or to suspend prosecution of one proceeding (usually the civil one) pending completion of the other case.

The AG and DEQ are authorized to investigate and prosecute misdemeanor criminal environmental crimes.²⁶¹ The EPA's Criminal Investigations Division investigates both misdemeanor and felony criminal violations of CWA regulations in Idaho. The AG and DEQ will coordinate with the criminal investigations division about any violations warranting felony criminal prosecution.

10.4.2.3.3 Temporary Restraining Orders and Preliminary Injunctions

A temporary restraining order and preliminary injunction allow DEQ to seek immediate injunctive relief when there is an imminent and substantial danger to public health and the environment.²⁶²

10.5 Civil Penalties

Any person²⁶³ determined in a civil enforcement action to have violated any provision of statute, rule, permit, or order related to the IPDES Program may be assessed a monetary penalty not exceeding:

- \$10,000 per violation, or
- \$5,000 for each day of a continuing violation, whichever is greater²⁶⁴

Civil penalties will be assessed according to DEQ's *Enforcement Procedures Manual* (DEQ 2000).

10.6 Criminal Penalties

Any person who willfully or negligently violates any of the provisions of the non-air quality public health or environmental protection laws or the terms of any lawful notice, order, permit, standard, rule or regulation will be found guilty of a misdemeanor. Upon conviction, that person will be punished with a fine not exceeding:

- \$10,000 for each separate violation, or
- \$1,000 per day for continuing violations, whichever is greater²⁶⁵

This penalty may be applied to a willful or negligent act that violates Idaho's water quality standards or any provisions not specific to the IPDES Program.

Any person who willfully or negligently violates any IPDES standard or limit, permit condition, or filing requirement is guilty of a misdemeanor. Upon conviction, that person will be punished with a fine not exceeding \$10,000 per violation or for each day of a continuing violation.

Any person is guilty of a misdemeanor who knowingly acts as follows:

- Makes any false statement, representation, or certification in any IPDES form, in any notice or report required by an IPDES permit, or
- Renders inaccurate any monitoring device or method required to be maintained.

Upon conviction, that person will be punished with a fine not exceeding \$5,000 per violation or for each day of a continuing violation.²⁶⁶

The prosecuting attorney may recommend a punishable fine amount to the judge; however, criminal fines will be determined by the district court.

10.7 Supplemental Environmental Projects

SEP is defined as an environmentally beneficial project that a person is not otherwise required to perform and falls into at least one of four categories:

1. Pollution prevention
2. Pollution reduction
3. Public awareness
4. General enhancement of the quality of the environment²⁶⁷

Environmentally beneficial means a SEP must improve, protect, or reduce risks to public health or the environment. DEQ encourages using SEPs to furthering the objectives of the Idaho Environmental Protection and Health Act while deterring noncompliance with the provisions of those statutes and the administrative rules that implement them.²⁶⁸

SEP proposals will be considered during settlement negotiations. DEQ will only consider those SEP proposals describing activities the person is not otherwise required to perform by virtue of any local, state, or federal statute, regulation, rule, order, decree, permit, or other law or agreement (DEQ 2015).

DEQ's consideration of a particular SEP proposal will take into account the scope of DEQ's authorities under Idaho law and federal requirements. Proposals may be considered in all enforcement actions filed after its effective date and in all pending actions in which DEQ and the person against whom a penalty is directed have not reached agreement in principle on the specific terms of a SEP.

Although a proposal may appear to satisfy all of the provisions of DEQ policy (DEQ 2015), federal requirements, and Idaho law, DEQ may decide, for one or more reasons, that the SEP is not appropriate. In such case, the SEP will not be taken into account in mitigating the civil penalty amount. Acceptance of a particular SEP proposal will be made only after review by, and consultation with, the AG and DEQ.

DEQ may give preference to SEPs with an environmental benefit that has some relationship to the specific violations for which the enforcement action was brought or at least one of the more broad objectives of the underlying statutes. However, an SEP cannot be inconsistent with any provision of the underlying statutes. DEQ may also give preference to those projects with a benefit in the actual or general geographic location where the violations occurred.

10.8 EPA's Role

EPA retains oversight of all authorized NPDES programs in the country. During the phased approval process in Idaho, EPA will likely continue active involvement in compliance monitoring and enforcement activities, particularly for those components of the program for which DEQ has not yet been approved. EPA will work with and inform DEQ on planned actions

in Idaho. Instances may occur where DEQ will request EPA's assistance with a particular compliance monitoring activity or enforcement action. Examples include noncompliance events that involve waters of the United States flowing directly through tribal lands or into an adjacent state; where DEQ resources are limited and prevent proper oversight; and when willful or negligent acts warrant felony prosecution (section 10.4.2.3.2).

EPA may initiate a formal enforcement action where they determine DEQ's informal responses are inappropriate. Generally, EPA will not initiate a formal enforcement action where DEQ is actively pursuing a formal enforcement response.²⁶⁹ If EPA believes a state judgement or DEQ settlement provides a penalty amount that is substantially inadequate, EPA may initiate a separate action for penalties. If EPA administers a consent decree, the State of Idaho will be named as a necessary party according to CWA §309(e), which requires the state in which a municipality is located to be joined as a party whenever the municipality is a party to a civil action brought by the United States. Once a proposed consent decree is logged with the court, the settlement will be subject to a 30-day public comment period.

10.9 Public Participation

Nothing precludes citizens to undertake a civil action under CWA §505 (DEQ 2016c), and DEQ will not oppose intervention by any citizen when permissive intervention may be authorized by statute, rule, or regulation.²⁷⁰ DEQ will publish notice and provide at least 30 days for public comment before finalizing a settlement agreement, including payment of civil penalty.²⁷¹

10.9.1 Filing a Complaint with DEQ

Any concerned citizen may report an environmental concern with DEQ via phone, e-mail, or through DEQ's website. DEQ will investigate and provide written responses to citizen complaints.²⁷² When a citizen prefers to speak with someone directly, the appropriate DEQ regional office should be contacted. For information on which regional office to contact, refer to DEQ's website at www.deq.idaho.gov/regional-offices-issues/. Alternatively, a citizen may report an environmental concern by completing an online form available at www.deq.idaho.gov/contact-us/environmental-concern/.

Every effort will be made to protect the identity of a concerned citizen who wishes to remain anonymous. Citizens should state this request at the time the concern is being reported.

10.9.2 Reporting Emergencies

To report a spill or accident involving oil, gas, hazardous materials, anthrax, or explosives, call 911, which activates Idaho's Emergency Response Network, consisting of state and local agencies (including designated DEQ regional office personnel), and, if necessary, federal agencies.

11 Appeals, Stays, and Contested Conditions²⁷³

This section provides the regulated community with a brief introduction of the processes associated with appeals, stays, and contested conditions but is not meant to provide any specific legal guidance or direction. The "Rules Regulating the IPDES Program" (IDAPA 58.01.25.204,

205, and 206) include the requirements for filing and otherwise participating in an appeal. The rules should be reviewed and the advice of an attorney should be sought before making any appeal decisions.

11.1 Permit Appeals

Permit appeals are the process by which certain parties may legally contest a DEQ-issued final permit decision (Figure 10). Although DEQ will work closely with permit applicants, EPA, and the public throughout the permit development process and public comment period, situations may arise in which a permittee or other party objects to a DEQ-issued permit. These parties may then choose to contest or appeal a permit decision.

Alternatively, parties to a permit appeal may agree to use a means of alternative dispute resolution.

11.1.1 Petition for Review²⁷⁴

An appeal of a final IPDES permit decision to a DEQ hearing authority begins when an aggrieved person files a Petition for Review with DEQ's hearing coordinator. The aggrieved person must file a Petition for Review with the hearing coordinator within 28 days after DEQ serves notice of the final permit decision. The petitioner has the burden of proving the allegations in the Petition for Review.²⁷⁵

Aggrieved persons (those allowed to file a Petition for Review) are limited to the permit holder or applicant, and any person or entity who filed comments or who participated in the public meeting on the draft permit.

All Petitions for Review must adhere to the following:

- Be confined to the issues raised during the public comment process or to changes made to the permit by DEQ after the close of the public comment period.
- Identify the permit condition or other specific aspect of the permit decision that is being challenged.
- Identify the legal and factual basis for the petitioner's contentions.
- Identify the relief sought.
- Identify the basis for asserting that the petitioner is an aggrieved person.

A permit applicant or permit holder who did not file a Petition for Review but who wishes to participate in an appeal filed by another person must file a Notice of Appearance within 28 days of when the Petition for Review was filed.²⁷⁶

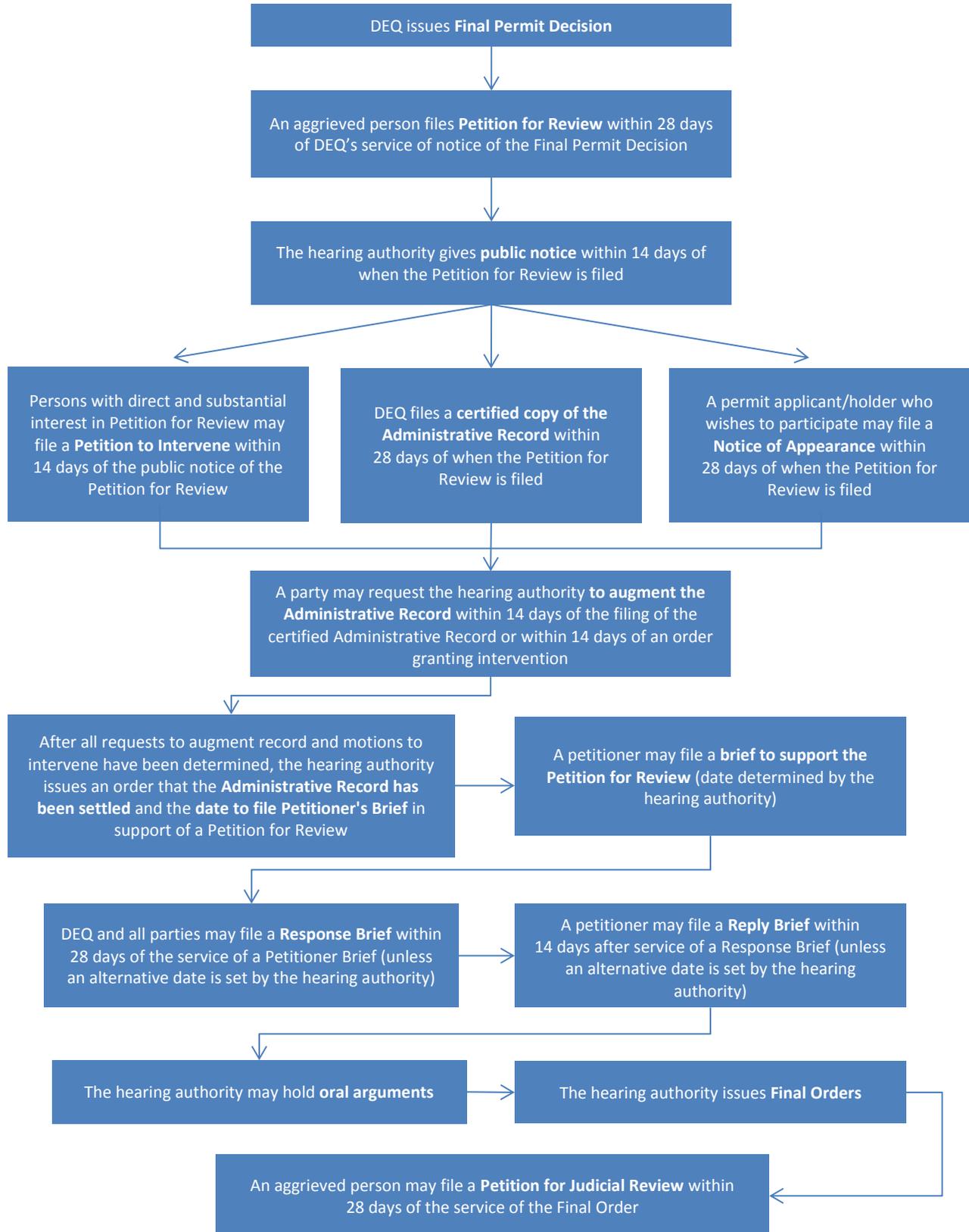


Figure 10. IPDES appeals process for final permit decisions (IDAPA 58.01.25.204).

11.1.2 Appeal Decided by the Hearing Authority²⁷⁷

The appeal is decided by the hearing authority. The hearing authority is an individual who is appointed by the DEQ director from a pool of individuals approved by the DEQ Board. The hearing authority is intended to have technical expertise or experience in the issues involved in the appeal.

11.1.3 Public Notice of the Petition for Review

Within 14 days of the date a Petition for Review is filed, the hearing authority must provide notice to the public that a Petition for Review has been filed.²⁷⁸

11.1.4 Petition to Intervene²⁷⁹

Any person who has a direct and substantial interest in the outcome of a Petition for Review may file a Petition to Intervene. Petitions to Intervene must be filed within 14 days of the public notice of the Petition for Review.

The hearing authority will grant intervention if a Petition to Intervene:

- Shows direct and substantial interest in the outcome of the Petition for Review.
- Does not unduly broaden the issues.
- Will not cause delay or prejudice to the parties.

Any party opposing a Petition to Intervene must file objections with the hearing coordinator within 7 days after service of the Petition to Intervene, and must serve the objection to all parties of record and upon the person petitioning to intervene.

11.1.5 Administrative Record

Within 28 days of when the Petition for Review is filed, DEQ must file a certified copy of the administrative record.²⁸⁰ The administrative record includes all documents and information upon which DEQ's final permitting decision was based, including the permit application, all public comments, DEQ's response to comments, and any draft and final permit issued.²⁸¹

The hearing authority's consideration of the Petition for Review is limited to the certified administrative record unless, upon the request of a party, the hearing authority allows the record to be augmented.²⁸² A request to augment the record must be filed within 14 days of the filing of the certified administrative record, unless intervention is granted (section 11.1.4). In which case, the request to augment must be filed within 14 days of the date of the order granting intervention.

The hearing authority may allow the record to be augmented if the requesting party shows that the additional information is material and relevant to the issues raised in the appeal:

- Good reasons exist for failure to present the information during the permitting proceeding.
- Alleged irregularities exist in the permitting proceeding and the party wants to introduce evidence of the alleged irregularities.

11.1.6 Petitioner Brief²⁸³

Once all requests to augment the record and motions to intervene have been determined, the hearing authority will issue an order notifying the parties that the administrative record has been settled and of the date by which the petitioner must file a petitioner's brief with the hearing coordinator in support of the Petition for Review. The brief must include the following:

- Legal arguments and citations that support the allegations in the Petition for Review
- Factual support for allegations in the Petition for Review, including citations to the administrative record
- Statement regarding whether the party desires an opportunity for oral argument

11.1.6.1 Response Briefs²⁸⁴

DEQ and all other parties must file response briefs within 28 days of the service of the petitioner's brief, unless the hearing authority sets an alternative date. The response brief must include the following:

- Response to the arguments and assertions in the petitioner's brief (either in support or opposed)
- Citation to all legal authorities and facts relied upon in the administrative record
- Statement regarding whether the party desires an opportunity for oral argument

11.1.6.2 Petitioner Reply Briefs²⁸⁵

Unless the hearing authority sets an alternative date, the petitioner may file a reply brief within 14 days after service of response briefs. A petitioner may not raise new issues or arguments in the reply.

11.1.7 Oral Arguments²⁸⁶

The hearing authority may hold oral arguments on its own initiative or at its discretion in response to a request by one or more of the parties.

11.1.8 Permit Withdrawal²⁸⁷

DEQ may, upon notifying the hearing authority and all parties, withdraw a permit or specified portions of a permit and prepare a new draft permit. The new draft permit will proceed through the same process of public comment and opportunity for a public meeting as would any other draft permit. If applicable, any portions of the permit that are not withdrawn continue to apply, unless they are stayed. An appeal continues for those portions of the permit that are contested in the appeal that DEQ does not withdraw.

11.1.9 Final Orders

The hearing authority issues final orders upon review of the petitions, briefs, and administrative record on appeal.²⁸⁸ Motions for reconsideration of any final order will not be considered.²⁸⁹

11.1.10 Judicial Reviews²⁹⁰

Any person aggrieved by a final agency action or determination has a right to file a Petition for Judicial Review. A Petition for Judicial Review must be filed within 28 days of service of a final order issued by the hearing authority.²⁹¹

A Petition for Judicial Review must be filed with the hearing coordinator and with the district court, and served on all parties. A Petition for Judicial Review must also be served upon the following:

- Hearing authority
- DEQ director
- State of Idaho AG

Petitions for judicial review may be filed in the District Court of the county in which the following occurs:²⁹²

- Hearing was held.
- Final agency action was taken.
- Party seeking review of the agency action resides.
- Real property or personal property that was the subject of the agency action is located.

11.1.11 Appeals of IPDES General Permits²⁹³

Persons affected by an IPDES general permit may not file a Petition for Review, but they may do either of the following:

- Challenge the conditions of a general permit by filing an action in court
- Apply for an individual IPDES permit and then petition the hearing authority to review the individual permit.

Any interested person may petition DEQ to require an individual IPDES permit for a discharger eligible for authorization to discharge under an IPDES general permit.²⁹⁴ Similarly, DEQ's decision to terminate, revoke, or deny coverage under a general permit and to require application for an individual permit may be appealed.

11.1.12 Appeals of Variances²⁹⁵

When DEQ issues a permit on which EPA has made a variance decision, separate appeals of the DEQ permit and of the EPA variance decision are possible. Variance decisions made by EPA may be appealed under federal regulations.

11.2 Appearances and Representation²⁹⁶

Unless otherwise authorized or required by law, the appearances and representation of parties or other persons in an IPDES appeal must be as follows:

- Natural persons may
 - Represent themselves.
 - Be represented by an attorney or, if the person lacks full legal capacity to act for themselves, be represented by a legal guardian or guardian ad litem or representative of an estate.

- General partnership may be represented by a partner or an attorney.
- Corporation, or any other business entity other than a general partnership, must be represented by an attorney.
- Municipal corporation, local government agency, unincorporated association, or nonprofit organization must be represented by an attorney.
- State, federal, or tribal governmental entity or agency must be represented by an attorney.

11.3 Filing and Service Requirements

All IPDES appeals documents must be filed with DEQ's hearing coordinator by one of the following methods:²⁹⁷

- Mail:
Hearing Coordinator
Idaho Department of Environmental Quality
1410 N. Hilton, Boise, ID 83706-1255
- Fax: (208) 373-0481
- File electronically

The documents are considered filed on the date received by the hearing coordinator, who will then provide a receipt confirmation to the originating party.

All IPDES-related petitions and briefs must provide the following:²⁹⁸

- In the caption, identify the following:
 - Permit applicant or holder
 - Permitted facility
 - Permit number
 - Case number, if available at the time of filing
 - Document title
- On the upper left corner of the first page, specify the following for the person filing the document:
 - Name
 - Address
 - Telephone number
 - E-mail address
 - Fax number (if any)
- If the person filing the document represents a party, the document must identify the name of the person or entity represented. No more than two representatives may be listed.

All documents filed after the Petition for Review must be served on all parties or representatives, unless otherwise directed by the hearing authority.²⁹⁹

Proof of Service³⁰⁰

Every document meeting the requirements for service must be attached to or accompanied by proof of service containing the following certificate:

I hereby certify that on this (*insert date*), a true and correct copy of the foregoing (*insert name of document*) was served on the following as indicated below:

(*insert names and addresses of parties and method of delivery (first class US mail, facsimile, hand-delivery, or overnight express)*)

(*Signature*)

11.4 Uncontested and Contested (Stayed) Permit Conditions

11.4.1 Uncontested Conditions

As soon as possible after receiving notification from the hearing coordinator that a Petition for Review was filed, DEQ will notify the hearing authority, the applicant, and all other parties of the uncontested (and severable) conditions of the final permit. These uncontested provisions of a permit become fully effective and enforceable 30 days after the notification date from the hearing coordinator.³⁰¹

While conditions in a permit are being contested (e.g., appealed), other permit conditions may become effective. These uncontested conditions may include, but are not limited to, the following:

- When effluent limits are contested, but the underlying control technology is not, the technology according to the permit compliance schedules is uncontested³⁰² (e.g., if a facility's discharge limits are contested, compliance schedule planning and construction milestones may remain uncontested).
- When a combination of technologies is contested, but a portion of the combination is not, that portion will be identified as uncontested³⁰³ (e.g., if multiple processes for some constituents are contested, but secondary treatment is not contested, associated effluent limits may be effective and uncontested).
- Preliminary design and engineering studies or other requirements necessary to achieve the final permit conditions that do not entail substantial expenditures.³⁰⁴
- Permit conditions that must be met regardless of the outcome of the appeal³⁰⁵ (e.g., standard permit conditions, such as the prohibition of discharging toxic chemicals at toxic concentrations, must still be complied with regardless of the permit conditions that are being contested).

Uncontested conditions not severable (independent) from contested conditions are considered contested and are stayed together with the contested conditions³⁰⁶ (e.g., sampling hardness when required to monitor/sample for metals).

11.4.2 Contested Conditions

During the appeals process, the force and effect of the contested permit conditions are stayed until final DEQ action on review.³⁰⁷ Contested (and stayed) conditions may include, but are not limited to, the following:

- Pollutant- and outfall-specific effluent limits
- Pollutant- and outfall-specific compliance schedules
- Influent and effluent flow rate
- Specific permit implementation requirements (e.g., monitoring installations)
- Uncontested conditions that are not severable from contested conditions

DEQ will identify the stayed provisions of permits for existing facilities, and sources. However, if the permit involves a new facility, new source, new discharger, or a recommencing discharger, DEQ will not issue a permit until contested conditions are resolved.³⁰⁸

Any facility or activity holding an existing permit must comply with the following:³⁰⁹

- Conditions of that permit during any modification or revocation and reissuance proceeding
- Conditions of the existing permit that correspond to the stayed conditions, unless compliance with the existing conditions is technologically incompatible with other conditions of the new permit, which have not been stayed

11.4.3 Stays Based on Cross Effects³¹⁰

DEQ may grant a stay based on the grounds that an appeal of one permit may result in changes to another IPDES permit, only when each of the permits involved has been appealed to DEQ.

No stay of an EPA-issued NPDES permit will be granted based on the stay of a DEQ-issued IPDES permit except at EPA's discretion, and only upon written request from DEQ.

12 Data Analysis and Considerations

12.1 Background

The inherent variability of environmental data makes it important to obtain a sufficient quantity and quality of samples to accurately characterize a water body or effluent. Limited data result in greater statistical uncertainty and increased variability. When data quantity and quality increase, the methods used by DEQ to determine RPTE water quality standards and to set WQBELs are more robust. Therefore, permittees often benefit from having a sufficient quantity and quality of data available for regulatory decision making.

DEQ, EPA, and permittees collect data on effluent and in-stream ambient waters for use in a variety of applications:

- To determine if water bodies are achieving water quality standards
- To estimate effluent concentrations and variability for permit development and compliance
- To estimate background concentrations for TMDLWLAs

12.1.1 Data Quality

To ensure that data collected for regulatory decision-making are valid and not affected by contamination from sampling or analytical techniques, quality control must be incorporated in all sampling event planning, collection, preparation, and analysis activities.

All data used for monitoring and reporting related to an IPDES permit are required to meet specific quality assurance requirements and be collected under a documented QAPP. EPA's *Guidance for Quality Assurance Project Plans* (QA/G-5; EPA 2002b) and *Requirements for Quality Assurance Project Plans* (QA/R-5; EPA 2001b) apply to all external data sources (e.g., federal databases and published data) and existing data collected by contractors or external organizations, unless specifically excluded by state or federal rules.

Third party data, also referred to as “secondary data” or “nondirect measurements,” require DEQ to develop a programmatic QAPP to identify data quality needs and criteria that will be used to assess the quality of that data. A DEQ-generated programmatic IPDES QAPP will specify the methods used to perform data verification, validation, and assessment, including any relevant statistical methods, required QC elements, and contractor certifications that must be satisfied to accept data from external sources (DEQ 2012a).

12.1.2 Data Applicability and Grouping

Similar to data quality, permit writers will evaluate whether the data are outdated or represent the appropriate environmental conditions suitable for use in permitting. For example, some permits have been administratively extended to the point that the permit reapplication data no longer reflect current conditions. Reference information becomes outdated and must be updated before relied upon for permitting. Alternatively, permit writers will need to evaluate whether data should be divided into flow periods, seasons, or other groupings because of the specific location and circumstances of the facility.

In these situations, IPDES permit writers will review data case-by-case and evaluate:

- Changes in the watershed
- Changes in facility discharge and processes
- Most current 3 to 5 years of data, initially
- Data older than 3 to 5 years, if applicable
- Assumptions and requirements of existing TMDL WLAs (e.g., compared to current water quality criteria)
- Seasonality and flow periods
- Need to collect additional data through monitoring or other actions (e.g., when data issues are identified, such as outdated data, no data, insufficient data, nonrepresentative data, or data not meeting quality objectives)
- Other information that may help identify data grouping and analyses to appropriately develop permit limits

These data and potential groupings (e.g., flow periods and seasonality) may need to be statistically verified and based on references and familiarity of the location, flow management, and other site-specific circumstances. Data older than 5 years is often used in permitting, especially water body flow data. Available and relevant data should be considered, but if data are excluded from the analyses, an explanation should be provided in the fact sheet. This evaluation

process provides permit writers a pathway to develop permit limits with accurate and current information.

12.2 Statistical Software

DEQ's *Statistical Guidance for Determining Background Ground Water Quality and Degradation* (DEQ 2014) identifies that developing robust statistical analysis requires clearly documenting the software used in the analysis, including version numbers and relevant information on the software source and publisher. Avoid using nonstandard methodologies to minimize interpretational problems or inappropriate conclusions. All software should be well documented and widely accepted for statistical analyses used to develop effluent limits.

DEQ may use a variety of statistical software packages, including those necessary for performing Monte Carlo or other specific statistical analyses. EPA's ProUCL v.5.1 statistical software is an example of acceptable software due to its ease of use, documentation, acceptance, and availability. The software is free and can be downloaded at <https://www.epa.gov/land-research/proucl-software>. It is easy to install and includes analysis tools for generating summary statistics for evaluating a RPTE.

12.3 Analytical Methods

In this section, the terms MDL and ML are used in reference to the MDL or ML in an IPDES permit.

Sampling and analytical methods used to determine compliance must conform to 40 CFR 136, which is referenced in IDAPA 58.01.02 and incorporated by reference in IDAPA 58.01.25, unless otherwise specified in the IPDES permit. When used for compliance, procedures for conducting clean and ultraclean metal analysis and procedures for conducting biological tests must be based on EPA-approved procedures³¹¹.

Quality control requirements for trace metals sampling and analysis are rigorous because of the high risk for inadvertent sample contamination. Trace level metals data can be compromised by contamination during standard sampling, filtration, storage, and analysis. Procedures referred to as "clean sampling" and "ultraclean sampling" have been developed by EPA to provide guidance in planning and executing sample collection and analysis. Additional information is provided in the draft *Guidance on the Documentation and Evaluation of Trace Metals Data Collected for Clean Water Act Compliance Monitoring* (EPA 1996c) and *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels* (EPA 1996d).

The following issues may also arise:

- Whether to use data that were collected using unofficial methods
- How to require monitoring and compliance of low limits when testing methods are not EPA-approved

One example is Method 1668 for polychlorinated biphenyls (PCBs). This method is not yet promulgated by EPA, yet recommended for water quality assessment but not for compliance purposes (VDEQ 2009). A similar issue is present with mercury, and more examples will occur with toxics rulemaking and lower water quality standards for these toxics. Detailed discussions

on these evolving issues are presented in section 12.3.2 and in DEQ's draft *Effluent Limit Development Guidance* (2017a).

Any test result used should represent current and projected effluent quality. If any significant process or analytical method changes occurred at a facility that could substantially affect the effluent characterization, then only data collected subsequent to those changes should be used for RPTE and WQBEL calculations. **However, all data must be submitted to DEQ with an explanation or qualifying reasons for data that may no longer be relevant. Permittees may not exclude any data from submission that would otherwise be required by a permit.** DEQ will present and document in the fact sheet, any data used in evaluating RPTE and disclose rejected data and the reasoning for the exclusion.

12.3.1 MDL and ML Definitions

Because many water quality criteria, as well as effluent and receiving water data, are at trace levels, analytical results of samples may yield concentrations not considered detectable (e.g., < MDL) or quantifiable (e.g., < ML) by the analytical method used by the laboratory. Consequently, data sets may include uncensored values (e.g., a measured or quantified value) and censored data (e.g., reported by the lab as below MDL or ML). The differences between MDL and ML, and how censored data are handled for RPTE and WQBEL calculations is an important component of the effluent development process (EPA 2005). The proper use of censored values in permit compliance determinations is also critical and is addressed in sections 12.3–12.4.

This issue continues to evolve on both technical and policy levels and may be revised as appropriate or adjusted on a permit-specific basis at DEQ's discretion. DEQ is using the following EPA definitions of MDL and ML with corresponding detection and quantitation levels. EPA defines MDL as³¹²:

...the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

EPA specifies that the laboratory is required to determine the MDL for each analyte according to the procedures in that part.

EPA defines ML as³¹³:

...the level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

EPA further identifies ML as³¹⁴:

The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor...

...EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level."

12.3.2 Sufficiently Sensitive Methods

EPA's rulemaking³¹⁵ requires NPDES applicants to use sufficiently sensitive EPA-approved analytical methods, where they exist, when submitting information required by a permit application quantifying the presence of pollutants in a discharge. The final rule also requires that, as a condition of permit development, to ensure compliance with permit limitations, the permit include requirements to monitor according to sufficiently sensitive EPA-approved methods, where they exist.

Consistent with EPA's rulemaking, DEQ³¹⁶ identifies an EPA-approved method as sufficiently sensitive for the following:

- The method ML is at or below the level of the applicable water quality criterion for the measured pollutant or pollutant parameter; or
- The method ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or
- When none of the EPA-approved methods for a pollutant can achieve the ML necessary to assess reasonable potential or to monitor compliance with a permit limit, applicants or permittees must use the method with the lowest ML among the EPA-approved methods for the pollutant, and this method would meet the definition of sufficiently sensitive.

Where an applicant can demonstrate that, despite a good faith effort to use a method that would otherwise meet the definition of sufficiently sensitive, the analytical results are not consistent with the QA/QC specifications for that method, DEQ may determine that the method is not performing adequately, and the applicant should select a different method from the remaining EPA-approved methods that is sufficiently sensitive³¹⁷.

When there is no EPA-approved analytical method and no DEQ requirement exists, the applicant may use any suitable method but must provide a description of the method. When selecting a suitable method, other factors such as a method's precision, accuracy, or resolution, may be considered when assessing the performance of the method³¹⁸.

Not all parameters have MDLs or MLs (e.g., temperature and pH). For EPA-approved methods that do not explicitly list MLs, the applicant or permittee can derive the minimum level from either the concentration of the lowest calibration standard in methods that dictate the concentrations of such standards, or as a multiple of the MDL or similar statistically derived detection limit concept³¹⁹.

For example, EPA's 1600 series method provides MLs. EPA (1996e) guidance suggests that an interim ML (IML) should be calculated when a method specified ML does not exist; the IML is equal to the MDL multiplied by 3.18:

$$\text{IML} = \text{MDL} \times 3.18$$

ML is more appropriate for methods that use calibration curves. IML applies to gravimetric methods (e.g., parameters such as TSS, hexane extractable materials [HEM]) and titration methods (e.g., parameters such as alkalinity, TKN). For example, EPA method 1664B for HEM defines the IML and ML, but there is no calibration curve used. Therefore, an acceptable calibration point may not apply because the method is gravimetric.

Reporting levels, instead of IMLs, may be more appropriate for parameters such as BOD, temperature, and dissolved oxygen. The IML applied as a reporting level may also apply to methods using factory calibrated spectrophotometers (e.g., Hach methods used for chemical oxygen demand, ammonia, nitrate, nitrite, and phosphorous). Whereas, temperature may be more appropriately defined as a level of sensitivity (e.g., +/- a tenth of a degree).

The method with the lowest detection limit may not always be appropriate. In situations where multiple EPA-approved methods are available for a pollutant, if the laboratory has demonstrated that it can achieve a method ML that is lower than the IPDES permit limit, then the laboratory method would be considered sufficiently sensitive even if it has a higher detection limit than another method. The applicant would then only need to show that the method selected has a method ML that is at least as sensitive as necessary to determine compliance with the water quality criterion, after accounting for allowable dilution³²⁰.

For example, several different methods are approved under 40 CFR 136 for the analysis of some pollutants with differing sensitivities and quantitation levels (e.g., mercury). It is important to apply the appropriate technique and ML for the specific pollutant and media sampled. Different methods are appropriate for measuring mercury concentrations in receiving water than measuring mercury concentration in biosolids. Biosolids do not need method 1631E, and requiring 1631E use for biosolids would decrease the measurement accuracy due to the dilutions required to get the sample into the analytical range.

12.3.3 Calculating and Reporting Values < MDL or ML

Sections 12.3.3.1–12.3.3.3 identify the procedures for IPDES permit writers and permittees to calculate and report effluent values.

12.3.3.1 Calculations Using Values < MDL or ML

To calculate average pollutant concentrations and average mass loads, assign zero (0) for each individual lab result that is less than the MDL, and use the numeric value of the MDL for each individual lab result that is between the MDL and ML (EPA 2005). When concentration data are equal to or greater than the ML, use the laboratory reported value to calculate the mass load.

12.3.3.2 Reporting Calculations of Average Values

If the resulting average pollutant concentration value is less than or equal to the MDL, report “less than {numeric value of the MDL}.” If the average value is greater than the MDL but less than the ML, report “less than {numeric value of the ML}.” If a value is equal to or greater than the ML, report and use the actual value. Compare the resulting average value to the compliance level in assessing compliance (EPA 2005).

12.3.3.3 Concentration and Mass Calculations

To calculate average concentrations, use Equation 1:

$$\frac{(Conc._1) + (Conc._2) \dots (Conc._n)}{(n \text{ Measurements})} = \text{Average Conc.} \left(\frac{mg}{L} \right)$$

Equation 1. Average concentration.

To calculate average mass loads, use Equation 2:

$$\frac{(Flow_1 \times Conc._1) + (Flow_2 \times Conc._2) \dots (Flow_n \times Conc._n)}{(n \text{ Measurements})} \times 8.34 = \text{Average Mass (lb/day)}$$

Equation 2. Average mass load.

Note: Flows must be in mgd and concentrations must be in mg/L.

Example: Calculate the average concentration and mass when concentration measurements are < MDL or < ML.

- Permit limits are 0.022 mg/L and 0.39 lb/day
- MDL is 0.010 and ML is 0.022 mg/L
- Measured flows and concentrations:
 - 2.0 mgd and < 0.010 mg/L (use 0 because it is < MDL)
 - 2.1 mgd and 0.030 mg/L
 - 2.2 mgd and 0.020 mg/L (use 0.010 because it is > MDL but < ML)

Calculate average concentration:

$$\frac{\left(0 \frac{mg}{L}\right) + \left(0.030 \frac{mg}{L}\right) + \left(0.010 \frac{mg}{L}\right)}{3} = 0.013 \bar{3} \frac{mg}{L}$$

- Report < 0.022 mg/L because the average concentration is greater than the MDL but less than the ML.

Calculate average mass:

$$\frac{\left(2.0 \text{ mgd} \times 0 \frac{mg}{L}\right) + \left(2.1 \text{ mgd} \times 0.030 \frac{mg}{L}\right) + \left(2.2 \text{ mgd} \times 0.010 \frac{mg}{L}\right)}{3} \times 8.34 = 0.2363 \left(\frac{lb}{day}\right)$$

- Round the result and report 0.24 lb/day, based on significant figures and the permit limit level of precision (1/100 lb/day).

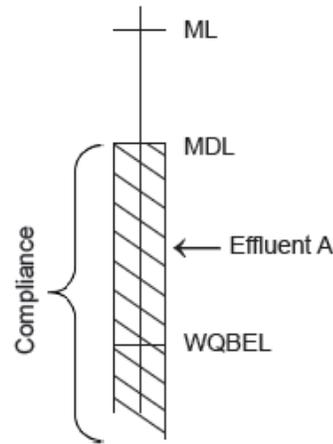
12.4 Compliance with WQBELs below MDL or ML

If a RPTE exists, DEQ will establish WQBELs in a permit. At times, DEQ will calculate WQBELs that are below the MDL or ML (Figure 11). In those cases, DEQ will establish a compliance evaluation level at the ML (EPA 2005). The permittee will monitor according to their permit, using an approved analytical method for the pollutant. DEQ will determine compliance with concentration and mass limits as follows:

- When the WQBEL is less than the MDL, effluent levels less than the MDL are in compliance with the WQBEL.
- When the WQBEL is less than the MDL, effluent levels greater than the MDL, but less than the ML, may be in compliance with the WQBEL, unless analytically and statistically confirmed to be above the MDL by a sufficient number of samples, analyses, and use of appropriate statistical techniques.
 - DEQ may require additional monitoring when effluent levels are between the MDL and ML.
 - DEQ may include as a permit condition that analytical results above the MDL, but below the ML, will trigger an investigation and possible corrective actions.
- When the WQBEL is greater than the MDL but less than the ML, effluent levels less than the ML are in compliance with the WQBEL.

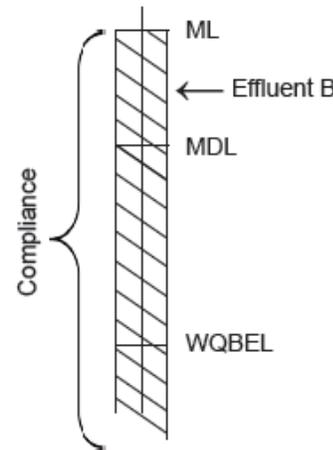
WQBEL < MDL < ML

A. Effluent < MDL = Compliance



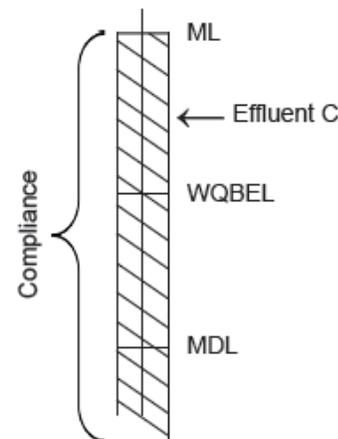
B. Effluent > MDL = Compliance

Unless analytically and statistically confirmed to be above the MDL by a sufficient number of samples, analyses, and use of appropriate statistical techniques.



MDL < WQBEL < ML

C. Effluent < ML = Compliance



ML - minimum level of quantification
 MDL - method detection limit
 WQBEL - water quality-based effluent limit

Figure 11. Compliance with water quality-based effluent limits that are below the MDL or ML.

12.5 Significant Figures, Rounding, and Precision

Much of the information in this section was adapted from the Oregon DEQ document, *The Use of Significant Figures and Rounding Conventions in Water Quality Permit* (ODEQ 2013).

12.5.1 Significant Figures

Regardless of the measuring device, uncertainty exists in a measurement. Significant figures include all of the digits in a measurement that are known with certainty plus one more digit, which indicates the uncertainty of the measurement. For example, a mass reported as 1.1 grams indicates the measurement is accurate to the nearest 0.1 gram (i.e., the actual mass is between 1.0 and 1.2 grams), but if the measurement is 1.10 grams, it is accurate to the nearest 0.01 gram. This uncertainty has implications both for permit limit development and for establishing compliance with a permit limit. Table 7 lists the significant figure conventions used by the IPDES Program.

Table 7. IPDES conventions for significant figures.

| Conventions | Examples | Number of Significant Figures |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------|
| 1. All nonzero digits (1-9) are counted as significant. | 23 | 2 |
| | 231 | 3 |
| 2. All zeros between nonzero digits are always significant. | 4308 | 4 |
| | 40.05 | 4 |
| 3. For numbers that do not contain decimal points, the trailing zeros may or may not be significant. In this situation, the number of significant figures is ambiguous, unless specified. | 470,000 | 2 to 6 |
| 4. For numbers that do contain decimal points, the trailing zeros are significant. | 0.360 | 3 |
| | 4.00 | 3 |
| 5. If a number is less than 1, zeros that follow the decimal point and are before a nonzero digit are not significant. | 0.00253 | 3 |
| | 0.0670 | 3 |

As indicated in the third convention above, numbers that contain trailing zeros but do not contain decimal points can be problematic. For example, “10” could be either one or two significant figures. The intention is unknown unless a note explicitly states how many significant figures exist.

Similarly, the number of significant figures can depend on the notation use. For example, 4.7×10^5 has 2 significant figures, whereas 4.70000×10^5 has 6 significant figures. Significant figures and trailing zeros are handled differently in software programs (e.g., NetDMR drops trailing zeros; Excel converts “10.” to “10”) making the units very important when dealing with reporting).

The problem of how to interpret numbers with trailing zeros is pervasive enough that EPA changed the maximum contaminant level (MCL) for arsenic in drinking water from 10 parts per billion to 0.010 parts per million to clarify the number of significant figures associated with the MCL.

For each effluent limit, IPDES permits should identify the units of measure and significant figures that DEQ will use to determine compliance.

12.5.2 Rounding

In reporting results and calculating permit limits or mass loads, it is necessary to round the results to the correct number of significant figures. The IPDES Program and permittees will utilize a hybrid approach in which the rounding convention used for a number ending in 5 depends on the context. In reporting measured values (values obtained directly from a laboratory or field measurement), 5 is rounded to the nearest even number. For calculated values (results obtained by using mathematic calculations on a laboratory or field measurement), 5 is rounded up. Table 8 lists the IPDES rounding conventions used.

Table 8. IPDES conventions for rounding calculated and measured values.

| Conventions for Rounding | Examples | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------|
| | Rounding Off Calculated Values | Rounding Off Measured Values |
| 1. If the digit dropped is 1, 2, 3 or 4, leave the preceding number as-is. | 1.11 → 1.1 | Same |
| | 1.12 → 1.1 | |
| | 1.13 → 1.1 | |
| | 1.14 → 1.1 | |
| 2. For calculations: if the digit dropped is 5, round the preceding digit up. | 1.15 → 1.2 | N/A |
| | 1.25 → 1.3 | |
| 3. For measurements: If the digit dropped is 5, round the preceding digit to the nearest even number (0 is considered an even number when rounding). | N/A | 1.15 → 1.2 |
| | | 1.25 → 1.2 |
| 4. If the digit dropped is 6, 7, 8 or 9, increase the preceding digit by one. | 1.16 → 1.2 | Same |
| | 1.17 → 1.2 | |
| | 1.18 → 1.2 | |
| | 1.19 → 1.2 | |

Notes:

- Calculated values—The digit 5 should be rounded up, unless the permittee follows the convention for measured values. Use the rounding convention consistently.
- Measured values—The digit 5 should be rounded to the nearest even number. Identify the rounding methodology used in the laboratory or monitoring QAPP.

For calculated results, rounding 5 is consistent with the Microsoft Excel software convention used by the IPDES Program and permittees to perform RPA-and reporting-related calculations. If commercial software packages and spreadsheets employ a different rounding routine, then the analyst should not change the results generated by the software. For measured values, rounding 5 to the nearest even number is consistent with *Standard Methods for the Examination of Water and Wastewater* (APHA, AWWA, and WEF 1999).

However, if a permit writer or permittee chooses to use the same convention for calculated and measured values, use the convention consistently. The rounding methodology employed should be identified in the laboratory or monitoring QAPP.

12.5.3 Reporting Significant Figures

Two types of permit limits include the following:

- Compliance is determined based on the results of a laboratory or field measurement.

- Compliance is based on the results of a mathematical calculation of a laboratory or field measurement.

If compliance is established based on a laboratory or field measurement, the number of significant figures in the permit limit should be the same as the number of significant figures associated with the laboratory or field measurement methodology.

If compliance is determined based on the results of a calculation, the number of significant figures in the permit limit should be determined in a manner that is consistent with the IPDES conventions for determining the number of figures to report (Table 9).

Permit writers should include in IPDES permits language clarifying how permittees should report significant figures on the DMR (DEQ 2017a draft Appendix A).

Table 9. IPDES conventions for determining the number of figures to report.

| Convention | Example |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. For multiplication or division. The number of significant figures in the result is equal to the smallest number of significant figures of the values used in the calculation.</p> | <p>$2.5 \times 3.42 = 8.55$ becomes 8.6</p> <p>2.5 has the fewest significant figures (two) so the final result has two significant figures.</p> |
| <p>2. For addition or subtraction. The number of decimal places in the result is equal to the number of decimal places in the least precise value used in the calculation.</p> <p><i>Note:</i> the number of decimal places is equal to the number of digits to the right of the decimal point.</p> | <p>$13.681 - 0.5 = 13.181$ becomes 13.2</p> <p>0.5 is reported to only one decimal place so the final answer has one decimal place.</p> <p><i>Note:</i> the number of digits in the answer is determined by the number of decimal places in the least precise measurement and not by the number of significant figures.</p> |
| <p>3. For calculations involving multiple arithmetic operations. The number of significant figures is determined by rules 1 and 2 above, with arithmetic operations performed in the following order:</p> <ol style="list-style-type: none"> Operations in parentheses Exponents Multiplication Division Addition Subtraction <p>In a situation with multiple operations, it is important not to round answers after each intermediate step. Instead keep track of the right most digit that would be retained based on rules 1 and 2 above (see underlined numbers on the right).</p> <p>The order of operations is seldom an issue in permitting. This information is included for completeness.</p> | <p>$(2.5 \times 3.42) + 13.681 - 0.5 = 21.731$ becomes 21.7</p> <ol style="list-style-type: none"> 1) First do the operation in parenthesis (in this case multiplication – rule 1 above) $= 8.55 + 13.681 - 0.5$ 2) Next perform addition - rule 2 above $= 22.231 - 0.5$ 3) Then subtraction – rule 2 above $= 21.731$ all digits carried through $= 21.7$ final rounding <p>In step 1, (based on rule 1), 8.55 would only be reported to two significant figures (retaining one decimal place). In this case, one place to the right of the decimal is the limiting digit for steps 2 and 3; therefore, the final result is reported to one decimal place.</p> |
| <p>4. For values that are not considered. Values that are considered “exact” numbers are not</p> | <p>Example 1: For a POTW with a design flow of 1.5 mgd, the</p> |

| Convention | Example |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>included in determining the final number of significant figures. Examples of exact values are provided below:</p> <p>a. Design/production flow of a treatment facility. By contrast, the measured flow at a facility is not an exact number and does affect the number of significant figures in a calculation. Measured flows at treatment plants typically have two significant figures.</p> <p>b. Conversion factors. These should be selected so that the number of digits is at least that associated with measured values used in a calculation.</p> <p>c. Values below the MDL or ML. Where the permittee uses <{value of MDL} or < {value of ML} when averaging, the MDL and ML are considered “exact” numbers and are not included in determining the final number of significant figures.</p> <p>d. Counted values such as:</p> <ol style="list-style-type: none"> i. Bacteria measurements ii. The number of samples iii. Values denoting time (days, months, etc.) | <p>mass load of a pollutant measured at 5.25 mg/L is calculated as follows:</p> $5.25 \text{ mg/L} \times 1.5 \text{ mgd flow} \times 8.34 = 65.7 \text{ lb}$ <p>The result contains three significant figures because the concentration of 5.25 contains three significant figures. The other numbers in the calculation, 1.5 mgd (design flow) and 8.34 (conversion factor), have no effect on the number of significant figures in the result.</p> <p>Note that if the mgd of the facility were measured at the plant rather than being supplied by the design engineer, then the number of significant figures associated with the flow would matter. Flow measurements typically have two significant figures.</p> <p>Example 2: What is the average of the following concentrations: 4.6 mg/L, 2.3 mg/L, < 0.1 mg/L, and < 0.2 mg/L</p> <p>Where MDL = 0.1; ML = 0.2</p> <p>Answer: $(4.6 + 2.3 + 0 + 0.1)/4 = 1.75 = 1.8 \text{ mg/L}$</p> <p>The number of significant figures is equal to the number of significant figures for the detected concentrations. However, a permittee would report the resulting average as < 0.2 because 1.8 is less than the ML.</p> <p>The 0 (< MDL) value, 0.1 (< ML value), and the 4 in the denominator (a counted value) do not affect the number of significant figures or decimal places in the final rounding.</p> |

12.5.4 Permit and Discharge Calculation Examples

Examples are provided below of how these rules may apply when developing mass load limits or when determining compliance with monthly mass load limits.

1. Calculate a permit limit for the average daily mass load of ammonia.

Example

Facility information:

- Average dry weather design flow = 1.25 mgd
- Permit limit for ammonia (Total Ammonia as N) = 5.0 mg/L
- Conversion factor from mgd and mg/L to lb/day = 8.34

The allowable mass load for ammonia from this facility is calculated as follows:

$$1.25 \text{ mgd} \times 5.0 \text{ mg/L} \times 8.34 = 52.13 \text{ lb/day} \rightarrow 52 \text{ lb/day}$$

Comments:

The resulting permit limit has been rounded to 2 significant figures because of the 2 significant figures in the ammonia concentration permit limit (5.0 mg/L). The number of significant figures in the permit limit is unaffected by the number of digits in the design flow or the conversion factor. If the calculated result had been 52.5 lb/day instead of 52.13 lb/day, the permit limit would have been rounded up to 53 lb/day.

Note that if the allowable ammonia concentration was greater than 10 mg/L, the permit limit would contain 3 significant figures instead of 2 (DEQ 2017a draft Appendix A).

2. Calculate the 7-day average concentration for ammonia.

Example

Facility information:

- Permit limit = 4.5 mg/L, sampled 4 times a week
- MDL = 0.1; ML = 0.2
- Measured concentrations = 0.5, 2.5, 12.7 mg/L and <0.1 mg/L

$$(0.5 + 2.5 + 12.7 + 0)/4 = 3.925 \text{ mg/L} \rightarrow 3.9 \text{ mg/L}$$

Comments:

The result has been rounded to 2 significant figures and is rounded because the permit limit contains 2 significant figures (4.5 mg/L).

Note that the lab result 12.7 contains more significant figures than the permit limit. However, this value is consistent with information provided in DEQ's (2017a) draft *Effluent Limit Development Guidance—Appendix A*. That is, ammonia values less than 10 mg/L should have 2 significant figures and 3 significant figures for values are greater than 10 mg/L. Also, 0.5, 2.5, and 12.7 mg/L only have one place to the right of the decimal so the result is reported to one decimal place (see convention 2 in Table 9).

Note that the nondetect (< MDL) is treated as zero and does not affect the number of significant figures in the final result. The value of 4 in the denominator also has no affect because it is a counted number.

3. Determine if the following facility is in compliance with their permit limit for average daily mass load of ammonia of 38 lb/day.

Example

Facility information:

- Average daily flow = 0.85 mgd
- Average daily concentration of ammonia (measured as Total Ammonia as N) = 5.0 mg/L
- Permit limit for ammonia (measured as Total Ammonia as N) = 5.4 mg/L
- Conversion factor from mgd and mg/L to lb/day = 8.34

The allowable mass load for ammonia from this facility is calculated as follows:

$$0.85 \text{ mgd} \times 5.0 \text{ mg/L} \times 8.34 = 35.5 \text{ lb/day} \rightarrow 36 \text{ lb/day}$$

Comments:

The result has been rounded off to 2 significant figures because of the 2 significant figures in the ammonia concentration permit limit (5.4 mg/L). The number of significant figures in the average daily flow from the facility (measured at 0.85 mgd) would also be limiting if it was clear that appropriate rounding and significant figure conventions had been used to derive that number. Lastly, the conversion factor has no effect on the number of significant figures.

12.6 Sample Size, Data Normality, and Outliers

12.6.1 Sample Size

This section specifically addresses quantifiable measurements above the detection limit not affected by censoring. Procedures for dealing with censored data are discussed in sections 12.3–12.4. The quality and quantity of available monitoring data are two of the most important factors in determining effluent and water quality. Individual samples only represent water quality at a particular time in a particular location, which often varies seasonally or changes with time and location. The greater the number of independent samples collected over time, the more representative the characterization of the effluent or water quality. Larger sample populations also increase the statistical confidence in the evaluation of effluent and water quality. Valid statistical testing depends upon collecting adequate data. Statistical tests rely on using estimates of the true mean and true variance of a population. For example, the estimate of the true mean is the average of the data points collected. The estimate of the true standard deviation is the standard deviation of the data points collected.

The number of samples needed to conduct a statistical analysis depends on the site-specific conditions, which in turn controls the data variability. Some existing sample size guidance documents include the following:

- EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance* (EPA 2009) recommends a minimum of 8 to 10 independent samples to estimate the standard deviation of a parametrically distributed statistical population (e.g., normal, gamma, or lognormal distributions).
- EPA (2004d) *Local Limits Development Guidance* identifies a procedure for establishing an acceptable minimum number of samples using the technique described in *Statistical Methods for Environmental Pollution Monitoring* (Gilbert 1987).
- EPA (1991a) also recommends that for data sets where $n < 10$, the coefficient of variation (CV) is estimated to equal 0.6 or the CV is calculated from data obtained from a discharger. For less than 10 data points, the uncertainty in the CV is too large to calculate a standard deviation or mean with sufficient confidence.
- DEQ recommends collecting a minimum of 12 independent samples for most IPDES statistical analysis methods (DEQ 2014).

In stark contrast, a tolerance interval estimate for a nonparametric distribution may require a minimum of 59 independent data points to achieve 95% coverage¹ at 95% confidence (Conover 1999, EPA 2009, and Gibbons 1994).

In other situations, such as the presence of a seasonal trend, the Seasonal Kendall Test requires a minimum of 3 years of monthly data, or 36 data points (Gilbert 1987). When quarterly data are sparse, the Kruskal-Wallis test can be used as long as there are at least 3 years of quarterly data collected in the same months (a minimum of 12 independent data points). To quantify serial correlation effects (temporal dependence), Harris et al. (1987) state that at least 10 years of quarterly data, or 40 data points, may be necessary.

Adequate sample size varies on a case-by-case basis and is a decision that must consider factors unique to each project and site. The goal of determining sample size for statistical analyses is to find the number of samples that provides adequate yet practically feasible evidence with which meaningful conclusions can be made. DEQ, in consultation with permittees, as appropriate, will make the final determination of what constitutes adequate sample size.

12.6.2 Data Normality

EPA has determined that daily measurements of many pollutants follow a lognormal distribution (EPA 2010a). Procedures in this guide allow permit writers to project a critical effluent or background concentration (e.g., the 99th or 95th percentile of a lognormal distribution of effluent concentrations) from a limited data set using statistical procedures based on the characteristics of the lognormal distribution. These procedures use the number of available effluent data points for the measured concentration of the pollutant and the CV of the data set, which is a measure of the variability of data around the average, to predict the critical pollutant concentration. Figure 12 provides an example of a lognormal distribution of effluent pollutant concentrations and projection of a critical effluent pollutant concentration (C_d).

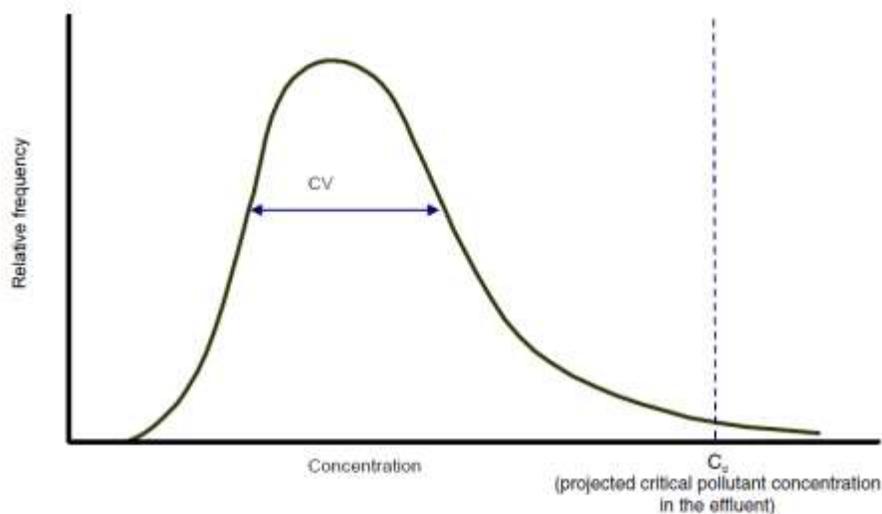


Figure 12. Example of lognormal distribution of effluent pollutant concentrations and projection of critical concentration (C_d) (EPA 2010).

¹ Where 95% of future samples will fall within the interval.

For pollutants that do not follow a lognormal distribution, DEQ will rely on alternative procedures to determine the critical pollutant concentration (e.g., evaluate the distribution as gamma or nonparametric) (DEQ 2014; EPA 2009, 2013b, 2013c).

12.6.3 Outlier Analysis

In any effluent or water body data set, it is possible that outliers (anomalous results) will exist. Outliers can have one of three causes: (1) a measurement or recording error, (2) an observation from a different population, or (3) a rare event with a very low probability of occurrence. Outliers can be discarded from the data set with adequate justification. For example, a valid justification for removing an outlier might be the simultaneous occurrence of extreme values in four independent data sets on the same day. This type of event would strongly suggest either a field contamination issue or a lab error.

The EPA's Unified Guidance (EPA 2009) and ProUCL manuals (EPA 2013b, 2013c) provide additional guidance on how outliers should be handled. For example, EPA's ProUCL statistical software evaluates data with the Dixon's or Rosner's tests at a specified significance level (recommend 5%). Rosner's test is used for data sets with $n \geq 25$, and Dixon's test is used for data sets with $n < 25$. Chapter 12 of EPA's Unified Guidance (EPA 2009) identifies the assumptions and requirements for Dixon's and Rosner's tests.

Outliers can also result from many factors other than a statistical anomaly. Examples may include the pursuit of treatment technology studies, optimization effort, and as a result of exploring better treatment performance. Treatment process testing can provide some unexpected results and looking at data in different ways can be useful for improving operations. Before undertaking any performance enhancing or testing activities, permittees should coordinate with DEQ. This coordination will provide upfront notice to DEQ and explain why, operationally, some data may be different.

In addition, DEQ will adhere to the following guidelines for outlier inclusion/exclusion and correction measures:

- If an error in transcription, dilution, or analytical procedure can be identified and the correct value recovered, then the observation should be replaced by its corrected value and further statistical analysis performed with the corrected value.
- If the observation is in error but the correct value cannot be determined, then the observation should be removed from the data set and further statistical analysis performed on the reduced data set. The observation removal and the reason for its removal should be documented in the fact sheet when reporting results of the analysis.
- If no error in the value can be documented, then it should be assumed that the observation is a true but extreme value. In this case, the value should not be altered or removed. However, it may be helpful to obtain another observation to verify or confirm the initial measurement.

Permit-required data that DEQ determines to be outliers and excludes from analyses must be explained in the fact sheet and not excluded from the administrative record.

References

- APHA, AWWA, and WEF (American Public Health Association, American Water Works Association, and Water Environment Federation). 1999. *Standard Methods for the Examination of Water and Wastewater, Part 1050 B*.
http://www.mwa.co.th/download/file_upload/SMWW_1000-3000.pdf
- Conference of Mayors et al. (United States Conference of Mayors, American Water Works Association, and Water Environment Federation). 2013. *Affordability Assessment Tool for Federal Water Mandates*. Boulder, CO: Stratus Consulting.
- Conover, W.L. 1999. *Practical Nonparametric Statistics*. 3rd ed. New York, NY: John Wiley & Sons.
- Defenders of Wildlife v. Browner 1999. 191 F.3d 1159 (9th Cir. 1999).
- DEQ (Idaho Department of Environmental Quality). 1997. *Idaho Waste Management Guidelines for Aquaculture Operations*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2000. *Enforcement Procedures Manual, May, 2000*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2001. *NPDES Decision Analysis Report #1*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2002a. *NPDES Decision Analysis Report #2*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2002b. *Water Body Assessment Guidance: Second Edition - Final*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2005a. *NPDES Decision Analysis Report #3*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2005b. *Catalog of Stormwater Best Management Practices for Idaho Cities and Counties*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2012a. *Quality Management Plan*. Boise, ID: DEQ. http://www.deq.idaho.gov/media/1069323-deq_quality_management_plan.pdf
- DEQ (Idaho Department of Environmental Quality). 2012b. *FINAL §401 Water Quality Certification for there-issuance of the NPDES Vessel General Permit (VGP) and Small Vessel General Permit (sVGP)*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2014. *Statistical Guidance for Determining Background Ground Water Quality and Degradation*. Boise, ID: DEQ.
www.deq.idaho.gov/media/1226/guidance-statistical-degradation.pdf
- DEQ (Idaho Department of Environmental Quality). 2015. *DEQ Policy Statement PS15-05: Supplemental Environmental Projects, May 21, 2015*. Boise, ID: DEQ.

- DEQ (Idaho Department of Environmental Quality). 2016a. Draft *Idaho Antidegradation Implementation Procedures*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2016b. Draft *Idaho Mixing Zone Implementation Guidance*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2016c. *Idaho Pollutant Discharge Elimination System: Public Participation in the Permitting Process*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2016d. *Idaho Water Quality Standards*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2016e. *Idaho Pollution Discharge Elimination System Compliance Monitoring Strategy*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2017a. Draft *Effluent Limit Development Guidance*. Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2017b. *Idaho Pollution Discharge Elimination System: Enforcement Response Guide*. Boise, ID: DEQ.
- DEQ and EPA (Idaho Department of Environmental Quality and US Environmental Protection Agency). 2016. Draft *National Pollutant Discharge Elimination System (NPDES) Memorandum of Agreement (MOA) Between the State of Idaho Department of Environmental Quality and U.S. Environmental Protection Agency, 10*. Boise, ID: DEQ and EPA.
- Environmental Defense Center et al. v. EPA 2002. 344 F.3d 832 (9th Cir. 2003).
- EPA (US Environmental Protection Agency). 1981. *NPDES Best Management Practices Guidance Document*. Washington, DC: Office of Water Enforcement and Permits.
- EPA (US Environmental Protection Agency). 1982. *Application Requirements for Modifications Under Sections 301(c) and 301(g) of the Clean Water Act*. Washington, DC: Office of Water Enforcement and Permits. <https://www3.epa.gov/npdes/pubs/owm0452.pdf>
- EPA (US Environmental Protection Agency). 1984a. *Continuance of NPDES General Permits Under the APA*. Washington, DC: Office of Water Enforcement and Permits. <https://www3.epa.gov/npdes/pubs/owm0438.pdf>
- EPA (US Environmental Protection Agency). 1984b. *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants*. Washington, DC: Office of Water. <https://www3.epa.gov/npdes/pubs/owm0436.pdf>
- EPA (US Environmental Protection Agency). 1984c. *Draft Guidance for Application and Review of Section 301(c) Variance Requests*. Washington, DC: Office of Water Enforcement and Permits. <https://www3.epa.gov/npdes/pubs/OWM0469.pdf>
- EPA (US Environmental Protection Agency). 1984d. *Draft Technical Guidance Manual for the Regulations Promulgated Pursuant to Section 301(g) of the Clean Water Act of 1977 40 CFR Part 125 (Subpart F)*. Washington, DC: Office of Water. <https://www3.epa.gov/npdes/pubs/owm0008.pdf>

- EPA (US Environmental Protection Agency). 1987a. *Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants*. February. Washington, DC: Office of Water. <https://www3.epa.gov/npdes/pubs/owm0393.pdf>
- EPA (US Environmental Protection Agency). 1987b. *Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants*. July. Washington, DC: Office of Water. <http://nepis.epa.gov/Exe/ZyNET.exe/10004N39.txt>
- EPA (US Environmental Protection Agency). 1989a. *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations*. Cincinnati, OH: Risk Reduction Engineering Laboratory. EPA-600-2-88/070.
- EPA (US Environmental Protection Agency). 1989b. *FY 1990 Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements*. Washington, DC: Office of Water.
- EPA (US Environmental Protection Agency). 1991a. *Technical Support Document for Water Quality-Based Toxics Control*. Washington, DC: Office of Water. EPA/505/2-90-001.
- EPA (US Environmental Protection Agency). 1991b. *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*. Washington, DC: Office of Research and Development. EPA/600/6-91/003.
- EPA (US Environmental Protection Agency). 1992a. *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems*. Washington, DC: Office of Water. EPA 833-B-9202.
- EPA (US Environmental Protection Agency). 1992b. *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*. Washington, DC: Office of Research and Development. EPA/600/6-91/005F.
- EPA (US Environmental Protection Agency). 1993a. *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity*. Washington, DC: Office of Research and Development. EPA/600/R-92/080.
- EPA (US Environmental Protection Agency). 1993b. *Methods for Aquatic Toxicity Identification Evaluations: Phase III Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*. Washington, DC: Office of Research and Development. EPA/600/R-92/081.
- EPA (US Environmental Protection Agency). 1994a. *A Plain English Guide to the EPA Part 503 Biosolids Rule*. Washington, DC: Office of Wastewater Management. EPA-832-R-93-003.
- EPA (US Environmental Protection Agency). 1994b. *Water Quality Standard Handbook: Second Edition*. Washington, DC: Office of Water. EPA-823-B-94-005a.
- EPA (US Environmental Protection Agency). 1994c. *Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors – July 1994*. Washington, DC: Office of Science and Technology. EPA-822-R-94-002.

- EPA (US Environmental Protection Agency). 1995a. *Interim Economic Guidance for Water Quality Standards*. Washington, DC: Office of Water. EPA-823-B-95-002.
- EPA (US Environmental Protection Agency). 1995b. *Revision of NPDES Significant Noncompliance (SNC) Criteria to Address Violations of Non-Monthly Average Limits*. Washington, DC: Office of Enforcement and Compliance Assurance.
- EPA (US Environmental Protection Agency). 1995c. *Interim Clean Water Act Settlement Penalty Policy*. <https://www.epa.gov/sites/production/files/documents/cwapol.pdf>
- EPA (US Environmental Protection Agency). 1996a. *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits*. Washington, DC: Office of Water. EPA-833-D-96-001.
- EPA (US Environmental Protection Agency). 1996b. *General Design for SNC Redefinition Enhancement in PCS*. Washington, DC: Office of Enforcement and Compliance.
- EPA (US Environmental Protection Agency). 1996c. *Draft Guidance on the Documentation and Evaluation of Trace Metals Data Collected for Clean Water Act Compliance Monitoring*. Washington, DC: Office of Science and Technology.
<https://nepis.epa.gov/Exe/ZyNET.exe/P10058HZ.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5Ctxt%5C00000024%5CPI0058HZ.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>
- EPA (US Environmental Protection Agency). 1996d. *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*. Washington, DC: Office of Water.
https://www3.epa.gov/caddis/pdf/Metals_Sampling_EPA_method_1669.pdf
- EPA (US Environmental Protection Agency). 1996e. *EPA Region 10 Guidance for WQBELs Below Analytical Detection/Quantitation Level*. Seattle, WA: Office of Water.
<https://dec.alaska.gov/water/npdes/Binders/application/APDES%20Application%20Guidance%20Documents/EPA%20Region%2010%20Guidance%20for%20%20WQBEL%20below%20detection%20level.pdf>
- EPA (US Environmental Protection Agency). 1997. *Region 8: Significant Noncompliance*. Denver, CO; EPA, Region 8.
<https://www.epa.gov/sites/production/files/documents/SNCGuidance.pdf>
- EPA (US Environmental Protection Agency). 1999. *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*. Washington, DC: Office of Wastewater Management. EPA/833B-99/002.
- EPA (US Environmental Protection Agency). 2000. *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR 136)*. Washington, DC: Office of Water. EPA 821-B-00-004.

- EPA (US Environmental Protection Agency). 2001a. *Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program*. Washington, DC: Office of Wastewater Management.
- EPA (US Environmental Protection Agency). 2001b. *EPA Requirements for Quality Assurance Project Plans: EPA/QA/R-5*. Washington, DC: Office of Environmental Information. EPA/240/B-01/003.
- EPA (US Environmental Protection Agency). 2002a. *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*. Washington, DC: Office of Water.
- EPA (US Environmental Protection Agency). 2002b. *Guidance for Quality Assurance Project Plans: EPA QA/G-5*. Washington, DC: Office of Environmental Information. EPA/240/R-02/009.
- EPA (US Environmental Protection Agency). 2004a. *NPDES Compliance Inspection Manual*. Washington, DC: Office of Enforcement and Compliance Assurance. EPA 305-X-04-001. https://www.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf
- EPA (US Environmental Protection Agency). 2004b. *Report to Congress: Impacts and Control of CSOs and SSOs*. Washington, DC: Office of Water. EPA 833-R-04-001.
- EPA (US Environmental Protection Agency). 2004c. *Implementing the Partial Remand of the Stormwater Phase II Regulations Regarding Notices of Intent & NPDES General Permitting for Phase II MS4s*. Washington, DC: Office of Wastewater Management. <https://www3.epa.gov/npdes/pubs/hanlonphase2apr14signed.pdf>
- EPA (US Environmental Protection Agency). 2004d. *Local Limits Development Guidance*. Office of Wastewater Management. EPA 833-R-04-002A. https://www3.epa.gov/npdes/pubs/final_local_limits_guidance.pdf
- EPA (US Environmental Protection Agency). 2005. *Guidance on Water Quality Based Effluent Limits Set Below Analytical Detection/Quantitation Limits*. Seattle, WA: EPA Region 10. [https://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Permits+Homepage/\\$FILE/ML-MDL-Policy-4-25-05.pdf](https://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Permits+Homepage/$FILE/ML-MDL-Policy-4-25-05.pdf)
- EPA (US Environmental Protection Agency). 2007a. *MS4 Program Evaluation Guidance*. Washington, DC: Office of Wastewater Management. EPA-833-R-07-003.
- EPA (US Environmental Protection Agency). 2007b. *EPA's Interim Significant Noncompliance Policy for Clean Water Act Violations Associated with CSOs, SSOs, CAFOs, and Storm Water Point Sources*. Washington, DC: Office of Compliance.
- EPA (US Environmental Protection Agency). 2007c. *Authorization to Discharge under the NPDES Epicenter Aquaculture*. Seattle, WA: EPA Region 10. ID-002826-6.
- EPA (US Environmental Protection Agency). 2007d. *Authorization to Discharge under the NPDES Aquaculture Facilities in Idaho, subject to Wasteload Allocations under Selected Total Maximum Daily Loads*. Seattle, WA: EPA, Region 10. IDG-130000.

- EPA (US Environmental Protection Agency). 2007e. *Authorization to Discharge under the NPDES Cold Water Aquaculture Facilities in Idaho (not subject to Wasteload Allocations)*. Seattle, WA: EPA, Region 10. IDG-131000.
- EPA (US Environmental Protection Agency). 2007f. *Authorization to Discharge under the NPDES Fish Processors associated with Aquaculture Facilities in Idaho*. Seattle, WA: Region 10. IDG-132000.
- EPA (US Environmental Protection Agency). 2008a. *Implementation of Clean Water Act Section 316(a) Thermal Variances in NPDES Permits (Review of Existing Requirements)*. Washington, DC: Office of Wastewater Management.
- EPA (US Environmental Protection Agency). 2008b. *Single Event Violation Data Entry Guide for ICIS-NPDES*. Washington, DC: Office of Compliance.
- EPA (US Environmental Protection Agency). 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance*. Washington, DC: Office of Resource Conservation and Recovery.
<https://nepis.epa.gov/Exe/ZyNET.exe/P10055GQ.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2006+Thru+2010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C06thru10%5Ctxt%5C00000011%5CP10055GQ.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL#>
- EPA (US Environmental Protection Agency). 2010a. *NPDES Permit Writer's Manual*. Washington, DC: Office of Wastewater Management. EPA-833-K-001.
- EPA (US Environmental Protection Agency). 2010b. *MS4 Permit Improvement Guide*. Washington, DC: Office of Water. EPA 833-R-10-001.
- EPA (US Environmental Protection Agency). 2011. *Achieving Water Quality Through Integrated Municipal Stormwater and Wastewater Plans*. Washington, DC: Office of Water.
- EPA (US Environmental Protection Agency). 2012a. *Integrated Municipal Stormwater and Wastewater Planning Approach Framework*. Washington, DC: Office of Water.
- EPA (US Environmental Protection Agency). 2012b. *National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities*. Washington, DC: Office of Water. https://www3.epa.gov/npdes/pubs/cgp2012_finalpermit.pdf
- EPA (US Environmental Protection Agency). 2012c. *Authorization to Discharge under the NPDES for Concentrated Animal Feeding Operations (CAFO)*. Seattle, WA: EPA, Region 10. IDG010000.
- EPA (US Environmental Protection Agency). 2013a. *Assessing Financial Capability for Municipal Clean Water Act Requirements*. Washington, DC: Office of Water.

- EPA (United States Environmental Protection Agency). 2013b. *ProUCL 5.0 Software and User Guide*. Washington, DC: Office of Research and Development. EPA/600/R-07/041
https://www.epa.gov/sites/production/files/2015-03/documents/proucl_v5.0_user.pdf
- EPA (United States Environmental Protection Agency). 2013c. *ProUCL 5.0 Technical Guide*. Washington, DC: Office of Research and Development. EPA/600/R-07/041
https://www.epa.gov/sites/production/files/2015-03/documents/proucl_v5.0_tech.pdf
- EPA (US Environmental Protection Agency). 2014a. *Financial Capability Assessment Framework for Municipal Clean Water Act Requirements*. Washington, DC: Office of Water.
- EPA (US Environmental Protection Agency). 2014b. *Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs."* Washington, DC: Office of Wastewater Management.
https://www3.epa.gov/npdes/pubs/EPA_SW_TMDL_Memo.pdf
- EPA (US Environmental Protection Agency). 2014c. *Post-Construction Performance Standards and Water Quality-Based Requirements; A Compendium of Permitting Approaches*. Washington, DC: Office of Water. EPA 833-R-14-003.
- EPA (US Environmental Protection Agency). 2014d. *NPDES Fact Sheet: Idaho Groundwater Remediation Discharge Facilities*. IDG911000.
https://www3.epa.gov/region10/pdf/permits/npdes/id/idg911000_fs_033114.pdf
- EPA (US Environmental Protection Agency). 2015. *United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)*. Washington, DC: Office of Water. https://www.epa.gov/sites/production/files/2015-10/documents/msgp2015_finalpermit.pdf
- EPA (US Environmental Protection Agency). 2016a. "Integrated Compliance Information System (ICIS)." Accessed January 26, 2016. <https://icis.epa.gov/icis/>.
- EPA (US Environmental Protection Agency). 2016b. "NPDES General Permit Inventory and eNOI Search Tool." National Pollutant Discharge Elimination System (NPDES). Accessed January 22, 2016. <http://ofmpub.epa.gov/apex/aps/f?p=LANDING:HOME>.
- Gibbons, R.D. 1994. *Statistical Methods for Groundwater Monitoring*. New York, NY: John Wiley & Sons.
- Gilbert, R.O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. New York, NY: Van Nostrand Reinhold.
- Harris, J., J.C. Loftis, and R.H. Montgomery. 1987. Statistical Methods for Characterizing Ground-Water Quality. *Ground Water*. 25(2): 185–193.
- Kalur v. Resor. 1971. Civ. Action No. 1331-71. DDC Dec. 21, 1971.

Northwest Environmental Advocates et al. v. EPA 2005. US Dist. LEXIS 5374 (ND Cal. March 30, 2005).

NRDC et al. v. Train. 1976. 8 E.R.C. 2120. DDC 1976.

ODEQ (Oregon Department of Environmental Quality). 2013. *The Use of Significant Figures and Rounding Conventions in Water Quality Permitting*. Portland, OR: ODEQ
<http://www.deq.state.or.us/wq/pubs/imds/SigFigsIMD.pdf>

US Court of Appeals for the Ninth Circuit. 2003. 344 F.3d 832 (9th Cir. 2003). Argued and submitted 2001; filed 2003.

VDEQ (Commonwealth of Virginia, Department of Environmental Quality). 2009. *TMDL Guidance Memo No. 09-2001. Guidance for monitoring of point sources for TMDL development using low-level PCB method 1668*. Richmond, VA: VDEQ.
<http://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/PCB/pcbmonguidance.pdf>

Key Terms

Citations for key terms used in this guide are provided below. To see the official definition for a term, users should go directly to the rule that is referenced.

| | |
|--------------------------------------------------------|---------------------------------|
| Animal Feeding Operation (AFO) | IDAPA 58.01.25.010.01.a and b. |
| Antibacksliding | Clean Water Act section 402(o). |
| Application | IDAPA 58.01.25.010.03. |
| Background | IDAPA 58.01.25.010.08. |
| Balanced, Indigenous, Community (or Population) | 40 CFR 125.71(c). |
| Best Management Practices (BMPs) | IDAPA 58.01.25.010.09. |
| Biochemical Oxygen Demand (BOD) | IDAPA 58.01.25.010.10. |
| Bypass | IDAPA 58.01.25.010.12. |
| Compliance Schedule or Schedule of Compliance | IDAPA 58.01.25.010.17. |
| Concentrated Animal Feeding Operation (CAFO) | IDAPA 58.01.25.010.18. |
| Concentrated Aquatic Animal Production (CAAP) | IDAPA 58.01.25.010.19. |
| Direct discharge | IDAPA 58.01.25.010.24. |
| Discharge | IDAPA 58.01.25.010.27. |
| Discharge Monitoring Report (DMR) | IDAPA 58.01.25.010.26. |
| Discharge of a Pollutant | IDAPA 58.01.25.010.28. |
| Draft Permit | IDAPA 58.01.25.010.29. |
| Effluent | IDAPA 58.01.25.010.30. |
| Effluent Data | 40 CFR 2.302(a)(2)(i)–(ii) |
| Effluent Limitation | IDAPA 58.01.25.010.31. |
| Effluent Limitation Guidelines (ELG) | IDAPA 58.01.25.010.32. |
| Facility or Activity | IDAPA 58.01.25.010.38. |

| | |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fundamentally Different Factors | IDAPA 58.01.02.010.39 |
| General Permit | IDAPA 58.01.02.010.40 |
| Hearing Authority | IDAPA 58.01.25.204.20 |
| Hydrologically-Based Design Flow | IDAPA 58.01.02.010.50 <ul style="list-style-type: none"> • 1Q10 (IDAPA 58.01.02.210.03.b.i) • 1B3 (IDAPA 58.01.02.210.03.b.ii) • 7Q10 (IDAPA 58.01.02.210.03.b.iii) • 4B3 (IDAPA 58.01.02.210.03.b.iv) • Harmonic Mean Flow (IDAPA 58.01.02.210.03.b.v) |
| Idaho Pollutant Discharge Elimination System (IPDES) | IDAPA 58.01.25.010.42 |
| Indirect Discharger | IDAPA 58.01.25.010.45 |
| Intake Pollutant | IDAPA 58.01.25.303.07.a.i |
| Load Allocation (LA) | IDAPA 58.01.25.010.50 |
| Major Facility | IDAPA 58.01.25.010.51 |
| Method Detection Limit (MDL) | 40 CFR 136, Appendix B |
| Minimum Level (ML) | 40 CFR 136, Table 2 |
| Mixing Zone | IDAPA 58.01.25.010.54 |
| Municipality | IDAPA 58.01.25.010.55 |
| National Pollutant Discharge Elimination System (NPDES) | IDAPA 58.01.25.010.56 |
| New Discharger | IDAPA 58.01.25.010.57 |
| New Source | IDAPA 58.01.25.010.58 a. |
| Notice of Intent to Deny | IDAPA 58.01.25.010.59 |
| Notice of Intent (NOI) to Obtain Coverage Under an IPDES General Permit | IDAPA 58.01.25.010.60 |
| Owner or Operator | IDAPA 58.01.25.010.62 |
| Permit | IDAPA 58.01.25.010.63 |
| Person | IDAPA 58.01.25.010.64 |
| Person Aggrieved | IDAPA 58.01.25.204.01.a |
| Point source | IDAPA 58.01.25.010.65 |
| Pollutant | IDAPA 58.01.25.010.66 |

| | |
|---------------------------------------------------------|-------------------------|
| Pretreatment | IDAPA 58.01.25.010.68 |
| Process Wastewater | IDAPA 58.01.25.010.71 |
| Proposed Permit | IDAPA 58.01.25.010.72 |
| Publicly Owned Treatment Works (POTW) | IDAPA 58.01.25.010.73 |
| Reasonable Potential Analysis (RPA) | 58.01.25.302.06.a.ii–vi |
| Reasonable Potential to Exceed (RPTE) | 58.01.25.302.06.a.ii–vi |
| Recommencing Discharger | IDAPA 58.01.25.010.75 |
| Secondary Treatment | IDAPA 58.01.25.010.78 |
| Sewage Sludge | IDAPA 58.01.25.010.84 |
| Source | IDAPA 58.01.25.010.90 |
| Storm Water | IDAPA 58.01.25.010.94 |
| Technology-Based Effluent Limitation (TBEL) | IDAPA 58.01.25.010.95 |
| Total Maximum Daily Load (TMDL) | IDAPA 58.01.02.010.100 |
| Treatment Works Treating Domestic Sewage (TWTDS) | IDAPA 58.01.25.010.100 |
| Upset | IDAPA 58.01.25.010.101 |
| Variance | IDAPA 58.01.25.103 |
| Wasteload Allocation (WLA) | IDAPA 58.01.25.010.104 |
| Water Body (Unit) | IDAPA 58.01.02.010.110 |
| Water Quality-Based Effluent Limitation (WQBEL) | IDAPA 58.01.25.010.107 |
| Waters of the United States | IDAPA 58.01.25.003.aa |
| Whole Effluent Toxicity | IDAPA 58.01.25.010.110 |

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Appendix A. 2016 NPDES Permits in Idaho

EPA-issued NPDES permits in Idaho that are effective or administratively continued, as of January 2016 are listed. The numbers and examples presented are subject to change.

Table A-1. 2016 NPDES permits in Idaho.

| Sector | NPDES Permits | Examples | Notes |
|---------------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Municipal | | | |
| POTWs ^a | 116 | Cities of Aberdeen, Blackfoot, Boise, Caldwell, Deary, and Fairfield | Includes domestic sewage treatment works that may not be publicly owned but essentially function as POTWs (e.g., Elk Valley Subdivision, The Meadows LLC, Jug Mountain Ranch LLC, and Avimor (2015 draft permit) (EPA 2016a). |
| Pretreatment | 12 | Cities of Boise, Coeur d'Alene, Nampa, Pocatello, and Twin Falls | POTWs with EPA-approved pretreatment programs. Facilities treat indirect industrial, manufacturing, and commercial discharges (EPA 2016a). |
| Sewage sludge | 222 generators | | DEQ estimates approximately 222 sewage sludge generators in Idaho (Tressa Nicholas, pers. comm., 2016). Of these sewage sludge generators, 118 facilities operate under NPDES permits to discharge to waters of the United States. Eighty additional facilities operate only under active DEQ reuse permits, and do not discharge to waters of the United States (25 facilities with both NPDES and DEQ reuse permits). Twenty-four facilities generate sewage sludge but do not have NPDES or DEQ reuse permits (e.g., generate sewage sludge and send to landfills or other treatment and disposal options). In addition to the generators, three facilities process but do not generate sewage sludge. |
| | 118 NPDES permits | NPDES permitted facilities—Worley, Kendrick, Star. | |
| | 24 non-NPDES | Nonpermitted facilities—Firth, Blaine County, Ahsahka. | |
| | 3 process-only facilities | Process-only facilities—Selle Soils Solutions, Latah Sanitation, Inc., Alvin Allen | |
| CSSs ^b | 0 | Sandpoint, Glens Ferry | Some relic CSSs exist in Idaho, but no known CSOs exist. ^c |
| SSOs ^d | Not permitted | Eight SSO events were reported in 2015, with three of those events reaching surface waters. | SSOs are a prohibited discharge under CWA with strict associated liability. |
| MS4s ^e | 16 | Post Falls MS4, Pocatello, Chubbuck, Bannock County, and Idaho Transportation Department District #5 MS4, Middleton MS4 | One NPDES-permitted Phase I MS4 and 15 Phase II MS4s in Idaho (EPA 2016a). In 2016, EPA is drafting a general permit for all MS4s, statewide. |
| Nonmunicipal | | | |
| Industrial, commercial, manufacturing | 40 | Bennett Timber Products Inc., Clearwater Paper, Independent Meat Co., McCain Foods USA | Permits include industrial, commercial, and manufacturing facilities discharging process and nonprocess wastewater (EPA 2016a). |
| MSGP ^f | Approx. 267 | LKQ Corporation, ABM Mining Corporation, Amalgamated Sugar Company LLC, Western Stockmen | EPA estimates that 267 facilities were covered by the 2008 MSGP when it expired (effective 2008–2013). Of the 180 facilities that have filed NOIs for the 2015 MSGP permit, approximately 82 are active certificates of no exposure (Margaret McCauley, pers. comm., 2016). |

| Sector | NPDES Permits | Examples | Notes |
|-----------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CGP ^g | Approx. 1209 | Westmark Credit Union, Bonners Ferry Islands and Strait Reach Projects, Storall Self Storage | EPA estimates in 2015 approximately 1,209 facilities were covered by CGP, including approximately 26 active low erosivity waivers (EPA 2016b; Margaret McCauley, pers. comm., 2016). |
| Cooling water intake | 1 or more (potentially) | Unknown | Potentially one or more major industrial facilities with cooling water intake structures exist where CWA §316(b) may apply, but EPA has not confirmed (Karen Burgess, pers. comm., 2016). |
| CAFOs ^h | 0 | None | Currently, one EPA-issued general permit regulates CAFOs (EPA 2012c). Currently, no CAFOs in Idaho have applied for or received coverage under this permit. One CAFO was covered until it requested permit termination. |
| CAAP ⁱ | 1 | Epicenter Aquaculture | One EPA-issued individual permit (effective 2007–2012) (EPA 2007c). |
| CAAPs (general permits) | 78 | Blind Canyon AquaRanch, Henslee Hatchery, Big Bend Trout Co., Ark Fisheries Inc. | Aquaculture Facilities in Idaho Subject to WLAs under Selected TMDLs (effective 2007–2012) (EPA 2007d; 2016a). |
| | 10 | Idaho Department of Fish and Game, US Fish and Wildlife Service | Cold Water Aquaculture Facilities in Idaho, not subject to WLAs (effective 2007–2012) (EPA 2007e, 2016a); |
| | 3 | Clear Springs Foods, Hagerman Valley Investments, SEAPAC of Idaho | Fish Processors Associated with Aquaculture Facilities in Idaho (effective 2007–2012) (EPA 2007f, 2016a). |
| GWGP ⁱ | 6 | McCall Oil and Chemical Corporation, Boise State University, Idaho Falls Pole Yard, Boise Towne Square Mall, Westgate Shopping Center, North Five Mile Road | Seven facilities received EPA administrative extension of coverage under expired 2007 GWGP (effective 2007–2012). The 2014 reissuance of this general permit replaced the 2007 permit (EPA 2014d), and five of these facilities received coverage. However, Atlanta Gold Corporation of America Inc. and Kinross Delamar Mining Company remain covered under the 2007 permit, which remains administratively extended for the mining facilities. EPA intends to issue a separate general permit covering discharges from these mines. In addition, EPA authorized coverage for BSU under the 2014 general permit. |
| Small suction dredge mining | 75 locations | Grimes, Mores, and Elk Creeks and their tributaries | In 2013, EPA issued the small suction dredge general permit (effective 2013–2018). For this general permit, a single application or NOI may have one or more locations listed. Grimes, Mores, and Elk Creeks and their tributaries are permitted annually; as a result, the yearly tallies often include repeat permittees for these select waters. All other open waters can be permitted up to 5 years (2013–2018), depending on when an applicant applies. In 2015, 56 people applied for permit coverage, and EPA authorized 75 requested locations (Tracy DeGering, pers. comm., 2016). |

| Sector | NPDES Permits | Examples | Notes |
|------------------|---------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PGP ^k | Approx. 130 | Idaho Department of Fish and Game, Boundary County, Avanti, Idaho Bureau of Land Management, Clean Lakes, Inc. | One EPA-issued general permit regulates pesticide application, nationwide. EPA estimates that approximately 35,183 facilities have received coverage under this general permit, nationwide, and 130 facilities are covered by this permit in Idaho (effective 2011–2016) (EPA 2016b). |
| VGP ^l | 6 | J.E. McAmis, American Construction Company Inc. | <p>Lewiston is the only port currently listed for coverage under the VGP. Six vessels covered under this permit anticipate visits to Idaho (EPA 2016a). However, this number can change from year to year (Karen Burgess, pers. comm., 2016).</p> <p>DEQ's final §401 Water Quality Certification for the vessel and small vessel general permits (DEQ 2012b) identifies vessels in specific Idaho counties prohibited from discharging graywater or sewage/graywater mixtures.</p> <p>Owners and operators of vessels covered by these general permits must be aware of and comply with the Panhandle Health District Rules governing discharges from vessels. The discharge of graywater or a sewage/graywater mixture otherwise authorized under this general permit is prohibited in certain regions of the state pursuant to IDAPA 41.01.01.200.01(c). Those areas include Boundary, Bonner, Kootenai, Benewah, and Shoshone Counties in northern Idaho (IDAPA 41.01.01.200.01 et seq.).</p> |

^aPOTW = Publicly Owned Treatment Works
^bCSS = Combined Sewer System
^cCSO = Combined Sewer System
^dSSO = Sanitary Sewer Overflow
^eMS4 = Municipal Separate Storm Sewer System
^fMSGP = Multi-Sector General Permit
^gCGP = Construction General Permit
^hCAFO = Concentrated Animal Feeding Operation
ⁱCAAP = Concentrated Aquatic Animal Production
^jGWGP = Ground Water Remediation General Permit
^kPGP = Pesticide General Permit
^lVGP = Vessel General Permit

Appendix B. IPDES Permit Rating Work Sheet and Instructions

Print Form

Idaho Department of Environmental Quality

IPDES Program

NPDES/IPDES No.:



IPDES Permit Rating Worksheet

- Regular addition
- Discretionary addition
- Score change, but no status change
- Deletion

Facility Name: City:

Receiving Water: Assessment Unit:

Is this facility a steam electric power plant (SIC = 4911) with one or more of the following characteristics? Yes; score is 800 (stop here) No (continue)

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

Is this permit for a municipal separate storm sewer serving a population greater than 100,000? Yes; score is 700 (stop here) No (continue)

Factor 1: Toxic Pollutant Potential

PCS SIC Code: Primary SIC Code:

Other SIC Codes:

Industrial Subcategory Code: (Code 000 if no subcategory)

Determine the toxicity potential from Appendix A. (Be sure to use the TOTAL toxicity potential column and check one.)

| Toxicity Group | Code | Points | Toxicity Group | Code | Points | Toxicity Group | Code | Points |
|---------------------------------------------------|------|--------|----------------------------|------|--------|-----------------------------|------|--------|
| <input type="checkbox"/> No process waste streams | 0 | 0 | <input type="checkbox"/> 3 | 3 | 15 | <input type="checkbox"/> 7 | 7 | 35 |
| <input type="checkbox"/> 1 | 1 | 5 | <input type="checkbox"/> 4 | 4 | 20 | <input type="checkbox"/> 8 | 8 | 40 |
| <input type="checkbox"/> 2 | 2 | 10 | <input type="checkbox"/> 5 | 5 | 25 | <input type="checkbox"/> 9 | 9 | 45 |
| | | | <input type="checkbox"/> 6 | 6 | 30 | <input type="checkbox"/> 10 | 10 | 50 |

Code Number Checked:

Total Points Factor 1:

Factor 2: Flow/Streamflow Volume (Complete either Section A or Section B, check only one.)

Section A - Wastewater Flow Only Considered

| Wastewater Type (see instructions) | Code | Points |
|------------------------------------|-----------------------------|--------|
| Type I: Flow < 5 MGD | <input type="checkbox"/> 11 | 0 |
| Flow 5-10 MGD | <input type="checkbox"/> 12 | 10 |
| Flow >10 to 50 MGD | <input type="checkbox"/> 13 | 20 |
| Flow >50 MGD | <input type="checkbox"/> 14 | 30 |
| Type II: Flow < 1 MGD | <input type="checkbox"/> 21 | 10 |
| Flow 1-5 MGD | <input type="checkbox"/> 22 | 20 |
| Flow >5 to 10 MGD | <input type="checkbox"/> 23 | 30 |
| Flow >10 MGD | <input type="checkbox"/> 24 | 50 |
| Type III: Flow < 1 MGD | <input type="checkbox"/> 31 | 0 |
| Flow 1-5 MGD | <input type="checkbox"/> 32 | 10 |
| Flow >5 to 10 MGD | <input type="checkbox"/> 33 | 20 |
| Flow >10 MGD | <input type="checkbox"/> 34 | 30 |

Section B - Wastewater and Streamflow Considered

| Wastewater Type (see instructions) | % of Instream Wastewater Concentration at Receiving Stream Low Flow | Code | Points |
|------------------------------------|---------------------------------------------------------------------|-----------------------------|--------|
| Type I/II: | <10% | <input type="checkbox"/> 41 | 0 |
| | ≥10% to <50% | <input type="checkbox"/> 42 | 10 |
| | ≥50% | <input type="checkbox"/> 43 | 20 |
| Type II: | <10% | <input type="checkbox"/> 51 | 0 |
| | ≥10% to <50% | <input type="checkbox"/> 52 | 20 |
| | ≥50% | <input type="checkbox"/> 53 | 30 |

Code Number Checked:

Total Points Factor 2:

Print Form

Idaho Department of Environmental Quality

IPDES Program

NPDES/IPDES No.:

Factor 3: Conventional Pollutants (only when limited by the permit)

A. Oxygen-Demanding Pollutants (check one) BOD COD TOC Other

| Permit Limits (check one) | Code | Points |
|-------------------------------------------------|------|--------|
| <input type="checkbox"/> <100 lb/day | 1 | 0 |
| <input type="checkbox"/> 100-1,000 lb/day | 2 | 5 |
| <input type="checkbox"/> >1,000 to 3,000 lb/day | 3 | 15 |
| <input type="checkbox"/> >3,000 lb/day | 4 | 20 |

Code Number Checked:
Points Scored:

B. Total Suspended Solids

| Permit Limits (check one) | Code | Points |
|-------------------------------------------------|------|--------|
| <input type="checkbox"/> <100 lb/day | 1 | 0 |
| <input type="checkbox"/> 100-1,000 lb/day | 2 | 5 |
| <input type="checkbox"/> >1,000 to 5,000 lb/day | 3 | 15 |
| <input type="checkbox"/> >5,000 lb/day | 4 | 20 |

Code Number Checked:
Points Scored:

C. Nitrogen Pollutants (check one) Ammonia Other:

| Permit Limits (check one) | Code | Points |
|-------------------------------------------------|------|--------|
| <input type="checkbox"/> <300 lb/day | 1 | 0 |
| <input type="checkbox"/> 300-1,000 lb/day | 2 | 5 |
| <input type="checkbox"/> >1,000 to 3,000 lb/day | 3 | 15 |
| <input type="checkbox"/> >3,000 lb/day | 4 | 20 |

Code Number Checked:
Points Scored:

Total Points Factor 3:

Factor 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

- Yes (if yes, check toxicity potential number below)
- No (if no, go to Factor 5)

Determine the human health toxicity potential from Appendix A. Use the same SIC Code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column and check one below.)

| Toxicity Group | Code | Points | Toxicity Group | Code | Points | Toxicity Group | Code | Points |
|---------------------------------------------------|------|--------|----------------------------|------|--------|-----------------------------|------|--------|
| <input type="checkbox"/> No process waste streams | 0 | 0 | <input type="checkbox"/> 3 | 3 | 0 | <input type="checkbox"/> 7 | 7 | 15 |
| <input type="checkbox"/> 1 | 1 | 0 | <input type="checkbox"/> 4 | 4 | 0 | <input type="checkbox"/> 8 | 8 | 20 |
| <input type="checkbox"/> 2 | 2 | 0 | <input type="checkbox"/> 5 | 5 | 5 | <input type="checkbox"/> 9 | 9 | 25 |
| | | | <input type="checkbox"/> 6 | 6 | 10 | <input type="checkbox"/> 10 | 10 | 30 |

Code Number Checked:
Total Points Factor 4:

Print Form

Idaho Department of Environmental Quality

IPDES Program

NPDES/IPDES No.:

Factor 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge?

| | Code | Points |
|------------------------------|------|--------|
| <input type="checkbox"/> Yes | 1 | 10 |
| <input type="checkbox"/> No | 2 | 0 |

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

| | Code | Points |
|------------------------------|------|--------|
| <input type="checkbox"/> Yes | 1 | 0 |
| <input type="checkbox"/> No | 2 | 5 |

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

| | Code | Points |
|------------------------------|------|--------|
| <input type="checkbox"/> Yes | 1 | 10 |
| <input type="checkbox"/> No | 2 | 0 |

Code Numbers Checked: A. B. C.

Total Points Factor 5: A. + B. + C. =

Score Summary

| Factor and Description | Total Points |
|------------------------------|--------------|
| 1. Toxic Pollutant Potential | |
| 2. Flow/Streamflow Volume | 0 |
| 3. Conventional Pollutants | |
| 4. Public Health Impacts | |
| 5. Water Quality Factors | |
| Total (Factors 1-5) | 0 |

S1. Is the total score equal to or greater than 80? Yes (facility is a major) No

S2. If the answer to the above question is no, would you like this facility to be discretionary major? Yes (add 500 points to the above score and provide reason below) No

Reason:

New Score: Old Score:

Permit Reviewer's Name

Phone Number

Date

Instructions for Completing the IPDES Permit Rating Worksheet

General Information

From the permit, enter the NPDES/IPDES number, facility name, and city. Enter the receiving water name and assessment unit. The assessment unit for the receiving water body of a facility can be obtained through the IPDES online interface or DEQ's Integrated Report web page. Contact the IPDES data management coordinator or permit lead for assistance.

Answer the next two questions regarding steam electric facilities and storm water permits. An answer of "yes" to either of these questions automatically makes this facility a major. A steam electric major will be automatically assigned a score of 600 and storm water major will be assigned a score of 700. If either of the "yes" boxes is checked, there is no need to go further.

Factor 1: Toxic Pollutant Potential

Determine what standard industrial classification (SIC) codes are assigned to the facility covered by the permit. This will usually be on Form 1 of the NPDES application or the IPDES equivalent form. The SIC codes are those published in 1987. If the facility has more than one outfall, each outfall will be identified in the NPDES application forms or the IPDES equivalent forms. When multiple SIC codes are assigned, select the one that appears to represent the primary activity at the facility and enter it in the primary SIC code box. Then enter up to four other SIC codes in the indicated boxes, selecting those that appear most significant if more than four have been reported (this will be rare).

Use the primary SIC code to search Appendix A of these instructions to determine if there are industrial subcategories for that SIC code. If no subcategory exists, there will be a single entry in Appendix A for that SIC code or no entry at all. If there are subcategories (indicated by multiple entries for one SIC code), select the subcategory that best corresponds to this facility. Use the CFR part and subpart number to identify the appropriate subcategory. Continue this procedure for each of the other SIC codes recorded. Select the industrial subcategory for the SIC code that has the highest toxicity group. Enter the industrial subcategory code on the rating sheet (use 000 if there is no subcategory) and check the appropriate **total toxicity potential number**. Note that regardless of the facility's SIC code, if the facility discharges no process waste stream to a receiving water, the points scored are 0.

Select the appropriate code number from the drop-down box and verify the points scored for Factor 1 in the shaded area.

Factor 2: Flow/Streamflow Volume

This factor consists of two methods: A (wastewater flow only) and B (wastewater and streamflow). Section A or Section B should be completed, but not both. Section A takes into account only the quantity and type of wastewater discharge from the facility. Section B scores

the facility for not only the quantity and type of wastewater discharged, but also its relationship to the receiving stream (water body) low flow conditions.

Determine the wastewater type (I, II, or III) based on the relative volumes of noncontact cooling waters (as defined in 40 CFR 401.11(n)), process wastewaters, and other wastewaters in the total combined discharge from the facility.

- Type I: Noncontact cooling waters are once-through cooling only and do not include blowdown from cooling towers and recirculating cooling systems.
- Type II: Process wastewaters include wastewaters resulting from most manufacturing processes, contact cooling water, and contaminated surface runoff.
- Type III: Other wastewaters include boiler blowdown, blowdown from cooling towers and recirculating cooling systems, sanitary wastewater, and uncontaminated surface runoff.

The relative volumes of different wastewaters discharged can usually be determined from the permit application. Use Figure 1 to determine the wastewater type. If the entire discharge is noncontact cooling water, it is Type I. If it is all process wastewater, it is Type II. If it is neither noncontact cooling water nor process wastewater, it is Type III. If the flow contains more than 1 MGD of process wastewater or more than 10% process wastewater, it is Type II. If the flow is predominantly noncontact cooling water (more than 90%) and contains less than 1 MGD of process wastewaters, it is Type I.

Once the wastewater type has been determined, compute the total volume of wastewater discharged for all outfalls. This is the sum of the daily average discharges for each outfall shown in the permit application.

Section A

On the worksheet under the type of wastewater selected, check the appropriate flow range. Although a facility may discharge some or all of the three types of wastewater, only one flow range and type should be checked representing the composite of all flows. Choose the two-digit flow code checked from the drop-down box on the right and confirm the associated total points for Factor 2.

Section B

For a few selected facilities, the volume of wastewater discharged may be large relative to the low flow of the receiving water. Section B of the rating worksheet allows the reviewer to calculate rating points based on the relative amounts and types of wastewater and receiving streamflows. The reviewer should identify the type of wastewater discharged from the facility based on the procedure described above and in Figure B-1. The other piece of information that will be necessary to complete Section B is the receiving stream's low flow (i.e., the 7Q10 flow or the state standard). Check the box that most closely describes the circumstances at this facility. Choose the appropriate code from the drop-down box and confirm the associated total points for Factor 2.

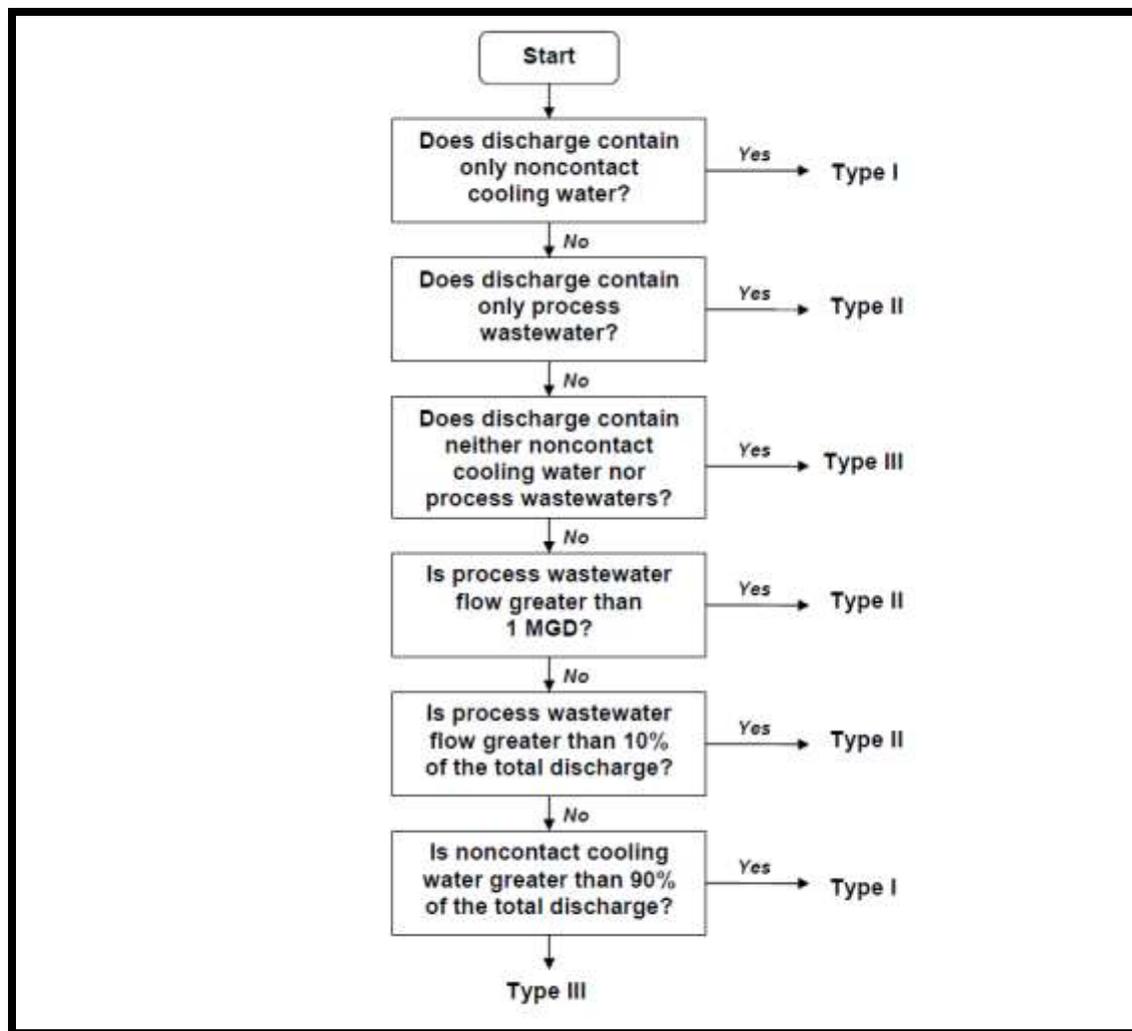


Figure B-1. Wastewater type selection flow diagram.

Factor 3: Conventional Pollutants

Data on conventional pollutants are obtained from the NPDES/IPDES permit and/or compliance files. Review the permit to see what traditional pollutants (i.e., oxygen demanding, TSS, and ammonia) are limited. Conventional pollutant loads are to be computed only when they are limited by the permit. Use the *current permit limits* if the permit contains two or more sets of limits for each outfall.

Add the daily average load for the oxygen-demanding pollutant and identify that parameter on the worksheet (e.g., BOD, COD, and TOC). If the permit is limited for more than one oxygen-demanding pollutant, use the one that provides the highest load. Most effluent limits specify loads in kilograms or pounds per day. However, they may sometimes be given in concentration units (usually mg/L) or in loads per production unit, such as kg BOD/1,000 kg of product. In such cases, the discharge must be converted to loads in terms of pounds per day using standard conversion factors and flow and/or production data from the application or the discharge monitoring reports (DMRs).

Once the load has been determined, check the appropriate box, choose the code number from the drop-down box, and verify the points scored. Continue this for TSS and ammonia if these pollutants are limited.

Factor 4: Public Health Impact

Determine if there is a public drinking water supply within 50 miles downstream of the facility. A drinking water intake may include infiltration galleries or other methods of conveyance that ultimately get its water from the receiving stream of the NPDES/IPDES facility. If this is true, answer “yes” to the question on the rating worksheet. Determine the **human health toxicity potential** from Appendix A in a similar manner as outlined in Factor 1 of this instruction sheet. Once the human health toxicity number has been identified, choose the code number from the drop-down box and confirm the total points for Factor 4.

If there are no drinking water utilities within 50 miles downstream of this facility, answer “no” to this question and continue to Factor 5.

Factor 5: Water Quality Factors

Determine if the discharge is subject to water quality limiting factors. This will be true if the discharge is to a stream designated as water quality limiting by DEQ or for which wasteload allocations have been established. This will also be true if some of the effluent limits in the permit are based on water quality conditions in the receiving stream rather than on effluent guidelines (i.e., typically TBELs). Making this determination may be somewhat difficult. Sources to review for the necessary information are the Fact Sheet (the rationale on which permit limits were based), water quality inventory reports prepared by DEQ and submitted to EPA biennially as required by §305 of the Clean Water Act (CWA), and area-wide Waste Treatment Management planning reports prepared for some urban areas by local planning agencies under §208 of the CWA.

Some facilities may have had whole effluent toxicity (WET) studies performed within the last 2 years. If this is true and the results of those tests indicated that the effluent from this facility shows toxicity, answer “yes” to the question in Section C of this factor.

After answering questions A, B, and C, enter the appropriate code for each section and verify the total points.

Score Summary

Confirm the total points scored under each of the five factors considered in this rating worksheet and the sum. If the sum is greater than or equal to 80, the facility is considered a major. If a facility has scored less than 80 points and the reviewer feels that the facility should still be considered a major, the reviewer may make the facility a discretionary major by adding 500 points to the total score of each of the factors. Should the reviewer wish to make this facility a discretionary major, it is strongly urged that the reasoning for this decision be provided on the rating worksheet.

Appendix A. SIC Code Cross Reference and Total and Human Health Toxicity Number

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|---------------------|---------------------|--------------------------------------|-------------|--------------------|------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 211 | 211 | BEEF CATTLE FEEDLOTS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 212 | 212 | BEEF CATTLE, EXCEPT FEEDLOTS | | NR | Beef Cattle not in Feedlots | 1 | 1 | 99 |
| 213 | 213 | HOGS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 213 | 213 | HOGS | | NR | Hogs not in Feedlots | 1 | 1 | 99 |
| 214 | 214 | SHEEP AND GOATS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 214 | 214 | SHEEP AND GOATS | | NR | Sheep and Goats not in Feedlots | 1 | 1 | 99 |
| 219 | 219 | GENERAL LIVESTOCK, NEC | | NR | General Livestock Farms | 1 | 1 | 99 |
| 241 | 241 | DAIRY FARMS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 241 | 241 | DAIRY FARMS | | NR | DAIRY CATTLE NOT CONFINED | 1 | 1 | 99 |
| 251 | 251 | BROILER, FRIER, AND ROASTER CHICKENS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 252 | 252 | CHICKEN EGGS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 253 | 253 | TURKEY AND TURKEY EGGS | 412 | A | All Feedlots Except Ducks | 1 | 1 | 0 |
| 254 | 254 | POULTRY HATCHERIES | | NR | Hatcheries Without Poultry Feeding | 1 | 1 | 99 |
| 259 | 259 | POULTRY AND EGGS, NEC | 412 | B | Ducks | 1 | 1 | 0 |
| 259 | 259 | POULTRY AND EGGS, NEC | | NR | Other Poultry Farms | 1 | 1 | 99 |
| 271 | 271 | FUR-BEARING ANIMALS AND RABBITS | | NR | | 1 | 1 | 99 |
| 272 | 272 | HORSES AND OTHER EQUINES | | NR | | 1 | 1 | 99 |
| 279 | 273 | ANIMAL SPECIALTIES, NEC | | NR | | 1 | 1 | 99 |
| 279 | 279 | ANIMAL SPECIALTIES, NEC | | NR | | 1 | 1 | 99 |
| 291 | 291 | GENERAL FARMS, PRIMARILY LIVESTOCK | | NR | | 1 | 1 | 99 |
| 291 | 291 | GENERAL FARMS, PRIMARILY LIVESTOCK | | NR | | 1 | 1 | 99 |
| 721 | 721 | CROP PLANTING & PROTECTION | | NR | Crop Dusting & Spraying | 6 | 6 | 99 |
| 721 | 721 | CROP PLANTING & PROTECTION | | NR | Crop Planting/Cultivation | 1 | 1 | 99 |
| 921 | 921 | FISH HATCHERIES AND PRESERVES | | NR | | 1 | 1 | 99 |
| 1011 | 1011 | IRON ORES | 440 | A | Iron Ore | 7 | 7 | 0 |
| 1021 | 1021 | COPPER ORES | 440 | J | Cu, Pb, Zn, Ag, Au, No, Ores | 8 | 10 | 0 |
| 1031 | 1031 | LEAD AND ZINC ORES | 440 | J | Cu, Pb, Zn, Ag, Au, No, Ores | 8 | 10 | 0 |
| 1041 | 1041 | GOLD ORES | 440 | J | Cu, Pb, Zn, Ag, Au, No, Ores | 8 | 10 | 1 |
| 1041 | 1041 | GOLD ORES | 440 | M | Gold Placer Mines | 8 | 9 | 2 |
| 1044 | 1044 | SILVER ORES | 440 | J | Cu, Pb, Zn, Ag, Au, No, Ores | 8 | 10 | 0 |
| 1051 | 1099 | BAUXITE & OTHER ALUMINUM ORES | 440 | B | Aluminum Ore | 5 | 10 | 0 |
| 1061 | 1061 | FERROALLOY ORES, EXCEPT VANADIUM | 440 | F | Tungsten Ore | 1 | 6 | 1 |
| 1061 | 1061 | FERROALLOY ORES, EXCEPT VANADIUM | 440 | G | Nickel Ores | 8 | 8 | 2 |
| 1061 | 1061 | FERROALLOY ORES, EXCEPT VANADIUM | 440 | J | Cu, Pb, Zn, Ag, Au, No, Ores | 7 | 7 | 3 |
| 1061 | 1061 | FERROALLOY ORES, EXCEPT VANADIUM | | NR | Ferroalloy Ores, NEC | 8 | 8 | 99 |
| 1081 | 1081 | METAL MINING SERVICES | | NR | Exploration/Development | 8 | 8 | 99 |
| 1092 | 1099 | MERCURY ORES | 440 | D | Mercury Ores | 8 | 8 | 0 |
| 1094 | 1094 | URANIUM-RADIUM-VANADIUM ORES | 440 | C | Uranium-Radium-Vanadium Ores | 8 | 9 | 1 |
| 1094 | 1094 | URANIUM-RADIUM-VANADIUM ORES | 440 | H | Vanadium Ore | 8 | 8 | 2 |
| 1099 | 1099 | METAL ORES, NEC | 440 | E | Titanium Ores | 1 | 4 | 1 |
| 1099 | 1099 | METAL ORES, NEC | 440 | I | Antimony Ore | 8 | 8 | 2 |
| 1099 | 1099 | METAL ORES, NEC | 440 | K | Platinum Ores | 8 | 8 | 3 |
| 1099 | 1099 | METAL ORES, NEC | | NR | Metal Ore, NEC | 8 | 8 | 99 |
| 1111 | 1231 | ANTHRACITE MINING | 434 | B | Coal Preparation Plants | 6 | 6 | 4 |
| 1111 | 1231 | ANTHRACITE MINING | 434 | C | Acid or Ferruginous Mine Drainage | 5 | 5 | 1 |
| 1111 | 1231 | ANTHRACITE MINING | 434 | D | Alkaline Mine Drainage | 5 | 5 | 2 |
| 1111 | 1231 | ANTHRACITE MINING | 434 | E | Post Mining Areas | 5 | 5 | 5 |
| 1112 | 1241 | ANTHRACITE MINING SERVICES | | NR | | 5 | 5 | 99 |
| 1211 | 1221 | BITUMINOUS COAL AND LIGNITE | 434 | B | Coal Preparation Plants | 6 | 6 | 3 |
| 1211 | 1221 | BITUMINOUS COAL AND LIGNITE | 434 | C | Acid or Ferruginous Mine Drainage | 5 | 5 | 1 |
| 1211 | 1221 | BITUMINOUS COAL AND LIGNITE | 434 | D | Alkaline Mine Drainage | 5 | 5 | 2 |
| 1211 | 1221 | BITUMINOUS COAL AND LIGNITE | 434 | E | Post Mining Areas | 5 | 5 | 4 |
| 1211 | 1222 | BITUMINOUS COAL AND LIGNITE | 434 | B | Coal Preparation Plants | 6 | 6 | 5 |
| 1211 | 1222 | BITUMINOUS COAL AND LIGNITE | 434 | C | Acid or Ferruginous Mine Drainage | 5 | 5 | 6 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977/ | 1987 | | CFR | CFR | | Human | Total | Industry |
|-------|------|------------------------------------------|------|------|------------------------------------------|--------|----------|----------|
| SIC | SIC | 1987 | Sub | Sub | Sub-part title | Health | Toxicity | Subcat |
| Code | Code | Title | Part | Part | | Number | Number | Number |
| 1211 | 1222 | BITUMINOUS COAL AND LIGNITE | 434 | D | ALKALINE MINE DRAINAGE | 5 | 5 | 7 |
| 1211 | 1222 | BITUMINOUS COAL AND LIGNITE | 434 | E | POST MINING AREAS | 5 | 5 | 8 |
| 1213 | 1241 | BITUMINOUS COAL, & LIGNITE MINING SERVI | | NR | | 5 | 5 | 99 |
| 1311 | 1311 | CRUDE PETROLEUM AND NATURAL GAS | 435 | A | Offshore | 1 | 1 | 1 |
| 1311 | 1311 | CRUDE PETROLEUM AND NATURAL GAS | 435 | C | Onshore | 1 | 1 | 2 |
| 1311 | 1311 | CRUDE PETROLEUM AND NATURAL GAS | 435 | D | Constal | 1 | 1 | 3 |
| 1311 | 1311 | CRUDE PETROLEUM AND NATURAL GAS | 435 | E | Agricultural & Wildlife Water Use | 1 | 1 | 4 |
| 1311 | 1311 | CRUDE PETROLEUM AND NATURAL GAS | 435 | F | Stripper | 5 | 5 | 5 |
| 1321 | 1321 | NATURAL GAS LIQUIDS | | NR | | 1 | 1 | 99 |
| 1381 | 1381 | DRILLING OIL AND GAS WELLS | 435 | C | Onshore | 1 | 1 | 0 |
| 1382 | 1382 | OIL & GAS FIELD EXPLORATION SERVICES | | NR | | 1 | 1 | 99 |
| 1389 | 1389 | OIL & GAS FIELD SERVICES, NEC | | NR | | 1 | 1 | 99 |
| 1411 | 1411 | DIMENSION STONE | 436 | A | Dimension Stone | 1 | 1 | 0 |
| 1422 | 1422 | CRUSHED AND BROKEN LIMESTONE | 436 | B | Crushed Stone | 1 | 1 | 0 |
| 1423 | 1423 | CRUSHED AND BROKEN GRANITE | 436 | B | Crushed Stone | 1 | 1 | 0 |
| 1429 | 1429 | CRUSHED AND BROKEN STONE, NEC | 436 | B | Crushed Stone | 1 | 1 | 0 |
| 1442 | 1442 | CONSTRUCTION SAND AND GRAVEL | 436 | C | CONSTRUCTION SAND & GRAVEL | 1 | 1 | 0 |
| 1446 | 1446 | INDUSTRIAL SAND | 436 | D | Industrial Sand | 1 | 1 | 0 |
| 1452 | 1459 | BENTONITE | 436 | V | Bentonite | 1 | 1 | 0 |
| 1453 | 1459 | FIRE CLAY | 436 | AA | Fire Clay | 1 | 1 | 0 |
| 1454 | 1459 | FULLER'S EARTH | | NR | | 1 | 1 | 99 |
| 1455 | 1455 | KAOLIN AND BALL CLAY | 436 | AG | Kaolin | 1 | 1 | 1 |
| 1455 | 1455 | KAOLIN AND BALL CLAY | 436 | AH | Ball Clay | 1 | 1 | 2 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | 436 | AI | FELDSPAR | 1 | 1 | 5 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | 436 | AC | KYANITE | 1 | 1 | 2 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | 436 | AD | SHALE AND COMMON CLAY | 1 | 1 | 3 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | 436 | AE | APLITE | 1 | 1 | 4 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | 436 | W | MAGNESITE | 1 | 1 | 1 |
| 1459 | 1459 | CLAY, CERAMIC & REFRACTORY MATERIALS, | | NR | Other Clay, Ceramic & Refr Minerals NR | 1 | 1 | 99 |
| 1472 | 1479 | BARITE | 436 | J | BARITE | 1 | 1 | 0 |
| 1473 | 1479 | FLUORSPAR | 436 | K | FLUORSPAR | 1 | 1 | 0 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | 436 | L | SALINES FROM BRINE LAKES | 1 | 1 | 1 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | 436 | N | POTASH | 1 | 1 | 3 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | 436 | M | BORAX | 1 | 1 | 2 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | 436 | O | SODIUM SULFATE | 1 | 1 | 4 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | | NR | Other Potash,Soda & Borate Minerals NR | 1 | 1 | 99 |
| 1474 | 1474 | POTASH, SODA AND BORATE MINERALS | 436 | P | TRONA | 1 | 1 | 5 |
| 1475 | 1475 | PHOSPHATE ROCK | 436 | R | Phosphate Rock | 6 | 6 | 0 |
| 1476 | 1479 | ROCK SALT | 436 | Q | ROCK SALT | 1 | 1 | 0 |
| 1477 | 1479 | SULFUR | 436 | S | FRASCH SULFER | 1 | 1 | 0 |
| 1479 | 1479 | CHEMICAL & FERTILIZER MINERAL MINING, | 436 | T | MINERAL PIGMENTS | 1 | 1 | 1 |
| 1479 | 1479 | CHEMICAL & FERTILIZER MINERAL MINING, | 436 | U | LITHIUM | 1 | 1 | 2 |
| 1479 | 1479 | CHEMICAL & FERTILIZER MINERAL MINING, | | NR | Other Chemical/Fertilizer Minerals NR | 1 | 1 | 99 |
| 1481 | 1481 | NONMETALLIC MINERALS (except fuels) SERV | | NR | | 1 | 1 | 99 |
| 1492 | 1499 | GYPSUM | 436 | E | GYPSUM | 1 | 1 | 0 |
| 1496 | 1499 | TALC, SOAPSTONE AND PYROPHYLLITE | 436 | AJ | Talc, Steatite, Soapstone & Pyrophyllite | 1 | 1 | 0 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | O | ASBESTOS AND WOLLASTONITE | 1 | 1 | 2 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | F | ASPHALTIC MINERAL | 1 | 1 | 1 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | I | MICA AND SERACITE | 1 | 1 | 3 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | X | DIATOMITE | 1 | 1 | 4 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | Y | JADE | 1 | 1 | 5 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | AF | TRIPOLI | 1 | 1 | 6 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | AK | GARNET | 1 | 1 | 7 |
| 1499 | 1499 | Miscellaneous NONMETALLIC MINERALS, NEC | 436 | AL | GRAPHITE | 1 | 1 | 8 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1972/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|------------------------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 1499 | 1499 | Miscellaneous, NONMETALLIC MINERALS, NEC | | NR | Other Misc Nonmetallic Minerals NR | 1 | 1 | 99 |
| 2011 | 2011 | MEAT PACKING PLANTS | 432 | A | SIMPLE SLAUGHTERHOUSE | 1 | 1 | 1 |
| 2011 | 2011 | MEAT PACKING PLANTS | 432 | B | COMPLEX SLAUGHTERHOUSE | 1 | 1 | 2 |
| 2011 | 2011 | MEAT PACKING PLANTS | 432 | C | LOW-PROCESSING Packing House | 1 | 1 | 3 |
| 2011 | 2011 | MEAT PACKING PLANTS | 432 | D | HIGH-PROCESSING Packing House | 1 | 1 | 4 |
| 2013 | 2013 | SAUSAGES & other PREPARED MEAT PRODUCT | 432 | E | SMALL PROCESSOR | 1 | 1 | 1 |
| 2013 | 2013 | SAUSAGES & other PREPARED MEAT PRODUCT | 432 | F | MEAT CUTTER | 1 | 1 | 2 |
| 2013 | 2013 | SAUSAGES & other PREPARED MEAT PRODUCT | 432 | G | Sausage & Luncheon Meats Processor | 1 | 1 | 3 |
| 2013 | 2013 | SAUSAGES & other PREPARED MEAT PRODUCT | 432 | H | HAM PROCESSOR | 1 | 1 | 4 |
| 2013 | 2013 | SAUSAGES & other PREPARED MEAT PRODUCT | 432 | I | CANNED MEATS PROCESSOR | 1 | 1 | 5 |
| 2016 | 2015 | POULTRY DRESSING PLANTS | 432 | B | COMPLEX SLAUGHTERHOUSE | 1 | 1 | 2 |
| 2016 | 2015 | POULTRY DRESSING PLANTS | 432 | A | SIMPLE SLAUGHTERHOUSE | 1 | 1 | 1 |
| 2016 | 2015 | POULTRY DRESSING PLANTS | 432 | C | LOW-PROCESSING Packing House | 1 | 1 | 3 |
| 2016 | 2015 | POULTRY DRESSING PLANTS | 432 | D | HIGH-PROCESSING Packing House | 1 | 1 | 4 |
| 2017 | 2015 | POULTRY AND EGG PROCESSING | 432 | E | SMALL PROCESSOR | 1 | 1 | 1 |
| 2017 | 2015 | POULTRY AND EGG PROCESSING | 432 | F | MEAT CUTTER | 1 | 1 | 2 |
| 2017 | 2015 | POULTRY AND EGG PROCESSING | 432 | G | Sausage & Luncheon Meats Processor | 1 | 1 | 3 |
| 2017 | 2015 | POULTRY AND EGG PROCESSING | 432 | H | HAM PROCESSOR | 1 | 1 | 4 |
| 2017 | 2015 | POULTRY AND EGG PROCESSING | 432 | I | CANNED MEATS PROCESSOR | 1 | 1 | 5 |
| 2021 | 2021 | CREAMERY BUTTER | 405 | D | BUTTER | 1 | 1 | 0 |
| 2022 | 2022 | CHEESE, NATURAL AND PROCESSED | 405 | F | NATURAL & PROCESSED CHEESE | 1 | 1 | 0 |
| 2023 | 2023 | CONDENSED AND EVAPORATED MILK | 405 | I | CONDENSED MILK | 1 | 1 | 1 |
| 2023 | 2023 | CONDENSED AND EVAPORATED MILK | 405 | J | DRY MILK | 1 | 1 | 2 |
| 2023 | 2023 | CONDENSED AND EVAPORATED MILK | 405 | K | CONDENSED WHEY | 1 | 1 | 3 |
| 2023 | 2023 | CONDENSED AND EVAPORATED MILK | 405 | L | DRY WHEY | 1 | 1 | 4 |
| 2024 | 2024 | ICE CREAM AND FROZEN DESSERTS | 405 | H | Ice Cream, Frozen Desserts, Novelties | 1 | 1 | 0 |
| 2026 | 2026 | FLUID MILK | 405 | B | FLUID PRODUCTS | 1 | 1 | 1 |
| 2026 | 2026 | FLUID MILK | 405 | C | CULTURED PRODUCTS | 1 | 1 | 2 |
| 2026 | 2026 | FLUID MILK | 405 | E | Cottage Cheese & Cultured Cream Cheese | 1 | 1 | 3 |
| 2026 | 2026 | FLUID MILK | 405 | G | Fluid Milk for Ice Cream, Other Desserts | 1 | 1 | 4 |
| 2032 | 2091 | CANNED SPECIALTIES | | | | 1 | 1 | 0 |
| 2032 | 2032 | CANNED SPECIALTIES | 407 | H | CANNED AND MISC, SPECIALTIES | 1 | 1 | 0 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | A | APPLE JUICE | 1 | 1 | 1 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | B | APPLE PRODUCTS | 1 | 1 | 2 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | C | CITRUS PRODUCTS | 1 | 1 | 3 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | F | CANNED & Preserved FRUITS | 1 | 1 | 4 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | G | CANNED & Preserved VEGETABLES | 1 | 1 | 5 |
| 2033 | 2033 | CANNED FRUITS, VEGETABLES, Preserves, JA | 407 | H | CANNED & Preserved SPECIALTIES | 1 | 1 | 6 |
| 2034 | 2068 | DRIED & DEHYDRATED FRUITS, Vegetables & | | NR | | 1 | 1 | 99 |
| 2034 | 2034 | DRIED & DEHYDRATED FRUITS, Vegetables & | 407 | E | DEHYDRATED POTATOE Products | 1 | 1 | 1 |
| 2034 | 2034 | DRIED & DEHYDRATED FRUITS, Vegetables & | 407 | F | CANNED & Preserved FRUITS | 1 | 1 | 2 |
| 2034 | 2034 | DRIED & DEHYDRATED FRUITS, Vegetables & | 407 | G | CANNED & Preserved VEGETABLES | 1 | 1 | 3 |
| 2035 | 2035 | PICKLED FRUITS & VEG., VEG. SAUCES & SEA | 407 | F | CANNED & Preserved FRUITS | 1 | 1 | 1 |
| 2035 | 2035 | PICKLED FRUITS & VEG., VEG. SAUCES & SEA | 407 | G | CANNED & Preserved VEGETABLES | 1 | 1 | 2 |
| 2035 | 2035 | PICKLED FRUITS & VEG., VEG. SAUCES & SEA | 407 | H | CANNED AND MISC SPECIALTIES | 1 | 1 | 3 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | A | APPLE JUICES | 1 | 1 | 1 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | O | CANNED & Preserved VEGETABLES | 1 | 1 | 6 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | C | CITRUS PRODUCTS | 1 | 1 | 3 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | D | FROZEN POTATOE PRODUCTS | 1 | 1 | 4 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | F | CANNED & Preserved FRUITS | 1 | 1 | 5 |
| 2037 | 2037 | FROZEN FRUITS, FRUIT JUICES & VEGETABLES | 407 | B | APPLE PRODUCTS | 1 | 1 | 2 |
| 2038 | 2038 | FROZEN SPECIALTIES | 407 | H | CANNED & MISC SPECIALTIES | 1 | 1 | 1 |
| 2038 | 2053 | FROZEN SPECIALTIES | 407 | H | CANNED & MISC SPECIALTIES | 1 | 1 | 2 |
| 2041 | 2041 | FLOUR AND OTHER GRAIN MILL PRODUCTS | 406 | B | CORN DRY MILLING | 1 | 1 | 1 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|---------------------|---------------------|------------------------------------------|-------------|--------------------|-------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2041 | 2041 | FLOUR AND OTHER GRAIN MILL PRODUCTS | 406 | C | NORMAL WHEAT FLOUR MILLING | 1 | 1 | 2 |
| 2041 | 2041 | FLOUR AND OTHER GRAIN MILL PRODUCTS | 406 | D | BULOUR WHEAT FLOUR MILLING | 1 | 1 | 3 |
| 2043 | 2043 | CEREAL BREAKFAST FOODS | 406 | H | HOT CEREAL | 1 | 1 | 1 |
| 2043 | 2043 | CEREAL BREAKFAST FOODS | 406 | I | READY-TO-EAT CEREAL | 1 | 1 | 2 |
| 2044 | 2044 | RICE MILLING | 406 | E | NORMAL RICE MILLING | 1 | 1 | 1 |
| 2044 | 2044 | RICE MILLING | 406 | F | PARBOILED RICE PROCESSING | 1 | 1 | 2 |
| 2045 | 2045 | BLENDED AND PREPARED FLOUR | | NR | | 1 | 1 | 99 |
| 2046 | 2046 | WET CORN MILLING | 406 | A | CORN WET MILLING | 1 | 1 | 1 |
| 2046 | 2046 | WET CORN MILLING | 406 | J | WHEAT STARCH AND GLUTEN | 1 | 1 | 2 |
| 2047 | 2047 | DOG, CAT, AND OTHER PET FOOD | 406 | G | ANIMAL FEED | 1 | 1 | 1 |
| 2047 | 2048 | DOG, CAT, AND OTHER PET FOOD | 406 | G | ANIMAL FEED | 1 | 1 | 2 |
| 2048 | 2048 | PREPARED FEEDS & FEED INGREDIENTS FOR AN | 406 | G | ANIMAL FEED | 1 | 1 | 0 |
| 2051 | 2051 | BREAD & other BAKERY PRODUCTS, Except CO | | NR | | 1 | 1 | 99 |
| 2052 | 2052 | COOKIES AND CRACKERS | | NR | | 1 | 1 | 99 |
| 2061 | 2061 | CANE SUGAR, EXCEPT REFINING ONLY | 409 | D | Louisiana Raw Cane Sugar Processing | 1 | 1 | 1 |
| 2061 | 2061 | CANE SUGAR, EXCEPT REFINING ONLY | 409 | E | FL & Texas Raw Cane Sugar Processing | 1 | 1 | 2 |
| 2061 | 2061 | CANE SUGAR, EXCEPT REFINING ONLY | 409 | F | Hilo-Hanalei/Hawaii Cane Sugar Processing | 1 | 1 | 3 |
| 2061 | 2061 | CANE SUGAR, EXCEPT REFINING ONLY | 409 | G | Hawaiian Raw Cane Sugar Processing | 1 | 1 | 4 |
| 2061 | 2061 | CANE SUGAR, EXCEPT REFINING ONLY | 409 | H | Puerto Rican Raw Cane Sugar Processing | 1 | 1 | 5 |
| 2062 | 2062 | CANE SUGAR REFINING | 409 | B | CRYSTALLINE Cane Sugar REFINING | 1 | 1 | 1 |
| 2062 | 2062 | CANE SUGAR REFINING | 409 | C | LIQUID CANE SUGAR REFINING | 1 | 1 | 2 |
| 2063 | 2063 | BEEF SUGAR | 409 | A | BEEF SUGAR PROCESSING | 1 | 1 | 0 |
| 2065 | 2068 | CANDY & OTHER CONFECTIONARY PRODUCTS | | NR | | 1 | 1 | 99 |
| 2065 | 2064 | CANDY & OTHER CONFECTIONARY PRODUCTS | | NR | | 1 | 1 | 99 |
| 2066 | 2066 | CHOCOLATE AND COCOA PRODUCTS | | NR | | 1 | 1 | 99 |
| 2067 | 2067 | CHEWING GUM | | NR | | 1 | 1 | 99 |
| 2074 | 2074 | COTTONSEED OIL MILLS | | NR | | 1 | 1 | 99 |
| 2075 | 2075 | SOYBEAN OIL MILLS | | NR | | 1 | 1 | 99 |
| 2076 | 2076 | VEG. OIL MILLS, EXCEPT CORN, COTTONSEED | | NR | | 1 | 1 | 99 |
| 2077 | 2077 | ANIMAL AND MARINE FATS AND OILS | 408 | O | FISH MEAL PROCESSING | 1 | 1 | 0 |
| 2077 | 2077 | ANIMAL AND MARINE FATS AND OILS | | NR | | 1 | 1 | 99 |
| 2079 | 2079 | SHORTENING, TABLE OILS, MARGARINE & OTH | | NR | | 1 | 1 | 99 |
| 2082 | 2082 | MALT BEVERAGES | | NR | | 1 | 1 | 99 |
| 2083 | 2083 | MALT | | NR | | 1 | 1 | 99 |
| 2084 | 2084 | WINES, BRANDY AND BRANDY SPIRITS | | NR | | 1 | 1 | 99 |
| 2085 | 2085 | DISTILLED, RECTIFIED AND BLENDED LIQUORS | | NR | | 1 | 1 | 99 |
| 2086 | 2086 | BOTTLED & CANNED SOFT DRINKS & Carbonate | | NR | | 1 | 1 | 99 |
| 2087 | 2087 | FLAVORING EXTRACTS & FLAVORING SYRUPS, | | NR | | 1 | 1 | 99 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | N | Breaded Shrimp Proc/Contiguous States | 1 | 1 | 12 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | R | WCoast Hand-Butchered Salmon Processing | 1 | 1 | 16 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | B | Conventional Blue Crab Processing | 1 | 1 | 1 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | C | Mechanized Blue Crab Processing | 1 | 1 | 2 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | D | Non-Remote Alaskan Crab Meat Processing | 1 | 1 | 3 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | E | Remote Alaskan Crab Meat Processing | 1 | 1 | 4 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | F | Non-Remote Alaskan Crab/Section Process | 1 | 1 | 5 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | G | Remote Alaskan Crab/Section Processing | 1 | 1 | 6 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | H | Dung & Tanner Crab Process/Contig States | 1 | 1 | 7 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | I | Non-Remote Alaskan Shrimp Processing | 1 | 1 | 8 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | W | Hand-Shucked Clam Processing | 1 | 1 | 21 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | X | Mechanized Clam Processing | 1 | 1 | 22 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | K | Northern Shrimp Processing/Contig States | 1 | 1 | 10 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | Y | PACCoast Hand-Shucked Oyster Processing | 1 | 1 | 23 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | N | TUNA PROCESSING | 1 | 1 | 13 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | Z | AT/GLFCoast Hand-Shucked Oyster Process | 1 | 1 | 24 |

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| 1977/1987 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|--------------------|---------------|-----------------------------------------|----------|--------------|------------------------------------------|------------------------------|-----------------------|------------------------|
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | O | Alaskan Mechanized Salmon Processing | 1 | 1 | 15 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AA | Steamed and Canned Oyster Processing | 1 | 1 | 25 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | T | Alaskan Bottom Fish Processing | 1 | 1 | 18 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AB | Sardine Processing | 1 | 1 | 26 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | V | Non-Alaskan Mech Bottom Fish Processing | 1 | 1 | 20 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AC | Alaskan Scallop Processing | 1 | 1 | 27 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | L | S Non-Breaded Shrimp Process/CNTG ST | 1 | 1 | 11 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | S | West Coast Mechanized Salmon Processing | 1 | 1 | 17 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | U | Non-Alaskan CONV Bottom Fish Processing | 1 | 1 | 19 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | J | Remote Alaskan Shrimp Processing | 1 | 1 | 9 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | P | Alaskan Hand-Butchered Salmon Processing | 1 | 1 | 14 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AD | Non-Alaskan Scallop Processing | 1 | 1 | 28 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AE | Alaskan Herring Fillet Processing | 1 | 1 | 29 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AF | Non-Alaskan Herring Fillet Processing | 1 | 1 | 30 |
| 2091 | 2091 | CANNED AND CURED FISH AND SEAFOODS | 408 | AG | ABALONE PROCESSING | 1 | 1 | 31 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | A | FARM RAISED CATFISH PROCESSING | 1 | 1 | 1 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | Y | PA Coast Hand-Shucked Oyster Processing | 1 | 1 | 24 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | Z | ATGLFCSTHND-Shucked Oyster Processing | 1 | 1 | 25 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | C | Mechanized Blue Crab Processing | 1 | 1 | 3 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AB | Sardine Processing | 1 | 1 | 26 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | E | Remote Alaskan Crab Meat Processing | 1 | 1 | 5 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AC | Alaskan Scallop Processing | 1 | 1 | 27 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | G | Remote ALA Whole Crab/Section Processing | 1 | 1 | 7 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AD | Non-Alaskan Scallop Processing | 1 | 1 | 28 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | I | Non-Remote Alaskan Shrimp Processing | 1 | 1 | 9 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AE | Alaskan Herring Fillet Processing | 1 | 1 | 29 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | K | Northern Shrimp Processing/Contig States | 1 | 1 | 11 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AF | Non-Alaskan Herring Fillet Processing | 1 | 1 | 30 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | M | Breaded Shrimp Processing/Contig States | 1 | 1 | 13 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | AG | ABALONE PROCESSING | 1 | 1 | 31 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | Q | Alaskan Mechanized Salmon Processing | 1 | 1 | 16 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | P | Alaskan Hand-Butchered Salmon Processing | 1 | 1 | 15 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | S | West Coast Mechanized Salmon Processing | 1 | 1 | 18 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | U | Non-Alaskan Conv Bottom Fish Processing | 1 | 1 | 20 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | X | Dung & Tanner Crab Process/Contig States | 1 | 1 | 8 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | J | Remote Alaskan Shrimp Processing | 1 | 1 | 10 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | X | MECHANIZED CLAM PROCESSING | 1 | 1 | 23 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | D | Non-Remote Alaskan Crab Meat Processing | 1 | 1 | 4 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | F | Non-Remote Whole Crab/Section Processing | 1 | 1 | 6 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | W | Hand-Shucked Clam Processing | 1 | 1 | 22 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | B | CONVENTIONAL Blue Crab Processing | 1 | 1 | 2 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | L | S Non-Bread Shrimp Process/Contig States | 1 | 1 | 12 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | N | TUNA PROCESSING | 1 | 1 | 14 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | R | W Coast Hand-Butchered Salmon Processing | 1 | 1 | 17 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | T | Alaskan Bottom Fish Processing | 1 | 1 | 19 |
| 2092 | 2092 | FRESH OR FROZEN PACKAGED FISH & SEAFOOD | 408 | V | Non-Alaskan Mech Bottom Fish Processing | 1 | 1 | 21 |
| 2095 | 2095 | ROASTED COFFEE | | NR | | 1 | 1 | 99 |
| 2097 | 2097 | MANUFACTURED ICE | | NR | | 1 | 1 | 99 |
| 2098 | 2098 | MACARONI, SPAGHETTI, VERMICELLI & WOOD | | NR | | 1 | 1 | 99 |
| 2099 | 2099 | FOOD PREPARATIONS, NEC | | NR | | 1 | 1 | 99 |
| 2099 | 2096 | FOOD PREPARATIONS, NEC | | NR | | 1 | 1 | 99 |
| 2099 | 2068 | FOOD PREPARATIONS, NEC | | NR | | 1 | 1 | 99 |
| 2099 | 2066 | FOOD PREPARATIONS, NEC | | NR | | 1 | 1 | 99 |
| 2111 | 2111 | CIGARETTES | | NR | | 1 | 1 | 99 |

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| 1972/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|---------------------------------------------|-------------|--------------------|------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2121 | 2121 | CIGARS | | NR | | 1 | 1 | 99 |
| 2131 | 2131 | TOBACCO (CHEWING AND SMOKING) & SNUFF | | NR | | 1 | 1 | 99 |
| 2141 | 2141 | TOBACCO STEMMING AND REDRYING | | NR | | 1 | 1 | 99 |
| 2211 | 2211 | BROAD WOVEN FABRIC MILLS, COTTON | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2211 | 2211 | BROAD WOVEN FABRIC MILLS, COTTON | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2211 | 2211 | BROAD WOVEN FABRIC MILLS, COTTON | 410 | D | WOVEN FABRIC FINISHING | 9 | 10 | 3 |
| 2211 | 2221 | BROAD WOVEN FABRIC MILLS, SYNTHETICS | 410 | D | WOVEN FABRIC FINISHING | 9 | 10 | 3 |
| 2211 | 2221 | BROAD WOVEN FABRIC MILLS, SYNTHETICS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2211 | 2221 | BROAD WOVEN FABRIC MILLS, SYNTHETICS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2211 | 2231 | BROAD WOVEN FABRIC MILLS, WOOL | 410 | B | WOOL FINISHING | 9 | 10 | 2 |
| 2211 | 2231 | BROAD WOVEN FABRIC MILLS, WOOL | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2241 | 2241 | NARROW FABRICS & Other SMALLWARES MILL | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2241 | 2241 | NARROW FABRICS & Other SMALLWARES MILL | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2251 | 2251 | WOMEN'S FULL Length & KNEE Length HOSIERY | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2251 | 2251 | WOMEN'S FULL Length & KNEE Length HOSIERY | | NR | NO FINISHING | 1 | 1 | 99 |
| 2252 | 2252 | HOSIERY, EXC WOMEN'S FULL Length & Knee | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2252 | 2252 | HOSIERY, EXC WOMEN'S FULL Length & Knee | | NR | NO FINISHING | 1 | 1 | 99 |
| 2253 | 2253 | KNIT OUTERWEAR MILLS | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2253 | 2253 | KNIT OUTERWEAR MILLS | | NR | NO FINISHING | 1 | 1 | 99 |
| 2254 | 2254 | KNIT UNDERWEAR MILLS | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2254 | 2254 | KNIT UNDERWEAR MILLS | | NR | NO FINISHING | 1 | 1 | 99 |
| 2257 | 2257 | CIRCULAR KNIT FABRIC MILLS | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2257 | 2257 | CIRCULAR KNIT FABRIC MILLS | | NR | NO FINISHING | 1 | 1 | 99 |
| 2258 | 2258 | WARP KNIT FABRIC MILLS | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2258 | 2258 | WARP KNIT FABRIC MILLS | | NR | NO FINISHING | 1 | 1 | 99 |
| 2259 | 2259 | KNITTING MILLS, NEC | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 0 |
| 2259 | 2259 | KNITTING MILLS, NEC | | NR | NO FINISHING | 1 | 1 | 99 |
| 2261 | 2261 | FINISHERS of BROAD WOVEN Fabrics of COTTON | 410 | D | WOVEN FABRIC FINISHING | 9 | 10 | 0 |
| 2262 | 2262 | FINISHERS of BROAD WOVEN Fabrics/Man-Made | 410 | D | WOVEN FABRIC FINISHING | 9 | 10 | 0 |
| 2269 | 2269 | FINISHERS OF TEXTILES, NEC | 410 | D | WOVEN FABRIC FINISHING | 9 | 10 | 1 |
| 2269 | 2269 | FINISHERS OF TEXTILES, NEC | 410 | G | STOCK & YARN FINISHING | 7 | 9 | 2 |
| 2271 | 2273 | WOVEN CARPETS AND RUGS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2271 | 2273 | WOVEN CARPETS AND RUGS | 410 | F | CARPET FINISHING | 1 | 8 | 1 |
| 2272 | 2273 | TUPTED CARPETS AND RUGS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2272 | 2273 | TUPTED CARPETS AND RUGS | 410 | F | CARPET FINISHING | 1 | 8 | 2 |
| 2279 | 2273 | CARPETS AND RUGS, NEC | 410 | F | CARPET FINISHING | 1 | 8 | 1 |
| 2279 | 2273 | CARPETS AND RUGS, NEC | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2281 | 2281 | YARN SPINNING MILLS:Cotton, Man-Made Fibers | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2281 | 2281 | YARN SPINNING MILLS:Cotton, Man-Made Fibers | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2282 | 2282 | YARN TEXTURIZING, THROWING, TWISTING & V | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2282 | 2282 | YARN TEXTURIZING, THROWING, TWISTING & V | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2283 | 2284 | YARN MILLS, WOOL, Including CARPET & RUG | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2283 | 2281 | YARN MILLS, WOOL, Including CARPET & RUG | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2283 | 2282 | YARN MILLS, WOOL, Including CARPET & RUG | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 3 |
| 2283 | 2284 | YARN MILLS, WOOL, Including CARPET & RUG | 410 | G | STOCK AND YARN FINISHING | 7 | 9 | 4 |
| 2284 | 2284 | THREAD MILLS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2284 | 2284 | THREAD MILLS | 410 | G | FELTED FABRIC PROCESSING | 7 | 9 | 2 |
| 2291 | 2299 | FELT GOODS, EXC WOVEN FELTS AND HATS | 410 | I | FELTED FABRIC PROCESSING | 1 | 5 | 0 |
| 2292 | 2258 | LACE GOODS | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 1 |
| 2292 | 2258 | LACE GOODS | 410 | E | KNIT FABRIC FINISHING | 9 | 10 | 2 |
| 2293 | 2299 | PADDINGS AND UPHOLSTERY FILLING | | NR | PADDING & UPHOLSTERY FILLING | 1 | 1 | 99 |
| 2294 | 2299 | PROCESSED WASTE AND RECOVERED FIBERS & | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 0 |
| 2295 | 2295 | COATED FABRICS, NOT RUBBERIZED | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 0 |
| 2296 | 2296 | TIRE CORD AND FABRIC | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 0 |

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| 1977 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|---------------------|---------------------|--------------------------------------------|-------------|--------------------|----------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2297 | 2297 | NONWOVEN FABRICS | 410 | N | NONWOVEN MANUFACTURING | 1 | 8 | 0 |
| 2298 | 2298 | CORDAGE AND TWINE | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 0 |
| 2299 | 2299 | TEXTILE GOODS NEC | 410 | A | WOOL SCOURING | 10 | 10 | 1 |
| 2299 | 2299 | TEXTILE GOODS NEC | 410 | C | LOW WATER USE PROCESSING | 2 | 9 | 2 |
| 2311 | 2311 | MEN'S, YOUTH'S, BOY'S SHIRTS (EXCEPT WOR | | NR | | 1 | 1 | 99 |
| 2321 | 2321 | MEN'S, YOUTH'S, BOY'S SHIRTS (EXCEPT WOR | | NR | | 1 | 1 | 99 |
| 2321 | 2322 | MEN'S, YOUTH'S, BOY'S SHIRTS (EXCEPT WOR | | NR | | 1 | 1 | 99 |
| 2322 | 2322 | MEN'S, YOUTH'S, & BOY'S UNDERWEAR | | NR | | 1 | 1 | 99 |
| 2323 | 2323 | MEN'S, YOUTH'S, & BOY'S NECKWEAR | | NR | | 1 | 1 | 99 |
| 2327 | 2325 | MEN'S, YOUTH'S, & BOY'S SEPARATE TROUSER | | NR | | 1 | 1 | 99 |
| 2328 | 2325 | MEN'S, YOUTH'S, & BOY'S WORK CLOTHING | | NR | | 1 | 1 | 99 |
| 2328 | 2326 | MEN'S, YOUTH'S, & BOY'S WORK CLOTHING | | NR | | 1 | 1 | 99 |
| 2329 | 2329 | MEN'S, YOUTH'S, & BOY'S CLOTHING, NEC | | NR | | 1 | 1 | 99 |
| 2331 | 2331 | WOMEN'S, MISSES & JUNIORS' BLOUSES, WAIS | | NR | | 1 | 1 | 99 |
| 2335 | 2335 | WOMEN'S, MISSES & JUNIORS' DRESSES | | NR | | 1 | 1 | 99 |
| 2337 | 2337 | WOMEN'S, MISSES & JUNIORS' SUITS, SHIRT | | NR | | 1 | 1 | 99 |
| 2339 | 2339 | WOMEN'S, MISSES & JUNIORS' OUTERWEAR, H | | NR | | 1 | 1 | 99 |
| 2341 | 2341 | WOMEN'S, MISSES, CHILDREN'S & INFANTS' | | NR | | 1 | 1 | 99 |
| 2342 | 2342 | BRASSIERS, GIRDLES & ALLIED GARMENTS | | NR | | 1 | 1 | 99 |
| 2351 | 2353 | MILLINERY | | NR | | 1 | 1 | 99 |
| 2352 | 2353 | HATS & COATS, EXCEPT MILLINERY | | NR | | 1 | 1 | 99 |
| 2361 | 2361 | GIRL'S, CHILDREN'S AND INFANT'S DRESSES, B | | NR | | 1 | 1 | 99 |
| 2363 | 2369 | GIRL'S, CHILDREN'S AND INFANT'S COATS & SU | | NR | | 1 | 1 | 99 |
| 2369 | 2369 | GIRL'S, CHILDREN'S & INFANT'S OUTERWEAR | | NR | | 1 | 1 | 99 |
| 2371 | 2371 | FUR GOODS | | NR | | 1 | 1 | 99 |
| 2381 | 2381 | DRESS & WORK GLOVES, EXCEPT KNIT & ALL-L | | NR | | 1 | 1 | 99 |
| 2384 | 2384 | ROBES & DRESSING GOWNS | | NR | | 1 | 1 | 99 |
| 2385 | 2385 | RAINCOATS & Other WATERPROOF OUTER GARM | | NR | | 1 | 1 | 99 |
| 2386 | 2386 | LEATHER & SHEEP-LINED CLOTHING | | NR | | 1 | 1 | 99 |
| 2387 | 2387 | APPAREL BELTS | | NR | | 1 | 1 | 99 |
| 2389 | 2389 | APPAREL & ACCESSORIES, NEC | | NR | | 1 | 1 | 99 |
| 2391 | 2391 | CURTAINS & DRAPERIES | | NR | | 1 | 1 | 99 |
| 2392 | 2392 | HOUSEFURNISHINGS, Except CURTAINS & DRAP | | NR | | 1 | 1 | 99 |
| 2393 | 2393 | TEXTILE BAGS | | NR | | 1 | 1 | 99 |
| 2394 | 2394 | CANVAS & RELATED PRODUCTS | | NR | | 1 | 1 | 99 |
| 2395 | 2395 | PLEATING, DECORATIVE & NOVELTY STICHING | | NR | | 1 | 1 | 99 |
| 2396 | 2396 | AUTOMOTIVE TRIMMINGS, APPAREL FINDINGS | | NR | | 1 | 1 | 99 |
| 2397 | 2397 | SCHIFFLI MACHINE EMBROIDERIES | | NR | | 1 | 1 | 99 |
| 2399 | 2399 | FABRICATED TEXTILE PRODUCTS, NEC | | NR | | 1 | 1 | 99 |
| 2411 | 2411 | LOGGING CAMPS AND LOGGING CONTRACTORS | 429 | I | WET STORAGE | 1 | 1 | 1 |
| 2411 | 2411 | LOGGING CAMPS AND LOGGING CONTRACTORS | 429 | U | LOG WASHING | 1 | 1 | 2 |
| 2411 | 2411 | LOGGING CAMPS AND LOGGING CONTRACTORS | | NR | | 1 | 1 | 99 |
| 2421 | 2411 | SAWMILLS & PLANING MILLS, GENERAL | | | | 3 | 3 | 1 |
| 2421 | 2421 | SAWMILLS & PLANING MILLS, GENERAL | 429 | A | BARKING | 1 | 1 | 2 |
| 2421 | 2421 | SAWMILLS & PLANING MILLS, GENERAL | 429 | K | SAWMILLS AND PLANING MILLS | 1 | 1 | 3 |
| 2421 | 2421 | SAWMILLS & PLANING MILLS, GENERAL | 429 | L | FINISHING | 1 | 1 | 4 |
| 2426 | 2426 | HARDWOOD DIMENSION & FLOORING MILLS | 429 | A | BARKING | 1 | 1 | 1 |
| 2426 | 2426 | HARDWOOD DIMENSION & FLOORING MILLS | 429 | I | WET STORAGE | 1 | 1 | 2 |
| 2426 | 2426 | HARDWOOD DIMENSION & FLOORING MILLS | 429 | J | LOG WASHING | 1 | 1 | 3 |
| 2426 | 2426 | HARDWOOD DIMENSION & FLOORING MILLS | 429 | K | SAWMILLS AND PLANING MILLS | 1 | 1 | 4 |
| 2426 | 2426 | HARDWOOD DIMENSION & FLOORING MILLS | 429 | L | FINISHING | 1 | 1 | 5 |
| 2429 | 2429 | SPECIAL PRODUCT SAWMILLS NEC | 429 | I | WET STORAGE | 1 | 1 | 1 |
| 2429 | 2429 | SPECIAL PRODUCT SAWMILLS NEC | 429 | J | LOG WASHING | 1 | 1 | 2 |
| 2429 | 2429 | SPECIAL PRODUCT SAWMILLS NEC | 429 | K | SAWMILLS AND PLANING MILLS | 1 | 1 | 3 |

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| 1977/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|-------------------------------------------|-------------|--------------------|------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2429 | 2429 | SPECIAL PRODUCT SAWMILLS NEC | 429 | L | MILLWORK | 1 | 1 | 4 |
| 2431 | 2431 | MILLWORK | 429 | K | SAWMILLS AND PLANING MILLS | 1 | 1 | 1 |
| 2431 | 2431 | MILLWORK | 429 | L | MILLWORK | 1 | 1 | 2 |
| 2434 | 2434 | WOOD KITCHEN CABINETS | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2434 | 2434 | WOOD KITCHEN CABINETS | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2435 | 2435 | HARDWOOD VENEER AND PLYWOOD | 429 | A | BARKING | 1 | 1 | 1 |
| 2435 | 2435 | HARDWOOD VENEER AND PLYWOOD | 429 | B | VENEER | 1 | 1 | 3 |
| 2435 | 2435 | HARDWOOD VENEER AND PLYWOOD | 429 | C | PLYWOOD | 1 | 1 | 2 |
| 2435 | 2435 | HARDWOOD VENEER AND PLYWOOD | 429 | I | WET STORAGE | 1 | 1 | 4 |
| 2435 | 2435 | HARDWOOD VENEER AND PLYWOOD | 429 | J | LOG WASHING | 1 | 1 | 5 |
| 2436 | 2436 | SOFTWOOD VENEER AND PLYWOOD | 429 | A | BARKING | 1 | 1 | 1 |
| 2436 | 2436 | SOFTWOOD VENEER AND PLYWOOD | 429 | B | VENEER | 1 | 1 | 3 |
| 2436 | 2436 | SOFTWOOD VENEER AND PLYWOOD | 429 | C | PLYWOOD | 1 | 1 | 2 |
| 2436 | 2436 | SOFTWOOD VENEER AND PLYWOOD | 429 | I | WET STORAGE | 1 | 1 | 4 |
| 2436 | 2436 | SOFTWOOD VENEER AND PLYWOOD | 429 | J | LOG WASHING | 1 | 1 | 5 |
| 2439 | 2439 | STRUCTURAL WOOD MEMBERS, NEC | | NR | | 1 | 1 | 99 |
| 2441 | 2441 | NAILED & LOCK CORNER WOOD Boxes & Shook | | NR | | 1 | 1 | 99 |
| 2448 | 2448 | WOOD PALLETS AND SKIDS | | NR | | 1 | 1 | 99 |
| 2449 | 2449 | WOOD CONTAINERS NEC | 429 | K | SAWMILLS | 1 | 1 | 0 |
| 2451 | 2451 | MOBILE HOMES | | NR | | 1 | 1 | 99 |
| 2452 | 2452 | Prefabricated WOOD BUILDINGS & COMPONENTS | | NR | | 1 | 1 | 99 |
| 2491 | 2491 | WOOD PRESERVING | 429 | A | BARKING | 10 | 10 | 4 |
| 2491 | 2491 | WOOD PRESERVING | 429 | J | LOG WASHING | 10 | 10 | 6 |
| 2491 | 2491 | WOOD PRESERVING | 429 | G | WOOD PRESERVING-STEAM | 10 | 10 | 1 |
| 2491 | 2491 | WOOD PRESERVING | 429 | H | WOOD PRESERVING-BOULTONIZING | 10 | 10 | 2 |
| 2491 | 2491 | WOOD PRESERVING | 429 | I | WET STORAGE | 10 | 10 | 5 |
| 2491 | 2491 | WOOD PRESERVING | 429 | F | WOOD PRESERVING | 10 | 10 | 3 |
| 2491 | 2491 | WOOD PRESERVING | 429 | M | PARTICLEBOARD | 3 | 3 | 0 |
| 2492 | 2493 | PARTICLEBOARD | | NR | | 3 | 3 | 99 |
| 2499 | 2493 | WOOD PRODUCTS, NEC | 429 | M | PARTICLEBOARD | 1 | 1 | 1 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | A | BARKING | 1 | 1 | 2 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | D | HARDBOARD - DRY PROCESS | 1 | 1 | 3 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | E | HARDBOARD - WET PROCESS | 1 | 7 | 4 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | I | WET STORAGE | 1 | 1 | 5 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | J | LOG WASHING | 1 | 1 | 6 |
| 2499 | 2499 | WOOD PRODUCTS, NEC | 429 | L | FINISHING | 1 | 1 | 7 |
| 2511 | 2511 | WOOD HOUSEHOLD FURNITURE, Except UPHOLS | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2511 | 2511 | WOOD HOUSEHOLD FURNITURE, Except UPHOLS | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2512 | 2512 | WOOD HOUSEHOLD FURNITURE, UPHOLSTERED | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2512 | 2512 | WOOD HOUSEHOLD FURNITURE, UPHOLSTERED | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2514 | 2514 | METAL HOUSEHOLD FURNITURE | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 2514 | 2514 | METAL HOUSEHOLD FURNITURE | | NR | | 1 | 1 | 99 |
| 2515 | 2515 | MATTRESSES & BEDSPRINGS | | NR | | 1 | 1 | 99 |
| 2517 | 2517 | WOOD TV, RADIO, Phonograph & SEWING MACHD | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2517 | 2517 | WOOD TV, RADIO, Phonograph & SEWING MACHD | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2519 | 2519 | HOUSEHOLD FURNITURE, NEC | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2519 | 2519 | HOUSEHOLD FURNITURE, NEC | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2521 | 2521 | WOOD OFFICE FURNITURE | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2521 | 2521 | WOOD OFFICE FURNITURE | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2522 | 2522 | METAL OFFICE FURNITURE | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 2522 | 2522 | METAL OFFICE FURNITURE | | NR | | 1 | 1 | 99 |
| 2531 | 2531 | PUBLIC BUILDING & RELATED FURNITURE | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |
| 2531 | 2531 | PUBLIC BUILDING & RELATED FURNITURE | 429 | P | WOOD FURN & Fixture Prod w/ Water | 1 | 1 | 2 |
| 2541 | 2541 | WOOD PARTITIONS, SHELVING, LOCKERS & OFF | 429 | O | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 1 |

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|------------------------------|---------------------|-------------------------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2541 | 2541 | WOOD PARTITIONS, SHELVING, LOCKERS & OFF | 429 | P | WOOD FURN & Fixture Prod w/o Water | 1 | 1 | 2 |
| 2542 | 2542 | METAL PARTITIONS, SHELVING, LOCKERS & OFF | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 2542 | 2542 | METAL PARTITIONS, SHELVING, LOCKERS & OFF | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 2591 | 2591 | DRAPERY HARDWARE & WINDOW Blinds & Shade | | NR | | 1 | 1 | 99 |
| 2599 | 2522 | FURNITURE AND FIXTURES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 2599 | 2522 | FURNITURE AND FIXTURES, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 2599 | 2542 | FURNITURE AND FIXTURES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 2599 | 2542 | FURNITURE AND FIXTURES, NEC | | | NO ELECTROPLATING | 1 | 1 | 3 |
| 2599 | 2599 | FURNITURE AND FIXTURES, NEC | 429 | O | WOOD FURN & Fixture Prod. w/o Water | 1 | 1 | 4 |
| 2599 | 2599 | FURNITURE AND FIXTURES, NEC | 429 | P | WOOD FURN & Fixture Prod. with Water | 1 | 1 | 5 |
| 2611 | 2611 | PULP MILLS | 430 | A | UNBLEACHED KRAFT | 10 | 10 | 1 |
| 2611 | 2611 | PULP MILLS | 430 | B | SEMI-CHEMICAL | 1 | 5 | 2 |
| 2611 | 2611 | PULP MILLS | 430 | J | PAPER GRADE SULFITE (blow pit wash) | 10 | 10 | 8 |
| 2611 | 2611 | PULP MILLS | 430 | D | UNBL KRAFT-NTRL Sulfite-Semi-Chem | 10 | 10 | 3 |
| 2611 | 2611 | PULP MILLS | 430 | G | MARKET BLEACHED KRAFT | 10 | 10 | 5 |
| 2611 | 2611 | PULP MILLS | 430 | H | Board, Course & Kraft BLEACHED Kraft | 10 | 10 | 6 |
| 2611 | 2611 | PULP MILLS | 430 | I | FINE BLEACHED KRAFT | 10 | 10 | 7 |
| 2611 | 2611 | PULP MILLS | 430 | F | DISSOLVING KRAFT | 10 | 10 | 4 |
| 2611 | 2611 | PULP MILLS | 430 | K | DISSOLVING SULFITE PULP | 10 | 10 | 9 |
| 2611 | 2611 | PULP MILLS | 430 | L | Groundwood CHEMI-MECHANICAL | 2 | 4 | 10 |
| 2611 | 2611 | PULP MILLS | 430 | M | Groundwood THERMO-MECHANICAL | 2 | 4 | 11 |
| 2611 | 2611 | PULP MILLS | 430 | N | Groundwood Course, Molded & NewsPapers | 2 | 4 | 12 |
| 2611 | 2611 | PULP MILLS | 430 | O | GROUNDWOOD FINE PAPERS | 2 | 4 | 13 |
| 2611 | 2611 | PULP MILLS | 430 | P | SODA | 4 | 5 | 14 |
| 2611 | 2611 | PULP MILLS | 430 | U | PAPER GRADE SULFITE (drum wash) | 8 | 8 | 15 |
| 2611 | 2611 | PULP MILLS | 430 | V | UNBLEACHED Kraft & Semi-Chemical | 10 | 10 | 16 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | A | UNBLEACHED KRAFT | 10 | 10 | 1 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | B | SEMI-CHEMICAL | 1 | 5 | 2 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | D | UNBL Kraft-NTRL Sulfite Semi-Chemical | 10 | 10 | 3 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | F | DISSOLVING KRAFT | 10 | 10 | 4 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | G | MARKET BLEACHED KRAFT | 10 | 10 | 5 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | H | Board, Course & Kraft BLEACHED Kraft | 10 | 10 | 6 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | I | FINE BLEACHED KRAFT | 10 | 10 | 7 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | J | PAPER GRADE SULFITE (blow pit wash) | 10 | 10 | 8 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | O | GROUNDWOOD FINE PAPERS | 2 | 4 | 13 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | L | Groundwood Chemi-Mechanical | 2 | 4 | 10 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | M | Groundwood Thermo-Mechanical | 2 | 4 | 11 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | N | Groundwood Course, Molded & Newspapers | 2 | 4 | 12 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | K | DISSOLVING SULFITE PULP | 10 | 10 | 9 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | P | SODA | 4 | 5 | 14 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | U | PAPER GRADE SULFITE (drum wash) | 8 | 8 | 15 |
| 2621 | 2611 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | V | UNBLEACHED Kraft & Semi-Chemical | 10 | 10 | 16 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | A | UNBLEACHED KRAFT | 10 | 10 | 17 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | B | SEMI-CHEMICAL | 1 | 5 | 18 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | D | UnbleachedKraft-Ntrl Sulfite-Semi-Chemic | 10 | 10 | 19 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | U | PAPERGRADE SULFITE (drum wash) | 8 | 8 | 30 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | V | UNBLEACHED Kraft & Semi-Chemical | 10 | 10 | 31 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | I | FINE BLEACHED KRAFT | 10 | 10 | 21 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | X | NONINTEGRATED Lightweight PAPERS | 1 | 2 | 32 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | L | Groundwood Chemi-Mechanical | 2 | 4 | 23 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | Y | Nonintegrated Filter & NonWoven Papers | 1 | 5 | 33 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | N | Groundwood Course, Molded & Newspapers | 2 | 4 | 25 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | P | SODA | 4 | 5 | 27 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | R | NONINTEGRATED FINE PAPERS | 1 | 5 | 29 |

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|----------------------|---------------------|--------------------------------------------|-------------|--------------------|----------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | H | Board, Course & Tissue Bleached Kraft | 10 | 10 | 20 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | J | PAPER GRADE SULFITE (blow pit wash) | 10 | 10 | 22 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | M | GROUNDWOOD Thermo-Chemical | 2 | 4 | 24 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | O | GROUNDWOOD FINE PAPERS | 2 | 4 | 26 |
| 2621 | 2621 | PAPER MILLS EXCEPT BUILDING PAPER | 430 | Q | DEINK | 4 | 7 | 28 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | A | UNBLEACHED KRAFT | 10 | 10 | 1 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | B | SEMI-CHEMICAL | 1 | 5 | 2 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | D | UNBL. Kraft-NTRL Sulfite Semi-Chemical | 10 | 10 | 3 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | H | Board, Course & Tissue Bleached Kraft | 10 | 10 | 4 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | I | FINE BLEACHED KRAFT | 10 | 10 | 5 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | J | PAPER GRADE SULFITE (blow pit wash) | 5 | 8 | 6 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | L | GROUNDWOOD Chemi-Mechanical | 2 | 4 | 7 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | M | GROUNDWOOD Thermo-Mechanical | 2 | 4 | 8 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | A | SEMI-CHEMICAL | 1 | 5 | 19 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | N | Groundwood Course, Molded & Newspapers | 2 | 4 | 9 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | D | UNBL. Kraft NTRL Sulfite Semi-Chemical | 10 | 10 | 20 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | P | SODA | 4 | 5 | 11 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | E | PAPERBOARD FROM WASTE PAPER | 2 | 6 | 21 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | R | NONINTEGRATED FINE PAPERS | 1 | 5 | 13 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | H | Board, Course Tissue Bleached Kraft | 10 | 10 | 22 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | V | UNBLEACHED Kraft & Semi-Chemical | 10 | 10 | 15 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | S | NONINTEGRATED TISSUE PAPERS | 1 | 4 | 23 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | Y | Nonintegrated Filter & Woven Papers | 1 | 5 | 17 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | V | UNBLEACHED Kraft & Semi-Chemical | 10 | 10 | 24 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | O | GROUNDWOOD FINE PAPERS | 2 | 4 | 10 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | U | PAPERGRADE SULFITE (drum wash) | 1 | 8 | 14 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | X | Nonintegrated Lightweight Papers | 1 | 2 | 16 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | A | UNBLEACHED KRAFT | 10 | 10 | 18 |
| 2631 | 2611 | PAPERBOARD MILLS | 430 | Q | DEINK | 4 | 7 | 12 |
| 2631 | 2631 | PAPERBOARD MILLS | 430 | Z | NONINTEGRATED PAPERBOARD | 1 | 4 | 25 |
| 2641 | 2671 | PAPER COATING AND GLAZING | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2641 | 2672 | PAPER COATING AND GLAZING | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2642 | 2677 | ENVELOPES | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2643 | 2674 | BAGS, EXCEPT TEXTILE BAGS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2643 | 2673 | BAGS, EXCEPT TEXTILE BAGS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2645 | 2675 | DIE-CUT PAPER, PAPERBOARD & CARDBOARD | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2646 | 2679 | PRESSED AND MOLDED PULP GOODS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2647 | 2676 | SANITARY PAPER PRODUCTS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2648 | 2678 | STATIONARY, TABLETS & RELATED PRODUCTS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2649 | 2679 | CONVERTED PAPER & PAPERBOARD PRODUCTS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2651 | 2657 | FOLDING PAPERBOARD BOXES | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2652 | 2652 | SET-UP PAPERBOARD BOXES | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2653 | 2653 | CORRUGATED AND SOLID FIBER BOXES | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2654 | 2657 | SANITARY FOOD CONTAINERS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2654 | 2656 | SANITARY FOOD CONTAINERS | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2655 | 2655 | FIBER CANS, TUBES, DRUMS & SIMILAR PRODUCT | | NR | CONVERTED PAPER | 1 | 1 | 99 |
| 2661 | 2493 | BUILDING PAPER & BUILDINGBOARD MILLS | 429 | NR | PARTICLEBOARD | 1 | 1 | 1 |
| 2661 | 2621 | BUILDING PAPER & BUILDINGBOARD MILLS | 431 | A | BUILDER'S PAPER & ROOFING FELT | 1 | 8 | 2 |
| 2711 | 2711 | NEWSPAPERS: PUBLISHING, PUBLISHING & PRIN | | NR | | 3 | 3 | 99 |
| 2721 | 2721 | PERIODICALS: PUBLISHING, PUBLISHING & PRIN | | NR | | 3 | 3 | 99 |
| 2731 | 2731 | BOOKS: PUBLISHING, PUBLISHING & PRINTING | | NR | | 3 | 3 | 99 |
| 2732 | 2732 | BOOK PRINTING | | NR | | 3 | 3 | 99 |
| 2741 | 2741 | MISCELLANEOUS PUBLISHING | | NR | | 3 | 3 | 99 |
| 2751 | 2759 | COMMERCIAL PRINTING, LETTERPRESS & SCRI | | NR | | 3 | 3 | 99 |

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|----------------------|---------------------|---------------------------------------------|-------------|--------------------|-------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2752 | 2752 | COMMERCIAL PRINTING, LITHOGRAPHIC | | NR | | 3 | 3 | 99 |
| 2753 | 2796 | ENGRAVING & PLATE PRINTING | | NR | | 3 | 3 | 99 |
| 2753 | 2759 | ENGRAVING & PLATE PRINTING | | NR | | 3 | 3 | 99 |
| 2754 | 2796 | COMMERCIAL PRINTING, GRAVURE | | NR | | 3 | 3 | 99 |
| 2754 | 2754 | COMMERCIAL PRINTING, GRAVURE | | NR | | 3 | 3 | 99 |
| 2761 | 2761 | MANIFOLD BUSINESS FORMS | | NR | | 3 | 3 | 99 |
| 2771 | 2771 | GREETING CARD PUBLISHING | | NR | | 3 | 3 | 99 |
| 2782 | 2782 | BLANKBOOKS, LOOSELEAF BINDERS & DEVICES | | NR | | 3 | 3 | 99 |
| 2789 | 2789 | BOOKBINDING & RELATED WORK | | NR | | 3 | 3 | 99 |
| 2791 | 2719 | TYPESETTING | | NR | | 3 | 3 | 99 |
| 2793 | 2796 | PHOTOENGRAVING | | NR | | 3 | 3 | 99 |
| 2794 | 2796 | ELECTRO/TYPING & STEREOTYPING | | NR | | 3 | 3 | 99 |
| 2795 | 2796 | LITHOGRAPHIC PLATEMAKING & Related Services | | NR | | 3 | 3 | 99 |
| 2812 | 2812 | ALKALIES AND CHLORINE | 415 | F | CHLORINE & Sodium or Potassium Hydr. | 10 | 10 | 1 |
| 2812 | 2812 | ALKALIES AND CHLORINE | 415 | F | Chlorine & Sod/Pot Hydr. (mercury cell) | 10 | 10 | 3 |
| 2812 | 2812 | ALKALIES AND CHLORINE | 415 | F | Chlorine & Sod/Pot Hydr. (diaphragm cell) | 10 | 10 | 2 |
| 2812 | 2812 | ALKALIES AND CHLORINE | 415 | N | SODIUM BICARBONATE | 3 | 3 | 5 |
| 2812 | 2812 | ALKALIES AND CHLORINE | 415 | O | SODIUM CARBONATE | 6 | 6 | 4 |
| 2812 | 2812 | ALKALIES AND CHLORINE | | NR | POTASSIUM CARBONATE | 3 | 3 | 99 |
| 2812 | 2812 | ALKALIES AND CHLORINE | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2813 | 2813 | INDUSTRIAL GASES | 415 | AF | CARBON DIOXIDE | 3 | 3 | 1 |
| 2813 | 2813 | INDUSTRIAL GASES | 415 | AO | HYDROGEN | 3 | 3 | 2 |
| 2813 | 2813 | INDUSTRIAL GASES | 415 | AW | OXYGEN & NITROGEN | 3 | 3 | 3 |
| 2813 | 2813 | INDUSTRIAL GASES | | NR | Gases, IND Compressed Liquid/Solid, NEC | 3 | 3 | 99 |
| 2813 | 2813 | INDUSTRIAL GASES | | NR | NITROUS OXIDE | 3 | 3 | 99 |
| 2813 | 2813 | INDUSTRIAL GASES | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | 415 | V | TITANIUM DIOXIDE (sulfate process) | 8 | 9 | 1 |
| 2816 | 2816 | INORGANIC PIGMENTS | 415 | V | TITANIUM DIOXIDE (chloride process) | 1 | 2 | 2 |
| 2816 | 2816 | INORGANIC PIGMENTS | 415 | AH | CHROME PIGMENTS | 1 | 8 | 3 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | BARYTES PIGMENTS | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | 415 | BJ | ZINC OXIDE | 6 | 6 | 4 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | LEAD DIOXIDE, BROWN (PbO2) | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | LEAD OXIDE, RED (Pb3O4) | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | BARIUM SULFATE | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | White Lead Pigment (Pb(ON)2+PbCO3) | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | IRON COLORS | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | IRON OXIDE, BLACK | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | IRON OXIDE, MAGNETIC | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | IRON OXIDE, YELLOW | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | OCHERS | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | SATIN WHITE PIGMENT | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | ULTRAMARINE PIGMENT | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | UMBERS | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | WHITING | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | NR | SIENNAS | 6 | 6 | 99 |
| 2816 | 2816 | INORGANIC PIGMENTS | | BL | CADMIUM PIGMENTS | 10 | 10 | 5 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | A | ALUMINUM CHLORIDE | 6 | 6 | 1 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | B | ALUMINUM SULFATE | 3 | 3 | 6 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | C | CALCIUM CARBIDE | 3 | 3 | 26 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | D | CALCIUM CHLORIDE | 6 | 6 | 28 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | J | NITRIC ACID | 3 | 3 | 81 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | G | HYDROCHLORIC ACID | 3 | 3 | 51 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | H | HYDROFLUORIC ACID | 8 | 9 | 52 |

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|----------------------|---------------------|-------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | I | HYDROGEN PEROXIDE | 3 | 3 | 55 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | E | CALCIUM OXIDE | 6 | 6 | 31 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | K | POTASSIUM METAL | 3 | 3 | 166 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | L | POTASSIUM DICHROMATE | 3 | 3 | 96 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | M | POTASSIUM SULFATE | 6 | 6 | 102 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | P | SODIUM CHLORIDE | 6 | 6 | 121 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | Q | SODIUM Dichromate/SODIUM Sulfate | 3 | 3 | 126 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | R | SODIUM METAL | 3 | 3 | 128 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AD | CALCIUM CARBONATE | 3 | 3 | 27 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AE | CALCIUM HYDROXIDE | 6 | 6 | 165 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | T | SODIUM SULFITE | 6 | 6 | 131 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AG | Calcium Monoxide & By-Product Hydrogen | 3 | 3 | 32 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | W | ALUMINUM FLUORIDE | 7 | 8 | 3 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AI | CHROMIC ACID | 3 | 3 | 35 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | Y | AMMONIUM HYDROXIDE | 3 | 3 | 11 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AJ | COPPER SULFATE | 10 | 10 | 43 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AA | BORAX | 3 | 3 | 19 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AK | CUPROUS OXIDE | 10 | 10 | 44 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AC | BROMINE | 3 | 3 | 24 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AL | FERRIC CHLORIDE | 3 | 3 | 45 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | U | SULFURIC ACID | 3 | 3 | 144 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | Z | BARIUM CARBONATE | 3 | 3 | 15 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AB | BORIC ACID | 6 | 6 | 20 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | S | SODIUM SILICATE | 3 | 3 | 129 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | X | AMMONIUM CHLORIDE | 3 | 3 | 9 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AN | FERROUS SULFATE | 3 | 3 | 46 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AN | FLUORINE | 3 | 3 | 48 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AO | HYDROGEN | 3 | 3 | 53 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AP | HYDROGEN CYANIDE | 1 | 7 | 54 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AQ | IODINE | 3 | 3 | 61 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SILVER OXIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AR | LEAD MONOXIDE | 3 | 3 | 64 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SODA ALLUM | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AT | MANGANESE SULFATE | 3 | 3 | 71 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SODIUM ANTIMONATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AV | NITRIC ACID (STRONG) | 3 | 3 | 80 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BN | SODIUM CHLORATE | 10 | 10 | 120 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AY | POTASSIUM IODIDE | 3 | 3 | 98 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SODIUM COMPOUNDS, INORGANIC | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BA | SILVER NITRATE | 6 | 6 | 115 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SODIUM CYANIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BC | SODIUM FLUORIDE | 3 | 3 | 125 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | STANNIC & STAMMOUS CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BE | SODIUM HYDROSULFITE | 3 | 3 | 126 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | Strontium Carbonate (Presipitated/oxide) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BG | SODIUM THIOSULFATE | 3 | 3 | 132 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | STRONTIUM NITRATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BI | SULFUR DIOXIDE | 3 | 3 | 141 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SULFIDES AND SULFITES | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BK | ZINC SULFATE | 3 | 3 | 149 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SULFOCYANIDES | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | ALUMINUM HYDROXIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | SULFUR | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | NR | NR | ALUMS | 6 | 6 | 99 |

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SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|-------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SULFUR HEXAFLUORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | AMMONIUM COMPOUNDS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | THIOCYANATES, INORGANIC | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | AMMONIUM PERCHLORATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | TIN COMPOUNDS, INORGANIC | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Barium Compounds (not produced at mines) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | URANIUM SLAG, RADIOACTIVE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Boron Compounds (not produced at mines) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BO | ZINC CHLORIDE | 10 | 10 | 147 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | BRINE CHEMICALS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | ZINC SULFIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CALCIUM HYPOCHLORITE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CALCIUM | 3 | 3 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CHLOROSULFONIC ACID | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | NON-CONTACT COOLING WATER | 1 | 1 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CHROMIUM SULFATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 419 | E | Integrated Refineries (SULFUR Recovery) | 6 | 6 | 139 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BM | COBALT SALTS (COBALT SULFATE) | 1 | 8 | 39 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 421 | A | BAUXITE REFINING | 5 | 10 | 164 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | COPPER CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 421 | A | BAUXITE REFINING (ALUMINA) | 5 | 10 | 168 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | FISSIONABLE MATERIALS Production | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 421 | O | BERYLIUM OXIDE | 5 | 10 | 17 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | HYDRATED ALUMINUM SILICATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | A | PHOSPHORUS PRODUCTION | 6 | 6 | 160 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | HYDROPHOSPHITES | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | B | PHOSPHORUS CONSUMING | 6 | 6 | 161 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Inorganic Acids (exc HNO2 OR H2PO4) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | C | PHOSPHATE | 6 | 6 | 162 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | ISOTOPES, RADIOACTIVE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | D | DEFLUORINATED PHOSPHATE ROCK | 6 | 6 | 158 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | LEAD SILICATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | E | DEFLUORINATED PHOSPHORIC ACID | 6 | 6 | 159 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | LUMINOUS COMPOUNDS (RADIUM) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 422 | F | SODIUM PHOSPHATES | 6 | 6 | 163 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Manganese Oxide (Powder Synthetic) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AU | NICKEL SALTS (NICKEL CHLORIDE) | 8 | 9 | 169 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | MERCURY OXIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AU | NICKEL SALTS (NICKEL NITRATE) | 8 | 9 | 170 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Nuclear Fuel Reactor Cases, Inorganic | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AU | NICKEL SALTS (NICKEL Fluoborate) | 8 | 9 | 171 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | OLEUM (FUMING SULFURIC ACID) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AU | NICKEL SALTS (NICKEL Carbonate) | 8 | 9 | 172 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | PERCHLORIC ACID | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AJ | COPPER SALTS (COPPER CHLORIDE) | 10 | 10 | 173 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASH ALUM | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AJ | COPPER SALTS (COPPER IODIDE) | 10 | 10 | 174 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM ALUMINUM SULFATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AJ | COPPER SALTS (COPPER NITRATE) | 10 | 10 | 175 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM CYANIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AJ | COPPER SALTS (COPPER Carbonate) | 10 | 10 | 176 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM COMPOUNDS, Inorganic | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BL | CADMIUM SALTS (Cadmium CHLORIDE) | 10 | 10 | 177 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM NITRATE & SULFATE | 6 | 6 | 99 |

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SIC Code Cross Reference
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| 1972/ 1977 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|------------------------------|---------------------|------------------------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BL | CADIUM SALTS (CADIUM NITRATE) | 10 | 10 | 178 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | RADIUM LUMINOUS COMPOUNDS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BL | CADIUM SALTS (CADIUM SULFATE) | 10 | 10 | 179 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Reagent Grade Chem (inorg ref from tech) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BM | COBALT SALTS (COBALT NITRATE) | 8 | 8 | 180 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILICA AMORPHOUS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILVER BROMIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BM | COBALT SALTS (COBALT CHLORIDE) | 1 | 8 | 38 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | COBALT 60 (RADIOACTIVE) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILVER CYANIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | COPPER IODIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AS | LITHIUM CARBONATE | 3 | 3 | 66 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | HEAVY WATER (DEUTERIUM OXIDE) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AX | POTASSIUM CHLORIDE | 3 | 3 | 92 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | HYDROGEN SULFIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BB | SODIUM BISULFITE | 3 | 3 | 119 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | INDIUM CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BF | SODIUM SILICOFLUORIDE | 6 | 6 | 130 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | IODIDES | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BJ | ZINC OXIDE | 3 | 3 | 148 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | LEAD ARSENATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | ALUMINUM OXIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | LITHIUM COMPOUNDS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | AMMONIUM MOLYBDATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | MAGNESIUM COMPOUNDS (inorganic) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | BLEACHING POWDER | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | MERCURY CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CALCIUM COMPOUNDS (INORGANIC) | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | NICKEL AMMONIUM SULFATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CHROMIUM OXIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | Nuclear Fuel Scrap Re-Processing | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILVER IODIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | OXIDATION CATALYST from Porcelain | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AZ | POTASSIUM PERMAGANATE | 3 | 3 | 101 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | PEROXIDES, INORGANIC | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BN | STANNIC OXIDE | 3 | 3 | 134 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASH MAGNESIA | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | AMMONIA ALUM | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM BROMIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | BOROSILICATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM CHLORATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILVER CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | POTASSIUM HYPOCHLORITE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | BO | SODIUM HYDROSULFIDE | 3 | 3 | 127 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | AMMONIUM THIOSULFATE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | CERIUM SALTS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | 415 | AU | NICKEL SULFATE | 8 | 10 | 79 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | ALUMINUM COMPOUNDS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | RADIUM CHLORIDE | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | RARE EARTH METAL SALTS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SALTS OF RARE EARTH METALS | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILICA GEL | 6 | 6 | 99 |
| 2819 | 2819 | INORGANIC CHEMICALS NEC | | NR | SILVER CARBONATE | 6 | 6 | 99 |
| 2821 | 2821 | PLASTIC MATERIALS, SYN RESINS & NONVUL E | 414/ 416 | F | RAYON FIBERS | 8 | 9 | 5 |

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| 1977/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|-------------------------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2821 | 2821 | PLASTIC MATERIALS, SYN RESINS & NONVUL E | 414/ 416 | D | THERMOPLASTIC RESINS | 8 | 9 | 2 |
| 2821 | 2821 | PLASTIC MATERIALS, SYN RESINS & NONVUL E | 414/ 416 | E | THERMOSETTING RESINS | 8 | 9 | 3 |
| 2821 | 2821 | PLASTIC MATERIALS, SYN RESINS & NONVUL E | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2821 | 2821 | PLASTIC MATERIALS, SYN RESINS & NONVUL E | 414/ 416 | C | OTHER FIBERS | 8 | 9 | 16 |
| 2822 | 2822 | SYNTHETIC RUBBER (Vulcanizable Elastomer) | 414/ 416 | D | THERMOPLASTIC RESINS (silicones) | 8 | 9 | 4 |
| 2822 | 2822 | SYNTHETIC RUBBER (Vulcanizable Elastomer) | 428 | B | EMULSION CRUMB RUBBER | 8 | 8 | 1 |
| 2822 | 2822 | SYNTHETIC RUBBER (Vulcanizable Elastomer) | 428 | C | SOLUTION CRUMB RUBBER | 8 | 8 | 2 |
| 2822 | 2822 | SYNTHETIC RUBBER (Vulcanizable Elastomer) | 428 | D | LATEX RUBBER | 8 | 8 | 3 |
| 2822 | 2822 | SYNTHETIC RUBBER (Vulcanizable Elastomer) | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2823 | 2823 | CELLULOSIC MAN-MADE FIBERS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2823 | 2823 | CELLULOSIC MAN-MADE FIBERS | 416 | B | RAYON FIBERS | 8 | 9 | 1 |
| 2823 | 2823 | CELLULOSIC MAN-MADE FIBERS | 416 | C | OTHER FIBERS | 8 | 9 | 2 |
| 2824 | 2824 | SYNTHETIC ORGANIC FIBERS, EXCEPT CELLULOC | 416 | C | OTHER FIBERS | 8 | 9 | 0 |
| 2824 | 2824 | SYNTHETIC ORGANIC FIBERS, EXCEPT CELLULOC | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2831 | 2835 | BIOLOGICAL PRODUCTS | 439 | A | FERMENTATION PRODUCTS | 6 | 8 | 1 |
| 2831 | 2835 | BIOLOGICAL PRODUCTS | 439 | B | EXTRACTION PRODUCTS | 6 | 8 | 2 |
| 2831 | 2836 | BIOLOGICAL PRODUCTS | 439 | A | FERMENTATION PRODUCTS | 6 | 8 | 3 |
| 2831 | 2836 | BIOLOGICAL PRODUCTS | 439 | B | EXTRACTION PRODUCTS | 6 | 8 | 4 |
| 2833 | 2833 | MEDICINAL CHEMICALS & BOTANICAL Products | 439 | A | FERMENTATION PRODUCTS | 6 | 8 | 3 |
| 2833 | 2833 | MEDICINAL CHEMICALS & BOTANICAL Products | 439 | B | EXTRACTION PRODUCTS | 6 | 8 | 2 |
| 2833 | 2833 | MEDICINAL CHEMICALS & BOTANICAL Products | 439 | C | CHEMICAL SYNTHESIS PRODUCTS | 6 | 8 | 1 |
| 2833 | 2833 | MEDICINAL CHEMICALS & BOTANICAL Products | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2834 | 2834 | PHARMACEUTICAL PERPARATIONS | 439 | D | MIXING/COMPOUNDING Formulation | 6 | 8 | 0 |
| 2834 | 2834 | PHARMACEUTICAL PERPARATIONS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | A | SOAP Manufacturing by Batch Kettle | 5 | 5 | 12 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | B | FATTY Acid Manufacturing by Fatsplitting | 5 | 5 | 1 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | C | SOAP Manufac by Fattyacid Neutralization | 5 | 5 | 13 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | D | GLYCERINE CONCENTRATION | 5 | 5 | 2 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | P | Manufacturing of LIQUID DETERGENTS | 5 | 5 | 9 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | E | GLYCERINE DYSTILLATION | 5 | 5 | 3 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | G | Manufacturing of BAR SOAPS | 5 | 5 | 4 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | H | Manufacturing of LIQUID SOAPS | 5 | 5 | 8 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | O | Manufacturing of Spray Dried Detergents | 5 | 5 | 11 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | F | Manufacturing of Soap Flakes & Powders | 5 | 5 | 10 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | Q | Manufacturing of Detergents by Dry Blend | 5 | 5 | 6 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | R | Manufacturing of Drum Dried Detergents | 5 | 5 | 7 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | 417 | S | Manufacturing of Detergent Bars & Cakes | 5 | 5 | 5 |
| 2841 | 2841 | SOAP & OTHER DETERGENTS, EXC SPECIALTY C | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2842 | 2842 | SPECIALTY CLEANING, POLISHING & SANITARY | 417 | H | Manufacturing of LIQUID SOAPS | 5 | 5 | 1 |
| 2842 | 2842 | SPECIALTY CLEANING, POLISHING & SANITARY | 417 | P | Manufacturing of LIQUID DETERGENTS | 5 | 5 | 2 |
| 2842 | 2842 | SPECIALTY CLEANING, POLISHING & SANITARY | | NR | OTHER PREPARATIONS, NEC | 5 | 5 | 99 |
| 2842 | 2842 | SPECIALTY CLEANING, POLISHING & SANITARY | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | I | OLEUM SULFONATION & SULFATION | 5 | 5 | 3 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | J | AIR-SO3 SULFONATION & SULFATION | 5 | 5 | 1 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | K | SO3 SOLVENT & VACUUM Sulfonation | 5 | 5 | 6 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | L | SULFANIC ACID SULFATION | 5 | 5 | 7 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | M | CHLOROSULFONIC ACID SULFATION | 5 | 5 | 2 |
| 2843 | 2843 | SURFACE ACTIVE AGENTS, FINISHING AGENTS, | 417 | N | NEUTRAL Sulfuric Acid Esters & Sulfonic | 5 | 5 | 4 |
| 2844 | 2844 | PERFUMES, COSMETICS & OTHER TOILET PREPAR | 417 | H | Manufacturing of LIQUID SOAPS | 5 | 5 | 1 |
| 2844 | 2844 | PERFUMES, COSMETICS & OTHER TOILET PREPAR | | NR | OTHER PREPARATIONS, NEC | 5 | 5 | 99 |
| 2851 | 2851 | PAINTS/VARNISHES/LAQUERS/ENAMELS & ALLI | | NR | OTHER PAINTS | 8 | 8 | 99 |
| 2851 | 2851 | PAINTS/VARNISHES/LAQUERS/ENAMELS & ALLI | 446 | A | OIL-BASE SOLVENT WASH PAINT | 3 | 3 | 0 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | A | CHAR & CHARCOAL BRIQUETTES | 3 | 3 | 1 |

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|---------------------|---------------------|------------------------------------------|-------------|--------------------|-----------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | B | GUM ROSIN & TURPENTINE | 3 | 3 | 3 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | D | TALL OIL, ROSIN, PITCH, FATTY Acids | 6 | 6 | 6 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | E | ESSENTIAL OILS | 3 | 3 | 2 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | F | ROSIN BASED DERIVATIVES | 6 | 6 | 4 |
| 2861 | 2861 | GUM AND WOOD CHEMICALS | 454 | C | WOOD ROSIN, TURPENTINE & Pine Oil | 6 | 6 | 7 |
| 2865 | 2865 | CYCLIC CRUDES INTERM., DYES & ORGANIC PL | 414/ 416 | F | COMMODITY | 8 | 9 | 1 |
| 2865 | 2865 | CYCLIC CRUDES INTERM., DYES & ORGANIC PL | 414/ 416 | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2865 | 2865 | CYCLIC CRUDES INTERM., DYES & ORGANIC PL | 414/ 416 | G | BULK | 8 | 9 | 2 |
| 2865 | 2865 | CYCLIC CRUDES INTERM., DYES & ORGANIC PL | 414/ 416 | H | SPECIALTY | 8 | 9 | 3 |
| 2869 | 2869 | INDUSTRIAL ORGANIC CHEMICALS, NEC | 416 | H | SPECIALTY | 8 | 9 | 3 |
| 2869 | 2869 | INORGANIC CHEMICALS NEC | 455 | A | ORGANIC PESTICIDE Chemicals MFG | 8 | 10 | 152 |
| 2869 | 2819 | INDUSTRIAL ORGANIC CHEMICALS, NEC | | NR | | 10 | 10 | 99 |
| 2869 | 2869 | INDUSTRIAL ORGANIC CHEMICALS, NEC | 414/ 416 | F | COMMODITY | 8 | 9 | 1 |
| 2869 | 2869 | INDUSTRIAL ORGANIC CHEMICALS, NEC | 414/ 416 | G | BULK | 8 | 9 | 2 |
| 2869 | 2869 | INDUSTRIAL ORGANIC CHEMICALS, NEC | 455 | B | METALLO-ORGANIC PESTICIDES | 8 | 10 | 154 |
| 2873 | 2873 | NITROGEN FERTILIZERS | 418 | B | AMMONIA | 1 | 1 | 1 |
| 2873 | 2873 | NITROGEN FERTILIZERS | 418 | C | UREA | 1 | 1 | 2 |
| 2873 | 2873 | NITROGEN FERTILIZERS | 418 | D | AMMONIUM NITRATE | 1 | 1 | 3 |
| 2873 | 2873 | NITROGEN FERTILIZERS | 418 | E | NITRIC ACID | 1 | 1 | 4 |
| 2873 | 2873 | NITROGEN FERTILIZERS | 418 | F | AMMONIUM SULFATE PRODUCTION | 1 | 1 | 5 |
| 2874 | 2874 | PHOSPHATIC FERTILIZERS | 418 | A | PHOSPHATE | 1 | 1 | 0 |
| 2874 | 2874 | PHOSPHATIC FERTILIZERS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2875 | 2875 | FERTILIZERS, MIXING ONLY | 418 | G | Mixed & Blend FERTILIZER Production | 1 | 1 | 0 |
| 2879 | 2879 | PESTICIDES & AGRICULTURAL CHEMICALS NEC | 455 | C | PESTICIDE CHEMICALS Formulating | 10 | 10 | 0 |
| 2891 | 2891 | ADHESIVES AND SEALANTS | | NR | ADHESIVES & SEALANTS | 8 | 8 | 99 |
| 2892 | 2892 | EXPLOSIVES | 457 | A | MANUFACTURE OF EXPLOSIVES | 6 | 6 | 1 |
| 2892 | 2892 | EXPLOSIVES | 457 | C | Explosives Load, Assemble & Pack Plants | 6 | 6 | 3 |
| 2892 | 2892 | EXPLOSIVES | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2893 | 2893 | PRINTING INK | 447 | A | OIL-BASED SOLVENT WASH INK | 3 | 3 | 0 |
| 2893 | 2893 | PRINTING INK | | NR | OTHER INKS | 8 | 8 | 99 |
| 2895 | 2895 | CARBON BLACK | 458 | A | CARBON BLACK FURNACE PROCESS | 5 | 5 | 2 |
| 2895 | 2895 | CARBON BLACK | 458 | C | CARBON BLACK CHANNEL PROCESS | 3 | 3 | 1 |
| 2895 | 2895 | CARBON BLACK | 458 | D | CARBON BLACK LAMP PROCESS | 3 | 3 | 3 |
| 2895 | 2895 | CARBON BLACK | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | 417 | B | FATTY ACID NFG. by FAT SPLITTING | 5 | 5 | 1 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | 424 | F | ROSIN-BASED DERIVATIVES | 6 | 6 | 4 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | 454 | D | TALL OIL, ROSIN, PITCH, FATTY Acids | 6 | 6 | 2 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | 457 | C | Explosives Load, Assemble & Pack Plants | 6 | 6 | 5 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | | NR | OTHER CHEMICAL Preparations NEC | 6 | 6 | 99 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2899 | 2899 | CHEMICALS & CHEMICAL PREPARATIONS, NEC | 454 | E | ESSENTIAL OILS | 3 | 3 | 3 |
| 2911 | 2911 | PETROLEUM REFINING | 419 | A | TOPPING | 3 | 8 | 1 |
| 2911 | 2911 | PETROLEUM REFINING | 419 | B | CRACKING | 3 | 8 | 2 |
| 2911 | 2911 | PETROLEUM REFINING | 419 | C | PETROCHEMICAL | 3 | 8 | 3 |
| 2911 | 2911 | PETROLEUM REFINING | 419 | D | LUBE | 3 | 8 | 4 |
| 2911 | 2911 | PETROLEUM REFINING | 419 | E | INTEGRATED | 3 | 8 | 5 |
| 2911 | 2911 | PETROLEUM REFINING | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2951 | 2951 | PAVING MIXTURES AND BLOCKS | 443 | A | ASPHALT EMULSION | 8 | 8 | 6 |
| 2951 | 2951 | PAVING MIXTURES AND BLOCKS | 443 | A | ASPHALT EMULSION | 8 | 8 | 1 |
| 2951 | 2951 | PAVING MIXTURES AND BLOCKS | 443 | B | ASPHALT CONCRETE | 8 | 8 | 2 |
| 2951 | 2951 | PAVING MIXTURES AND BLOCKS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2952 | 2952 | ASPHALT FELT AND COATINGS | 443 | C | ASPHALT ROOFING | 8 | 8 | 1 |
| 2952 | 2952 | ASPHALT FELT AND COATINGS | 443 | D | LINOLEUM & Printed ASPHALT FELT | 8 | 8 | 2 |

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|----------------------|---------------------|--------------------------------------|-------------|--------------------|--------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 2952 | 2952 | ASPHALT FELT AND COATINGS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2992 | 2992 | LUBRICATING OILS AND GREASES | | NR | LUBE OIL RE-REFINING | 8 | 8 | 99 |
| 2992 | 2992 | LUBRICATING OILS AND GREASES | | NR | WASTE OIL RECYCLING | 10 | 10 | 99 |
| 2992 | 2992 | LUBRICATING OILS AND GREASES | | NR | OTHER OILS & GREASES NEC | 5 | 5 | 99 |
| 2992 | 2992 | LUBRICATING OILS AND GREASES | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 2999 | 2999 | PRODUCTS OF PETROLEUM AND COAL, NEC | | NR | | 5 | 5 | 99 |
| 3011 | 3011 | TIRES AND INNER TUBES | 428 | A | TIRE & INNER TUBE PLANTS | 6 | 6 | 0 |
| 3011 | 3011 | TIRES AND INNER TUBES | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 428 | E | sm-sizedGenMolded,extra&fabrRubberPlnt | 5 | 5 | 4 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 428 | F | md-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 3 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 428 | G | lg-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 1 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 428 | J | LATEX Dipped, Molded, Extruded Goods | 5 | 5 | 2 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 463 | A | Contact Cooling & Heating Water (Plastics) | 4 | 6 | 5 |
| 3021 | 3021 | BUBBER AND PLASTICS FOOTWEAR | 463 | B | CLEANING (PLASTICS) | 5 | 6 | 6 |
| 3031 | 3069 | RECLAIMED RUBBER | 428 | H | WET DIGESTION RECLAIM | 8 | 8 | 2 |
| 3031 | 3069 | RECLAIMED RUBBER | 428 | I | Pan, Dry Digestion, & Mechanical Reclaim | 8 | 8 | 1 |
| 3031 | 3069 | RECLAIMED RUBBER | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | 428 | E | sm-sizedGenMolded,extra&fabrRubberPlnt | 5 | 5 | 3 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | 428 | F | md-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 2 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | 428 | G | lg-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 1 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 4 |
| 3041 | 3052 | RUBBER AND PLASTICS HOSE AND BELTING | 463 | B | CLEANING WATER | 5 | 6 | 5 |
| 3069 | 3061 | FABRICATED RUBBER PRODUCTS, NEC | 428 | E | sm-sizedGenMolded,extra&fabrRubberPlnt | 5 | 5 | 1 |
| 3069 | 3061 | FABRICATED RUBBER PRODUCTS, NEC | 428 | F | md-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 2 |
| 3069 | 3061 | FABRICATED RUBBER PRODUCTS, NEC | 428 | G | lg-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 3 |
| 3069 | 3069 | FABRICATED RUBBER PRODUCTS, NEC | 428 | G | lg-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 4 |
| 3069 | 3069 | FABRICATED RUBBER PRODUCTS, NEC | 428 | F | md-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 5 |
| 3069 | 3069 | FABRICATED RUBBER PRODUCTS, NEC | 428 | E | sm-sizedGenMolded,extra&fabrRubberPlnt | 5 | 5 | 6 |
| 3079 | 3081 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 1 |
| 3079 | 3081 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 2 |
| 3079 | 3083 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3081 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 3 |
| 3079 | 3083 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 4 |
| 3079 | 3083 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 5 |
| 3079 | 3083 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 6 |
| 3079 | 3081 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3084 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 7 |
| 3079 | 3084 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 8 |
| 3079 | 3084 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 9 |
| 3079 | 3084 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3085 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 10 |
| 3079 | 3085 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 12 |
| 3079 | 3089 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3432 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | Contact Cooling & Heating Water | 4 | 6 | 29 |
| 3079 | 3085 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3432 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 30 |
| 3079 | 3082 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 15 |
| 3079 | 3432 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 31 |
| 3079 | 3082 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3432 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3086 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 18 |
| 3079 | 3086 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |

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|----------------------|---------------------|------------------------------------------|-------------|--------------------|-----------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3079 | 3089 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | CONTACT COOLING & Heating Water | 4 | 6 | 26 |
| 3079 | 3089 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 27 |
| 3079 | 3087 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 22 |
| 3079 | 3089 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 28 |
| 3079 | 3088 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | CONTACT COOLING & Heating Water | 4 | 6 | 23 |
| 3079 | 3085 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 13 |
| 3079 | 3088 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 25 |
| 3079 | 3087 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 21 |
| 3079 | 3087 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3088 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | B | CLEANING WATER | 5 | 6 | 24 |
| 3079 | 3088 | MISCELLANEOUS PLASTICS PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3079 | 3082 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | CONTACT COOLING & Heating Water | 4 | 6 | 14 |
| 3079 | 3082 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 16 |
| 3079 | 3086 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | CONTACT COOLING & Heating Water | 4 | 6 | 17 |
| 3079 | 3086 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | C | FINISHING WATER | 6 | 8 | 19 |
| 3079 | 3087 | MISCELLANEOUS PLASTICS PRODUCTS | 463 | A | CONTACT COOLING & Heating Water | 4 | 6 | 20 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | A | Hair Pulp, Chrome Tan, Retan-Wet Finish | 7 | 8 | 1 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | I | RETAIN-WET FINISH - SPLITS | 1 | 6 | 9 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | C | HairSave,Non-ChromeTan,Retan-WetFinish | 5 | 9 | 3 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | E | NO BEAMHOUSE | 4 | 10 | 4 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | G | SHEARLING | 4 | 7 | 6 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | H | PIGSKIN | 4 | 10 | 8 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | B | Hair Save, Chrome Tan, Retan-Wet Finish | 3 | 7 | 2 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | D | RETAN-WET FINISH SIDES | 1 | 6 | 5 |
| 3111 | 3111 | LEATHER TANNING AND FINISHING | 425 | F | THROUGH-THE-BLUE | 1 | 10 | 7 |
| 3131 | 3131 | BOOT & SHOE CUT STOCK & FINDINGS | | NR | | 1 | 1 | 99 |
| 3142 | 3142 | HOUSE SLIPPERS | | NR | | 1 | 1 | 99 |
| 3143 | 3143 | MEN'S FOOTWEAR, EXCEPT ATHLETIC | | NR | | 1 | 1 | 99 |
| 3144 | 3144 | WOMEN'S FOOTWEAR, EXCEPT ATHLETIC | | NR | | 1 | 1 | 99 |
| 3149 | 3149 | FOOTWEAR, EXCEPT RUBBER NEC | | NR | | 1 | 1 | 99 |
| 3151 | 3151 | LEATHER GLOVES AND MITTENS | | NR | | 1 | 1 | 99 |
| 3161 | 3161 | LUGGAGE | | NR | | 1 | 1 | 99 |
| 3171 | 3171 | WOMEN'S HANDBAGS AND PURSES | | NR | | 1 | 1 | 99 |
| 3172 | 3172 | PERSONAL LEATHER GOODS, Except WOMEN'S H | | NR | | 1 | 1 | 99 |
| 3199 | 3199 | LEATHER GOODS NEC | | NR | | 1 | 1 | 99 |
| 3211 | 3211 | FLAT GLASS | 426 | B | SHEET GLASS NFG | 1 | 1 | 1 |
| 3211 | 3211 | FLAT GLASS | 426 | C | ROLLED GLASS NFG | 1 | 1 | 2 |
| 3211 | 3211 | FLAT GLASS | 426 | D | PLATE GLASS NFG | 1 | 1 | 3 |
| 3211 | 3211 | FLAT GLASS | 426 | E | FLOAT GLASS NFG | 1 | 1 | 4 |
| 3211 | 3211 | FLAT GLASS | 426 | F | AUTOMOTIVE GLASS TEMPERING | 1 | 1 | 5 |
| 3211 | 3211 | FLAT GLASS | 426 | G | AUTOMOTIVE GLASS LAMINATING | 1 | 1 | 6 |
| 3221 | 3221 | GLASS CONTAINERS | 426 | H | GLASS CONTAINER NFG | 1 | 1 | 0 |
| 3229 | 3229 | PRESSED & BLOWN GLASS & GLASSWARE NFC | 426 | I | MACHINE PRESSED & Blown GLASS NFG | 1 | 1 | 1 |
| 3229 | 3229 | PRESSED & BLOWN GLASS & GLASSWARE NFC | 426 | J | GLASS TUBING (DANNER) NFG | 1 | 1 | 2 |
| 3229 | 3229 | PRESSED & BLOWN GLASS & GLASSWARE NFC | 426 | K | TELEVISION Picture Tube Envelope NFG | 1 | 1 | 3 |
| 3229 | 3229 | PRESSED & BLOWN GLASS & GLASSWARE NFC | 426 | L | INCANDESCENT LAMP Envelope NFG | 1 | 1 | 4 |
| 3229 | 3229 | PRESSED & BLOWN GLASS & GLASSWARE NFC | 426 | M | HAND PRESSED & Blown GLASS NFG | 1 | 1 | 5 |
| 3231 | 3231 | GLASS PRODUCTS MADE OF PURCHASED GLASS | 426 | F | AUTOMOTIVE GLASS TEMPERING | 1 | 1 | 1 |
| 3231 | 3231 | GLASS PRODUCTS MADE OF PURCHASED GLASS | 426 | G | AUTOMOTIVE GLASS LAMINATING | 1 | 1 | 2 |
| 3241 | 3241 | CEMENT, HYDRAULIC | 411 | A | NONLEACHING | 1 | 1 | 1 |
| 3241 | 3241 | CEMENT, HYDRAULIC | 411 | B | LEACHING | 1 | 1 | 2 |
| 3241 | 3241 | CEMENT, HYDRAULIC | 411 | C | MATERIALS STORAGE PILES RUNOFF | 1 | 1 | 3 |
| 3251 | 3251 | BRICK AND STRUCTURAL CLAY TILE | | NR | | 1 | 1 | 99 |

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|---------------------|---------------------|-----------------------------------------|-------------|--------------------|------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3253 | 3253 | CERAMIC WALL AND FLOOR TILE | | NR | | 1 | 1 | 99 |
| 3255 | 3255 | CLAY REFRACTORIES | | NR | | 1 | 1 | 99 |
| 3259 | 3259 | STRUCTURAL CLAY PRODUCTS NEC | | NR | | 1 | 1 | 99 |
| 3261 | 3261 | VITREOUS CHINA PLUMBING FIXTURES, ETC. | | NR | | 1 | 1 | 99 |
| 3262 | 3262 | VITREOUS CHINA TABLE & KITCHEN ARTICLES | | NR | | 1 | 1 | 99 |
| 3263 | 3263 | FINE EARTHENWARE | | NR | | 1 | 1 | 99 |
| 3264 | 3264 | PORCELAIN ELECTRICAL SUPPLIES | | NR | | 1 | 1 | 99 |
| 3269 | 3269 | POTTERY PRODUCTS, NEC | | NR | | 1 | 1 | 99 |
| 3271 | 3271 | CONCRETE BLOCK & BRICK | | NR | | 1 | 1 | 99 |
| 3272 | 3272 | CONCRETE PRODUCTS EXCEPT BLOCK & BRICK | | NR | | 1 | 1 | 99 |
| 3273 | 3273 | READY-MIXED CONCRETE | | NR | | 1 | 1 | 99 |
| 3274 | 3274 | LIME | 415 | E | CALCIUM OXIDE PRODUCTION | 1 | 1 | 0 |
| 3274 | 3274 | LIME | | NR | OTHER LIME PRODUCTION | 1 | 1 | 99 |
| 3275 | 3275 | GYPSSUM PRODUCTS | | NR | | 1 | 1 | 99 |
| 3281 | 3281 | CUT STONE & STONE PRODUCTS | 436 | A | DIMENSION STONE | 1 | 1 | 0 |
| 3291 | 3291 | ABRASIVE PRODUCTS | | NR | | 1 | 1 | 99 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | A | ASBESTOS-CEMENT PIPE | 1 | 1 | 1 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | B | ASBESTOS-CEMET SHEET | 1 | 1 | 2 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | I | SOLVENT RECOVERY | 1 | 1 | 7 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | F | ASBESTOS ROOFING | 1 | 1 | 4 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | G | ASBESTOS FLOOR TILE | 1 | 1 | 5 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | H | Coating or Finishing ASBESTOS Textiles | 1 | 1 | 6 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | E | ASBESTOS MILLBOARD | 1 | 1 | 3 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | J | VAPOR ABSORPTION | 1 | 1 | 8 |
| 3292 | 3292 | ASBESTOS PRODUCTS | 427 | K | WET DUST COLLECTION | 1 | 1 | 9 |
| 3293 | 3053 | GASKETS, PACKING & SEALING DEVICES | 427 | K | WET DUST COLLECTION (ASBESTOS) | 1 | 1 | 4 |
| 3293 | 3053 | GASKETS, PACKING & SEALING DEVICES | 428 | E | sm-sizedGenMolded,extra&FabrRubberPint | 5 | 5 | 3 |
| 3293 | 3053 | GASKETS, PACKING & SEALING DEVICES | 428 | F | md-sizedGenMolded,extra&FabrRubberPint | 6 | 6 | 2 |
| 3293 | 3053 | GASKETS, PACKING & SEALING DEVICES | 428 | G | lg-sizedGenMolded,extra&FabrRubberPint | 6 | 6 | 1 |
| 3293 | 3053 | GASKETS, PACKING & SEALING DEVICES | | NR | NON-RUBBER PRODUCTS | 1 | 1 | 99 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | J | BARITE | 1 | 1 | 1 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | W | MAGNESITE | 1 | 1 | 2 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | X | DIATONITE | 1 | 1 | 3 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | AG | KAOLIN | 1 | 1 | 4 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | AJ | Talc, Steatite, Soapstone & Pyrophyllite | 1 | 1 | 5 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | 436 | AL | GRAPHITE | 1 | 1 | 6 |
| 3295 | 3295 | MINERALS & EARTHS,GROUND or OTHERWISE T | | NR | OTHER MINERALS & EARTHS | 1 | 1 | 99 |
| 3296 | 3296 | MINERAL WOOL | 426 | A | INSULATION FIBERGLASS | 1 | 1 | 1 |
| 3296 | 3296 | MINERAL WOOL | | NR | OTHER MINERAL WOOLS | 1 | 1 | 99 |
| 3299 | 3299 | NONMETALLIC MINERAL PRODUCTS, NEC | | NR | | 1 | 1 | 99 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | A | COKEMAKING | 10 | 10 | 6 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | B | SINTERING | 9 | 9 | 23 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | C | IRONMAKING | 10 | 10 | 5 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | D | STEELMAKING | 10 | 10 | 1 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | E | VACUUM DEGASSING | 3 | 9 | 24 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | F | CONTINUOUS CASTING | 1 | 7 | 10 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | G | HOT FORMING | 1 | 3 | 16 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | X | SALT BATH DESCALING | 9 | 10 | 22 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | J | COLD FORMING | 10 | 10 | 7 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | K | ALKALINE CLEANING | 8 | 8 | 9 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | L | HOT COATING | 10 | 10 | 13 |
| 3312 | 3312 | BLAST FURNACES, STEEL WORKS & ROLLING M | 420 | I | ACID PICKLING | 10 | 10 | 20 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 420 | D | STEELMAKING | 10 | 10 | 2 |

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|-----------------------|------------------|--------------------------------------------|-------------|--------------------|-----------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 420 | F | CONTINUOUS CASTING | 1 | 7 | 3 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | A | OPEN Electric Furnaces w/Wet APC | 5 | 5 | 4 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | B | COVERED Electric Furnaces w/Wet APC | 5 | 5 | 5 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | G | ELECTROLYTIC CHROMIUM | 5 | 5 | 10 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | D | Covered Calcium Carbide Furnaces w/APC | 5 | 5 | 7 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | E | Other CALCIUM CARBIDE FURNACES | 5 | 5 | 8 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | F | ELECTROLYTIC MANGANESE Products | 5 | 5 | 9 |
| 3313 | 3313 | ELECTROMETALLURGICAL PRODUCTS | 424 | C | SLAG PROCESSING | 5 | 5 | 6 |
| 3315 | 3315 | STEEL WIRE DRAWING & STEEL NAILS & SPIKE | 420 | H | SALT BATH DESCALING | 9 | 10 | 1 |
| 3315 | 3315 | STEEL WIRE DRAWING & STEEL NAILS & SPIKE | 420 | J | COLD FORMING | 10 | 10 | 3 |
| 3315 | 3315 | STEEL WIRE DRAWING & STEEL NAILS & SPIKE | 420 | K | ALKALINE CLEANING | 8 | 8 | 4 |
| 3315 | 3315 | STEEL WIRE DRAWING & STEEL NAILS & SPIKE | 420 | I | ACID PICKLING | 10 | 10 | 2 |
| 3316 | 3316 | COLD ROLLED STEEL SHEET, STRIP & BARS | 420 | J | COLD FORMING | 10 | 10 | 2 |
| 3316 | 3316 | COLD ROLLED STEEL SHEET, STRIP & BARS | 420 | I | ACID PICKLING | 10 | 10 | 1 |
| 3317 | 3317 | STEEL PIPE AND TUBES | 420 | H | SALT BATH DESCALING | 9 | 10 | 2 |
| 3317 | 3317 | STEEL PIPE AND TUBES | 420 | G | HOT FORMING | 1 | 3 | 1 |
| 3317 | 3317 | STEEL PIPE AND TUBES | 420 | I | ACID PICKLING | 10 | 10 | 3 |
| 3317 | 3317 | STEEL PIPE AND TUBES | 420 | J | COLD FORMING | 10 | 10 | 4 |
| 3317 | 3317 | STEEL PIPE AND TUBES | 420 | K | ALKALINE CLEANING | 8 | 8 | 5 |
| 3321 | 3321 | GRAY IRON FOUNDRIES | 464 | C | FERROUS CASTING | 1 | 9 | 0 |
| 3322 | 3322 | MALLEABLE IRON FOUNDRIES | 464 | C | FERROUS CASTING | 1 | 9 | 0 |
| 3324 | 3324 | STEEL INVESTMENT FOUNDRIES | 464 | C | FERROUS CASTING | 1 | 9 | 0 |
| 3325 | 3325 | STEEL FOUNDRIES, NEC | 464 | C | FERROUS CASTING | 1 | 9 | 0 |
| 3331 | 3331 | PRIMARY SMELTING AND REFINING OF COPPER | 421 | D | PRIMARY COPPER SMELTING | 1 | 8 | 1 |
| 3331 | 3331 | PRIMARY SMELTING AND REFINING OF COPPER | 421 | E | Primary Electrolytic Copper Refining | 1 | 8 | 2 |
| 3331 | 3331 | PRIMARY SMELTING AND REFINING OF COPPER | 421 | I | METALLURGICAL ACID PLANTS | 10 | 10 | 3 |
| 3332 | 3339 | PRIMARY SMELTING AND REFINING OF LEAD | 421 | G | PRIMARY LEAD | 1 | 6 | 1 |
| 3332 | 3339 | PRIMARY SMELTING AND REFINING OF LEAD | 421 | I | METALLURGICAL ACID PLANTS | 10 | 10 | 2 |
| 3333 | 3339 | PRIMARY SMELTING AND REFINING OF ZINC | 421 | H | PRIMARY ZINC | 10 | 10 | 1 |
| 3333 | 3339 | PRIMARY SMELTING AND REFINING OF ZINC | 421 | I | METALLURGICAL ACID PLANTS | 10 | 10 | 2 |
| 3334 | 3334 | PRIMARY PRODUCTION OF ALUMINUM | 421 | A | BAUXITE REFINING | 10 | 10 | 2 |
| 3334 | 3334 | PRIMARY PRODUCTION OF ALUMINUM | 421 | B | PRIMARY ALUMINUM SMELTING | 10 | 10 | 1 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | I | Metallurgical Acid Plants (Hollybdenum) | 10 | 10 | 36 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | J | PRIMARY TUNGSTEN | 10 | 10 | 33 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | K | PRIMARY COLUMBIUM-TANTALUM | 10 | 10 | 13 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | N | PRIMARY ANTIMONY | 10 | 10 | 3 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | O | PRIMARY BERYLLIUM | 10 | 10 | 6 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | P | PRIMARY BORON | 10 | 10 | 8 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | Q | PRIMARY CALCIUM & RUBIDIUM | 10 | 10 | 11 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | R | Primary&Secondary Germanium & Gallium | 10 | 10 | 15 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 424 | G | ELECTROLYTIC CHROMIUM | 8 | 8 | 37 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | W | PRIMARY NICKEL & COBALT | 1 | 9 | 22 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY ARSENIC | 5 | 5 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY BARIUM | 5 | 5 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | AC | PRIMARY & SECONDARY TIN | 10 | 10 | 31 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY BISMUTH | 5 | 5 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY URANIUM | 8 | 8 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY CALCIUM | 5 | 5 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY PATINUM GROUP | 8 | 8 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY & SECONDARY INDIUM | 8 | 8 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY SELENIUM | 10 | 10 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY LITHIUM | 8 | 8 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | AA | PRIMARY RARE EARTH METALS | 10 | 10 | 24 |

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|----------------------|---------------------|-----------------------------------------------|-------------|--------------------|-----------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | AG | PRIMARY ZIRCONIUM & HAFNIUM | 7 | 10 | 35 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY CADMIUM | 10 | 10 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY TELLURIUM | 10 | 10 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | AD | PRIMARY & SECONDARY TITANIUM | 9 | 10 | 32 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | PRIMARY MAGNESIUM | 5 | 5 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 424 | F | Electrolytic MANGANESE PRODUCTS | 8 | 8 | 36 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | U | PRIMARY HOLYBDENIUM&RHENIUM | 10 | 10 | 21 |
| 3339 | 3339 | Primary Smelt & Refin of NONFERROUS METALS | 421 | Y | Primary PRECIOUS Metals & MERCURY | 1 | 10 | 16 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | C | SECONDARY ALUMINUM SMELTING | 1 | 8 | 1 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | AB | SECONDARY TANTALUM | 10 | 10 | 16 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | AE | SECONDARY TUNGSTEN & COBALT | 10 | 10 | 19 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | L | SECONDARY SILVER-PHOTOGRAPHIC | 7 | 8 | 15 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | AF | SECONDARY URANIUM | 10 | 10 | 20 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | M | SECONDARY LEAD | 10 | 10 | 8 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY BERYLLIUM | 5 | 5 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | T | SECONDARY MERCURY | 8 | 8 | 10 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY HABBITT | 5 | 5 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | X | SECONDARY NICKEL | 8 | 8 | 11 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY BORON | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | F | SECONDARY COPPER | 1 | 8 | 7 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | S | SECONDARY INDIUM | 5 | 5 | 23 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | V | Secondary Holybdenum & Vanadium | 10 | 10 | 24 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | Z | SECONDARY PRECIOUS METALS | 10 | 10 | 13 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | 421 | L | Secondary Silver-Non-Photographic | 7 | 8 | 22 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY COLUMBIUM | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY MAGNESIUM | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY PLUTONIUM | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY TIN | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY TITANIUM | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY ZINC | 8 | 8 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3341 | 3341 | Secondary Smelt & Refin of NONFERROUS METALS | | NR | SECONDARY CADMIUM | 5 | 5 | 99 |
| 3351 | 3351 | ROLLING, DRAWING & EXTRUDING OF COPPER | 468 | A | COPPER FORMING | 1 | 9 | 1 |
| 3351 | 3351 | ROLLING, DRAWING & EXTRUDING OF COPPER | 468 | B | BERYLLIUM COPPER ALLOY Forming | 1 | 9 | 2 |
| 3351 | 3351 | ROLLING, DRAWING & EXTRUDING OF COPPER | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3353 | 3353 | ALUMINUM SHEET, PLATE AND FOIL | 464 | A | ALUMINUM CASTING | 1 | 8 | 1 |
| 3353 | 3353 | ALUMINUM SHEET, PLATE AND FOIL | 467 | A | ROLLING WITH HEAT OILS | 5 | 8 | 2 |
| 3353 | 3353 | ALUMINUM SHEET, PLATE AND FOIL | 467 | B | ROLLING WITH EMULSIONS | 4 | 8 | 3 |
| 3353 | 3353 | ALUMINUM SHEET, PLATE AND FOIL | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3354 | 3354 | ALUMINUM EXTRUDED PRODUCTS | 467 | C | EXTRUSION | 1 | 8 | 2 |
| 3354 | 3354 | ALUMINUM EXTRUDED PRODUCTS | 467 | E | DRAWING WITH HEAT OILS | 1 | 9 | 3 |
| 3354 | 3354 | ALUMINUM EXTRUDED PRODUCTS | 467 | F | DRAWING with EMULSIONS or SOAPS | 4 | 8 | 1 |
| 3354 | 3354 | ALUMINUM EXTRUDED PRODUCTS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | 464 | A | ALUMINUM CASTING | 1 | 8 | 1 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | 467 | A | ROLLING WITH HEAT OILS | 5 | 8 | 2 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | 467 | B | ROLLING WITH EMULSIONS | 4 | 8 | 3 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | 467 | E | DRAWING WITH HEAT OILS | 1 | 9 | 4 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | 467 | F | DRAWING with EMULSIONS or SOAPS | 4 | 8 | 5 |
| 3355 | 3355 | ALUMINUM ROLLING & DRAWING NEC | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | A | BERYLLIUM FORMING | 5 | 5 | 1 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | B | LEAD/TIN/BISMUTH FORMING | 9 | 10 | 2 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | D | NICKEL-COBALT FORMING | 8 | 9 | 4 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | E | PRECIOUS METALS FORMING | 1 | 10 | 5 |

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| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | F | REFRACTORY METALS FORMING | 1 | 8 | 6 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | G | TITANIUM FORMING | 3 | 8 | 7 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | H | URANIUM FORMING | 1 | 8 | 8 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | I | ZINC FORMING | 1 | 8 | 9 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | 471 | J | ZIRCONIUM/HAFNIUM FORMING | 7 | 9 | 10 |
| 3356 | 3356 | Rolling, Drawing & Extruding NONFERROUS METAL | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 463 | A | Contact Cooling & Heating Water (Plastics) | 4 | 6 | 2 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 463 | B | Cleaning & Finishing Water (Plastics) | 5 | 6 | 3 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 467 | E | DRAWING w/ HEAT OILS (Aluminum) | 1 | 9 | 4 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 467 | F | Drawing w/Emulsions orSoaps (Aluminum) | 4 | 8 | 1 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | 468 | A | COPPER FORMING | 1 | 9 | 6 |
| 3357 | 3357 | Drawing & Insulating of NONFERROUS WIRE | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3361 | 3363 | ALUMINUM FOUNDRIES (CASTING) | 464 | A | ALUMINUM CASTING | 1 | 8 | 1 |
| 3361 | 3365 | ALUMINUM FOUNDRIES (CASTING) | 464 | A | ALUMINUM CASTING | 1 | 8 | 2 |
| 3362 | 3364 | BRASS, BRONZE, COPPER, COPPER BASE ALL.OY | 464 | B | COPPER CASTING | 5 | 8 | 1 |
| 3362 | 3366 | BRASS, BRONZE, COPPER, COPPER BASE ALL.OY | 464 | B | COPPER CASTING | 5 | 8 | 2 |
| 3369 | 3364 | NONFERROUS FOUNDRIES (CASTING) NEC | 464 | B | COPPER CASTING | 5 | 8 | 1 |
| 3369 | 3369 | NONFERROUS FOUNDRIES, NEC | 464 | D | ZINC CASTING | 10 | 10 | 2 |
| 3398 | 3398 | METAL HEAT TREATING | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3399 | 3399 | PRIMARY METAL PRODUCTS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3399 | 3399 | PRIMARY METAL PRODUCTS, NEC | 471 | K | METAL POWDERS | 7 | 9 | 2 |
| 3399 | 3399 | PRIMARY METAL PRODUCTS, NEC | | NR | OTHER PRODUCTS | 1 | 1 | 99 |
| 3411 | 3411 | METAL CANS | 465 | D | CAN MAKING | 1 | 7 | 0 |
| 3412 | 3412 | METAL BARRELS, DRUMS AND PAILS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3412 | 3412 | METAL BARRELS, DRUMS AND PAILS | | NR | DRUM RECYCLING | 8 | 8 | 99 |
| 3412 | 3412 | METAL BARRELS, DRUMS AND PAILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3421 | 3421 | CUTLERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3421 | 3421 | CUTLERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3423 | 3423 | HAND AND EDGE TOOLS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3423 | 3423 | HAND AND EDGE TOOLS, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3425 | 3425 | HAND SAWS AND SAW BLADES | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3429 | 3429 | HARDWARE, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3429 | 3429 | HARDWARE, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3431 | 3431 | METAL SANITARY WARE | 466 | B | CAST IRON BASIS MATERIAL | 10 | 10 | 0 |
| 3432 | 3432 | PLUMBING FITTINGS AND BRASS GOODS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3432 | 3432 | PLUMBING FITTINGS AND BRASS GOODS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3432 | 3432 | PLUMBING FITTINGS AND BRASS GOODS | 468 | A | COPPER FORMING | 1 | 9 | 2 |
| 3433 | 3567 | HEATING EQUIPMENT, EXCEPT ELECTRIC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3433 | 3567 | HEATING EQUIPMENT, EXCEPT ELECTRIC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3433 | 3433 | HEATING EQUIPMENT, EXCEPT ELECTRIC | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3433 | 3433 | HEATING EQUIPMENT, EXCEPT ELECTRIC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3441 | 3441 | FABRICATED STRUCTURAL METAL | | NR | | 1 | 1 | 99 |
| 3442 | 2431 | METAL DOORS, SASH AND TRIM | | | | 1 | 1 | 1 |
| 3442 | 3442 | METAL DOORS, SASH AND TRIM | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3442 | 3442 | METAL DOORS, SASH AND TRIM | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3443 | 3443 | FABRICATED PLATE WORK (BOILER SHOPS) | | NR | | 1 | 1 | 99 |
| 3444 | 3444 | SHEET METAL WORK | | NR | | 1 | 1 | 99 |
| 3444 | 3449 | SHEET METAL WORK | | NR | | 1 | 1 | 99 |
| 3446 | 3446 | ARCHITECTURAL METAL WORK | | NR | | 1 | 1 | 99 |
| 3448 | 3448 | PREFABRICATED METAL BUILDINGS | | NR | | 1 | 1 | 99 |
| 3449 | 3449 | MISCELLANEOUS METAL WORK | | NR | | 1 | 1 | 99 |
| 3451 | 3451 | SCREW MACHINE PRODUCTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3451 | 3451 | SCREW MACHINE PRODUCTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |

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|---------------------|---------------------|--------------------------------------|-------------|--------------------|--------------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3452 | 3452 | BOLTS, NUTS, RIVETS AND WASHERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3452 | 3452 | BOLTS, NUTS, RIVETS AND WASHERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3462 | 3462 | IRON STEEL FORGINGS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3462 | 3462 | IRON STEEL FORGINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3463 | 3463 | NONFERROUS FORGINGS | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3463 | 3463 | NONFERROUS FORGINGS | 467 | D | FORGING (ALUMINUM) | 5 | 5 | 1 |
| 3463 | 3463 | NONFERROUS FORGINGS | 468 | A | COPPER FORMING | 1 | 9 | 2 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | A | BERYLLIUM FORMING | 5 | 5 | 4 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | B | LEAD/TIN/BISMUTH FORMING | 9 | 10 | 5 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | C | MAGNESIUM FORMING | 5 | 5 | 6 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | D | NICKEL-COBALT FORMING | 8 | 9 | 7 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | E | PRECIOUS METALS FORMING | 1 | 10 | 8 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | J | ZIRCONIUM/HAFNIUM FORMING | 7 | 9 | 13 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | G | TITANIUM FORMING | 3 | 8 | 10 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | H | URANIUM FORMING | 1 | 8 | 11 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | I | ZINC FORMING | 1 | 8 | 12 |
| 3463 | 3463 | NONFERROUS FORGINGS | 471 | F | REFRACTORY METALS FORMING | 1 | 8 | 9 |
| 3463 | 3463 | NONFERROUS FORGINGS | | NR | NON-CONTACT COOLING Water ONLY | 1 | 1 | 99 |
| 3465 | 3465 | AUTOMOTIVE STAMPINGS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3465 | 3465 | AUTOMOTIVE STAMPINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3466 | 3466 | CROWNS AND CLOSURES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3466 | 3466 | CROWNS AND CLOSURES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3469 | 3449 | METAL STAMPINGS, NEC | | NR | | 1 | 1 | 99 |
| 3469 | 3469 | METAL STAMPINGS, NEC | | NR | | 1 | 1 | 99 |
| 3471 | 3471 | PLATING AND POLISHING | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | 420 | L | HOT COATING | 10 | 10 | 5 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | 433 | A | METAL FINISHING | 1 | 9 | 4 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | | NR | NO ELECTROPLATING/COATING | 1 | 1 | 99 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | 465 | A | STEEL BASIS MATERIAL COATING | 10 | 10 | 2 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | 465 | B | GALVANIZED Basis Material COATING | 10 | 10 | 3 |
| 3479 | 3479 | METAL COATING AND ALLIED SERVICES | 465 | C | ALUMINUM Basis Material COATING | 10 | 10 | 1 |
| 3482 | 3482 | SMALL ARMS AMMUNITION | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3482 | 3482 | SMALL ARMS AMMUNITION | 457 | C | Explosives Load, Assemble & Pack Plants | 6 | 6 | 2 |
| 3482 | 3482 | SMALL ARMS AMMUNITION | | NR | NO ELECTROPLATING/EXPLOSIVES | 1 | 1 | 99 |
| 3482 | 3482 | SMALL ARMS AMMUNITION | 463 | A | Contact Cooling & Heating Water (Plastics) | 4 | 6 | 3 |
| 3482 | 3482 | SMALL ARMS AMMUNITION | 463 | B | CLEANING WATER (PLASTICS) | 5 | 6 | 4 |
| 3483 | 3483 | AMMUNITION, EXC. FOR SMALL ARMS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3483 | 3483 | AMMUNITION, EXC. FOR SMALL ARMS, NEC | 457 | C | Explosives Load, Assemble & Pack Plants | 6 | 6 | 2 |
| 3483 | 3483 | AMMUNITION, EXC. FOR SMALL ARMS, NEC | | NR | NO ELECTROPLATING/EXPLOSIVES | 1 | 1 | 99 |
| 3484 | 3484 | SMALL ARMS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3484 | 3484 | SMALL ARMS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3489 | 3489 | ORDNANCE AND ACCESSORIES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3489 | 3489 | ORDNANCE AND ACCESSORIES, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3493 | 3493 | STEEL SPRINGS, EXCEPT WIRE | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3493 | 3493 | STEEL SPRINGS, EXCEPT WIRE | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3494 | 3492 | VALVES AND PIPE FITTINGS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3494 | 3491 | VALVES AND PIPE FITTINGS | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3494 | 3494 | VALVES AND PIPE FITTINGS | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3494 | 3494 | VALVES AND PIPE FITTINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3494 | 3494 | VALVES AND PIPE FITTINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3494 | 3492 | VALVES AND PIPE FITTINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3495 | 3495 | WIRE SPRINGS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3495 | 3495 | WIRE SPRINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3496 | 3496 | MISC. FABRICATED WIRE PRODUCTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|--------------------------------------|-------------|--------------------|--------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3496 | 3496 | MISC. FABRICATED WIRE PRODUCTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3497 | 3497 | METAL FOIL AND LEAF | 468 | A | COPPER FORMING | 1 | 9 | 2 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | E | PRECIOUS METALS FORMING | 1 | 10 | 7 |
| 3497 | 3497 | METAL FOIL AND LEAF | 465 | C | ALUMINUM Base Material COATING | 5 | 5 | 1 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | B | LEAD-TIN/BISMUTH FORMING | 9 | 10 | 4 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | C | MAGNESIUM FORMING | 5 | 5 | 5 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | D | NICKEL-COBALT FORMING | 8 | 9 | 6 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | A | BERYLLIUM FORMING | 5 | 5 | 3 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | F | REFRACTORY METALS FORMING | 1 | 8 | 8 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | G | TITANIUM FORMING | 3 | 8 | 9 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | H | URANIUM FORMING | 1 | 8 | 10 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | I | ZINC FORMING | 1 | 8 | 11 |
| 3497 | 3497 | METAL FOIL AND LEAF | 471 | J | ZIRCONIUM/HAFNIUM FORMING | 7 | 9 | 12 |
| 3498 | 3498 | FABRICATED PIPE AND FITTINGS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3498 | 3498 | FABRICATED PIPE AND FITTINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3499 | 3499 | FABRICATED METAL PRODUCTS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3499 | 3499 | FABRICATED METAL PRODUCTS, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3511 | 3511 | TURBINES AND TURBINE GENERATOR SETS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3511 | 3511 | TURBINES AND TURBINE GENERATOR SETS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3519 | 3519 | INTERNAL COMBUSTION ENGINES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3519 | 3519 | INTERNAL COMBUSTION ENGINES, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3523 | 3523 | FARM MACHINERY AND EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3523 | 3523 | FARM MACHINERY AND EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3524 | 3524 | LAWN AND GARDEN EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3524 | 3524 | LAWN AND GARDEN EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3531 | 3531 | CONSTRUCTION MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3531 | 3531 | CONSTRUCTION MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3532 | 3532 | MINING MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3532 | 3532 | MINING MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3533 | 3533 | OIL FIELD MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3533 | 3533 | OIL FIELD MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3534 | 3534 | ELEVATORS AND MOVING STAIRWAYS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3534 | 3534 | ELEVATORS AND MOVING STAIRWAYS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3535 | 3535 | CONVEYORS AND CONVEYING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3535 | 3535 | CONVEYORS AND CONVEYING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3536 | 3536 | HOISTS, CRANES AND MONORAILS | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3536 | 3536 | HOISTS, CRANES AND MONORAILS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3536 | 3536 | HOISTS, CRANES AND MONORAILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3536 | 3537 | HOISTS, CRANES AND MONORAILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3536 | 3536 | HOISTS, CRANES AND MONORAILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3536 | 3531 | HOISTS, CRANES AND MONORAILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3536 | 3537 | HOISTS, CRANES AND MONORAILS | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3537 | 3537 | INDUSTRIAL TRUCKS AND TRACTORS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3537 | 3537 | INDUSTRIAL TRUCKS AND TRACTORS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3541 | 3541 | MACHINE TOOLS, METAL CUTTING TYPES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3541 | 3541 | MACHINE TOOLS, METAL CUTTING TYPES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3542 | 3542 | MACHINE TOOLS, METAL FORMING TYPES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3542 | 3542 | MACHINE TOOLS, METAL FORMING TYPES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3544 | 3544 | SPECIAL DIES, TOOLS, JIGS & FIXTURES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3544 | 3544 | SPECIAL DIES, TOOLS, JIGS & FIXTURES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3545 | 3545 | MACHINE TOOL ACCESSORIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3545 | 3545 | MACHINE TOOL ACCESSORIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3546 | 3546 | POWER DRIVEN HAND TOOLS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3546 | 3546 | POWER DRIVEN HAND TOOLS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977/1978 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|--------------------|---------------|-----------------------------------|----------|--------------|----------------------------------------|------------------------------|-----------------------|------------------------|
| 3547 | 3547 | ROLLING MILL MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3547 | 3547 | ROLLING MILL MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3549 | 3548 | METALWORKING MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3549 | 3548 | METALWORKING MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3549 | 3559 | METALWORKING MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3549 | 3559 | METALWORKING MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3549 | 3549 | METALWORKING MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3549 | 3549 | METALWORKING MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3551 | 3565 | FOOD PRODUCTS MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3552 | 3552 | TEXTILE MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3552 | 3552 | TEXTILE MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3553 | 3553 | WOODWORKING MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3553 | 3553 | WOODWORKING MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3554 | 3554 | PAPER INDUSTRIES MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3554 | 3554 | PAPER INDUSTRIES MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3555 | 3069 | PRINTING TRADES MACHINERY | 428 | E | sm-sizedGenMolded,extra&fabrRubberPlnt | 5 | 5 | 1 |
| 3555 | 3069 | PRINTING TRADES MACHINERY | 428 | F | md-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 2 |
| 3555 | 3069 | PRINTING TRADES MACHINERY | 428 | G | lg-sizedGenMolded,extra&fabrRubberPlnt | 6 | 6 | 3 |
| 3555 | 3523 | PRINTING TRADES MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3555 | 3423 | PRINTING TRADES MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 4 |
| 3555 | 3555 | PRINTING TRADES MACHINERY | 433 | A | METAL FINISHING | 1 | 9 | 5 |
| 3555 | 3555 | PRINTING TRADES MACHINERY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3559 | 3559 | SPECIAL INDUSTRY MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3559 | 3559 | SPECIAL INDUSTRY MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3561 | 3594 | PUMPS AND PUMPING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3561 | 3561 | PUMPS AND PUMPING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3561 | 3561 | PUMPS AND PUMPING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3561 | 3594 | PUMPS AND PUMPING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3562 | 3562 | BALL AND ROLLER BEARINGS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3562 | 3562 | BALL AND ROLLER BEARINGS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3563 | 3563 | AIR AND GAS COMPRESSORS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3563 | 3563 | AIR AND GAS COMPRESSORS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3564 | 3564 | BLOWER AND FANS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3564 | 3564 | BLOWER AND FANS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3565 | 3543 | INDUSTRIAL PATTERNS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3565 | 3543 | INDUSTRIAL PATTERNS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3566 | 3594 | SPEED CHANGERS, DRIVES AND GEARS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3566 | 3594 | SPEED CHANGERS, DRIVES AND GEARS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3566 | 3566 | SPEED CHANGERS, DRIVES AND GEARS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3566 | 3566 | SPEED CHANGERS, DRIVES AND GEARS | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3567 | 3567 | INDUSTRIAL FURNACES AND OVENS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3567 | 3567 | INDUSTRIAL FURNACES AND OVENS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3568 | 3568 | POWER TRANSMISSION EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3568 | 3568 | POWER TRANSMISSION EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3569 | 3594 | GENERAL INDUSTRIAL MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3569 | 3594 | GENERAL INDUSTRIAL MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3569 | 3565 | GENERAL INDUSTRIAL MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3569 | 3565 | GENERAL INDUSTRIAL MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3569 | 3569 | GENERAL INDUSTRIAL MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3569 | 3569 | GENERAL INDUSTRIAL MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3572 | 3579 | TYPEWRITERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3572 | 3579 | TYPEWRITERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3573 | 3571 | ELECTRONIC COMPUTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3573 | 3571 | ELECTRONIC COMPUTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977/ SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|----------------------|---------------------|--------------------------------------|-------------|--------------------|-------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3573 | 3572 | ELECTRONIC COMPUTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3573 | 3572 | ELECTRONIC COMPUTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3573 | 3575 | ELECTRONIC COMPUTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3573 | 3575 | ELECTRONIC COMPUTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3573 | 3577 | ELECTRONIC COMPUTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 4 |
| 3573 | 3577 | ELECTRONIC COMPUTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3573 | 3695 | ELECTRONIC COMPUTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 5 |
| 3573 | 3695 | ELECTRONIC COMPUTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3574 | 3578 | CALCULATING AND ACCOUNTING MACHINES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3574 | 3578 | CALCULATING AND ACCOUNTING MACHINES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3576 | 3596 | SCALES AND BALANCES, EXC. LABORATORY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3576 | 3596 | SCALES AND BALANCES, EXC. LABORATORY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3579 | 3579 | OFFICE MACHINES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3579 | 3579 | OFFICE MACHINES, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3581 | 3581 | AUTOMATIC MERCHANDISING MACHINES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3581 | 3581 | AUTOMATIC MERCHANDISING MACHINES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3582 | 3582 | COMMERCIAL LAUNDRY EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3582 | 3582 | COMMERCIAL LAUNDRY EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3585 | 3585 | REFRIGERATION AND HEATING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3585 | 3585 | REFRIGERATION AND HEATING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3586 | 3586 | MEASURING AND DISPENSING PUMPS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3586 | 3586 | MEASURING AND DISPENSING PUMPS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3589 | 3589 | SERVICE INDUSTRY MACHINERY, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3589 | 3589 | SERVICE INDUSTRY MACHINERY, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3592 | 3592 | CARBURETORS, PISTONS, RINGS, VALVES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3592 | 3592 | CARBURETORS, PISTONS, RINGS, VALVES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3599 | 3593 | MACHINERY, EXCEPT ELECTRICAL, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3599 | 3593 | MACHINERY, EXCEPT ELECTRICAL | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3599 | 3599 | MACHINERY, EXCEPT ELECTRICAL | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3599 | 3599 | MACHINERY, EXCEPT ELECTRICAL | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3612 | 3612 | TRANSFORMERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3612 | 3612 | TRANSFORMERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3612 | 3612 | TRANSFORMERS | | NR | NO ELECTROPLATING | 8 | 8 | 99 |
| 3613 | 3625 | SWITCHGEAR AND SWITCHBOARD APPARATUS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3613 | 3625 | SWITCHGEAR AND SWITCHBOARD APPARATUS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3613 | 3613 | SWITCHGEAR AND SWITCHBOARD APPARATUS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3613 | 3613 | SWITCHGEAR AND SWITCHBOARD APPARATUS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3621 | 3621 | MOTORS AND GENERATORS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3621 | 3621 | MOTORS AND GENERATORS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3622 | 3625 | RELAYS AND INDUSTRIAL CONTROLS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3622 | 3625 | RELAYS AND INDUSTRIAL CONTROLS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3623 | 3548 | WELDING APPARATUS, ELECTRIC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3623 | 3548 | WELDING APPARATUS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3624 | 3624 | CARBON AND GRAPHITE PRODUCTS | | NR | CARBON & GRAPHITE PRODUCTS | 8 | 8 | 99 |
| 3629 | 3629 | ELECTRICAL INDUSTRIAL APPARATUS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3629 | 3629 | ELECTRICAL INDUSTRIAL APPARATUS, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3629 | 3629 | ELECTRICAL INDUSTRIAL APPARATUS, NEC | | NR | FUEL CELLS | 8 | 8 | 99 |
| 3631 | 3631 | HOUSEHOLD COOKING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3631 | 3631 | HOUSEHOLD COOKING EQUIPMENT | | NR | NO ELECTROPLATING/PORCELAIN | 1 | 1 | 99 |
| 3631 | 3631 | HOUSEHOLD COOKING EQUIPMENT | 466 | A | STEEL Basis Material (PORCELAIN) | 10 | 10 | 3 |
| 3631 | 3631 | HOUSEHOLD COOKING EQUIPMENT | 466 | C | ALUMINUM Basis Material (Porcelain) | 10 | 10 | 2 |
| 3632 | 3632 | HOUSEHOLD REFRIGERATORS AND FREEZERS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3632 | 3632 | HOUSEHOLD REFRIGERATORS AND FREEZERS | | NR | NO ELECTROPLATING (PORCELAIN) | 1 | 1 | 99 |
| 3632 | 3632 | HOUSEHOLD REFRIGERATORS AND FREEZERS | 466 | A | STEEL Basis Material (PORCELAIN) | 10 | 10 | 2 |

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|-----------------------|------------------|----------------------------------------|-------------|--------------------|----------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3633 | 3633 | HOUSEHOLD LAUNDRYEQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3633 | 3633 | HOUSEHOLD LAUNDRYEQUIPMENT | | NR | NO ELECTROPLATING/PORCELAIN | 1 | 1 | 99 |
| 3633 | 3633 | HOUSEHOLD LAUNDRYEQUIPMENT | 466 | A | STEEL Basis Material (PORCELAIN) | 10 | 10 | 2 |
| 3634 | 3634 | ELECTRIC HOUSEWARES AND FANS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3634 | 3634 | ELECTRIC HOUSEWARES AND FANS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3635 | 3635 | HOUSEHOLD VACUUM CLEANERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3635 | 3635 | HOUSEHOLD VACUUM CLEANERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3636 | 3639 | SEWING MACHINES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3636 | 3639 | SEWING MACHINES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3636 | 3559 | SEWING MACHINES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3636 | 3559 | SEWING MACHINES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3639 | 3639 | HOUSEHOLD APPLIANCES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3639 | 3639 | HOUSEHOLD APPLIANCES, NEC | 466 | A | STEEL Basis Material (PORCELAIN) | 10 | 10 | 1 |
| 3641 | 3641 | ELECTRIC LAMPS | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3641 | 3641 | ELECTRIC LAMPS | 469 | D | LUMINESCENT MATERIALS | 1 | 1 | 1 |
| 3643 | 3643 | CURRENT-CARRYING WIRING DEVICES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3643 | 3643 | CURRENT-CARRYING WIRING DEVICES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3643 | 3643 | CURRENT-CARRYING WIRING DEVICES | | NR | | 1 | 1 | 99 |
| 3644 | 3644 | NONCURRENT-CARRYING WIRING DEVICES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3644 | 3644 | NONCURRENT-CARRYING WIRING DEVICES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3645 | 3645 | RESIDENTIAL LIGHTING FIXTURES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3645 | 3645 | RESIDENTIAL LIGHTING FIXTURES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3646 | 3646 | COMMERCIAL LIGHTING FIXTURES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3646 | 3646 | COMMERCIAL LIGHTING FIXTURES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3647 | 3647 | VEHICULAR LIGHTING EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3647 | 3647 | VEHICULAR LIGHTING EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3648 | 3648 | LIGHTING EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3648 | 3648 | LIGHTING EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3651 | 3651 | RADIO AND TV RECEIVING SETS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3651 | 3651 | RADIO AND TV RECEIVING SETS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3652 | 3652 | PHONOGRAPH RECORDS | | NR | | 1 | 1 | 99 |
| 3661 | 3575 | TELEPHONE AND TELEGRAPH APPARATUS | | NR | | 1 | 1 | 99 |
| 3661 | 3575 | TELEPHONE AND TELEGRAPH APPARATUS | | NR | | 1 | 1 | 99 |
| 3662 | 3663 | RADIO AND TV COMMUNICATION EQUIPMENT | | NR | | 1 | 1 | 99 |
| 3662 | 3812 | RADIO AND TV COMMUNICATION EQUIPMENT | | NR | | 1 | 1 | 99 |
| 3662 | 3669 | RADIO AND TV COMMUNICATION EQUIPMENT | | NR | | 1 | 1 | 99 |
| 3662 | 3829 | RADIO AND TV COMMUNICATION EQUIPMENT | | NR | | 1 | 1 | 99 |
| 3662 | 3699 | RADIO AND TV COMMUNICATION EQUIPMENT | | NR | | 1 | 1 | 99 |
| 3672 | 3671 | ELECTRON TUBES | 469 | C | CATHODE RAY TUBE | 8 | 8 | 0 |
| 3674 | 3674 | SEMICONDUCTORS AND RELATED DEVICES | 469 | A | SEMI-CONDUCTORS | 9 | 10 | 0 |
| 3675 | 3675 | ELECTRONIC CAPACITORS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3676 | 3676 | RESISTORS FOR ELECTRONIC APPLICATIONS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3676 | 3676 | RESISTORS FOR ELECTRONIC APPLICATIONS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3677 | 3677 | ELECTRONIC COILS, TRANSFORMERS & OTHER | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3677 | 3677 | ELECTRONIC COILS, TRANSFORMERS & OTHER | | NR | NO ELECTROPLATING | 8 | 8 | 99 |
| 3678 | 3678 | CONNECTORS FOR ELECTRONIC APPLICATIONS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3678 | 3678 | CONNECTORS FOR ELECTRONIC APPLICATIONS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3679 | 3672 | ELECTRONIC COMPONENTS, NEC | 413 | H | PRINTED CIRCUIT BOARDS | 1 | 9 | 1 |
| 3679 | 3264 | ELECTRONIC COMPONENTS, NEC | | NR | | 1 | 1 | 99 |
| 3679 | 3679 | ELECTRONIC COMPONENTS, NEC | 469 | B | ELECTRONIC CRYSTALS | 1 | 5 | 2 |
| 3679 | 3671 | ELECTRONIC COMPONENTS, NEC | | NR | | 1 | 1 | 99 |
| 3679 | 3695 | ELECTRONIC COMPONENTS, NEC | | NR | | 1 | 1 | 99 |
| 3679 | 3679 | ELECTRONIC COMPONENTS, NEC | | NR | | 1 | 1 | 99 |
| 3679 | 3625 | ELECTRONIC COMPONENTS, NEC | | NR | | 1 | 1 | 99 |

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| 3691 | 3691 | STORAGE BATTERIES | 461 | A | CADMIUM BATTERIES | 5 | 10 | 14 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | B | CALCIUM BATTERIES | 5 | 5 | 1 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | C | LEAD BATTERIES | 2 | 9 | 5 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | D | LECLANCHE BATTERIES | 5 | 5 | 17 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | E | LITHIUM BATTERIES | 5 | 5 | 7 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | O | MERCURY (WESTON) CELLS | 5 | 5 | 11 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | G | ZINC BATTERIES | 10 | 10 | 4 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | O | MERCURY (RUBEN) BATTERIES | 5 | 5 | 10 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | O | LEAD ACID RESERVE BATTERIES | 5 | 5 | 6 |
| 3691 | 3691 | STORAGE BATTERIES | 461 | F | MAGNESIUM BATTERIES | 5 | 5 | 9 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | A | CADMIUM BATTERIES | 5 | 10 | 14 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | B | CALCIUM BATTERIES | 5 | 5 | 1 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | C | LEAD BATTERIES | 2 | 9 | 5 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | E | LITHIUM BATTERIES | 5 | 5 | 7 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | F | MAGNESIUM BATTERIES | 5 | 5 | 9 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | O | MERCURY (RUBEN) BATTERIES | 5 | 5 | 10 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | O | MERCURY (WESTON) CELLS | 5 | 5 | 11 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | O | LEAD ACID RESERVE BATTERIES | 3 | 3 | 6 |
| 3692 | 3692 | PRIMARY BATTERIES, DRY & WET | 461 | G | ZINC BATTERIES | 10 | 10 | 4 |
| 3693 | 3845 | ELECTROMEDICAL EQUIPMENT | 469 | C | ELECTRON TUBES | 8 | 8 | 1 |
| 3693 | 3844 | X-RAY APPARATUS AND TUBES | 469 | C | ELECTRON TUBES | 8 | 8 | 2 |
| 3694 | 3694 | ELECTRICAL EQUIP for INTERNAL COMBUSTION | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3694 | 3694 | ELECTRICAL EQUIP for INTERNAL COMBUSTION | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3699 | 3641 | ELECTRICAL MACHINERY, EQUIPMENT & SUPPL | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3699 | 3585 | ELECTRICAL MACHINERY, EQUIPMENT & SUPPL | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3699 | 3699 | ELECTRICAL MACHINERY, EQUIPMENT & SUPPL | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3711 | 3711 | MOTOR VEHICLES & PASSENGER CAR BODIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3711 | 3711 | MOTOR VEHICLES & PASSENGER CAR BODIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3713 | 3713 | TRUCK & BUS BODIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3713 | 3713 | TRUCK & BUS BODIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3714 | 3714 | MOTOR VEHICLE PARTS & ACCESSORIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3714 | 3714 | MOTOR VEHICLE PARTS & ACCESSORIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3715 | 3715 | TRUCK TRAILERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3715 | 3715 | TRUCK TRAILERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3721 | 3721 | AIRCRAFT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3721 | 3721 | AIRCRAFT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3724 | 3724 | AIRCRAFT ENGINES & ENGINE PARTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3724 | 3724 | AIRCRAFT ENGINES & ENGINE PARTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3728 | 3492 | AIRCRAFT EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3728 | 3593 | AIRCRAFT EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3728 | 3594 | AIRCRAFT EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3728 | 3594 | AIRCRAFT EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3728 | 3593 | AIRCRAFT EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3728 | 3492 | AIRCRAFT EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3728 | 3728 | AIRCRAFT EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3728 | 3728 | AIRCRAFT EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3731 | 3731 | SHIP BUILDING AND REPAIRING | 470 | I | SHIP BUILDING AND REPAIRING | 6 | 6 | 0 |
| 3732 | 3732 | BOAT BUILDING AND REPAIRING | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3732 | 3732 | BOAT BUILDING AND REPAIRING | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3743 | 3743 | RAILROAD EQUIPMENT | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3743 | 3743 | RAILROAD EQUIPMENT | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3751 | 3751 | MOTORCYCLES, BICYCLES AND PARTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3751 | 3751 | MOTORCYCLES, BICYCLES AND PARTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3761 | 3761 | GUIDED MISSILES AND SPACE VEHICLES | 433 | A | METAL FINISHING | 1 | 9 | 0 |

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| 3761 | 3761 | GUIDED MISSILES AND SPACE VEHICLES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3764 | 3764 | SPACE PROPULSION UNITS AND PARTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3764 | 3764 | SPACE PROPULSION UNITS AND PARTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3769 | 3769 | SPACE VEHICLE EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3769 | 3769 | SPACE VEHICLE EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3792 | 3792 | TRAVEL TRAILERS AND CAMPERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3792 | 3792 | TRAVEL TRAILERS AND CAMPERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3795 | 3795 | TANKS AND TANK COMPONENTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3795 | 3795 | TANKS AND TANK COMPONENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3799 | 3799 | TRANSPORTATION EQUIPMENT, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3799 | 3799 | TRANSPORTATION EQUIPMENT, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3812 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3811 | 3812 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3821 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3821 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3811 | 3826 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3811 | 3826 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3829 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 4 |
| 3811 | 3829 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3826 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 5 |
| 3811 | 3827 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3811 | 3827 | ENGINEERING AND SCIENTIFIC INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 6 |
| 3822 | 3822 | ENVIRONMENTAL CONTROLS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3822 | 3822 | ENVIRONMENTAL CONTROLS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3823 | 3823 | PROCESS CONTROL INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3823 | 3823 | PROCESS CONTROL INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3824 | 3824 | FLUID METERS AND COUNTING DEVICES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3824 | 3824 | FLUID METERS AND COUNTING DEVICES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3825 | 3825 | INSTRUMENTS TO MEASURE ELECTRICITY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3825 | 3825 | INSTRUMENTS TO MEASURE ELECTRICITY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3829 | 3829 | MEASURING & CONTROLLING DEVICES, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3829 | 3829 | MEASURING & CONTROLLING DEVICES, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3832 | 3826 | OPTICAL INSTRUMENTS AND LENSES | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3832 | 3826 | OPTICAL INSTRUMENTS AND LENSES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3832 | 3829 | OPTICAL INSTRUMENTS AND LENSES | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3832 | 3829 | OPTICAL INSTRUMENTS AND LENSES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3832 | 3827 | OPTICAL INSTRUMENTS AND LENSES | 433 | A | METAL FINISHING | 1 | 9 | 3 |
| 3832 | 3827 | OPTICAL INSTRUMENTS AND LENSES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3841 | 3841 | SURGICAL AND MEDICAL INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3841 | 3841 | SURGICAL AND MEDICAL INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3842 | 3842 | SURGICAL APPLIANCES AND SUPPLIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3842 | 3842 | SURGICAL APPLIANCES AND SUPPLIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3843 | 3843 | DENTAL EQUIPMENT AND SUPPLIES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3843 | 3843 | DENTAL EQUIPMENT AND SUPPLIES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3851 | 3851 | OPHTHALMIC GOODS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3851 | 3851 | OPHTHALMIC GOODS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3861 | 3861 | PHOTOGRAPHIC EQUIPMENT AND SUPPLIES | 459 | 3 | DIAZO, SOLVENT PROCESS | 8 | 8 | 1 |
| 3861 | 3861 | PHOTOGRAPHIC EQUIPMENT AND SUPPLIES | 459 | 4 | PHOTOGRAPHIC Equipment & Supplies | 8 | 8 | 2 |
| 3861 | 3861 | PHOTOGRAPHIC EQUIPMENT AND SUPPLIES | 459 | 5 | THERMAL, SOLVENT PROCESS | 8 | 8 | 3 |
| 3873 | 3873 | WATCHES, CLOCKS AND WATCHCASES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3873 | 3873 | WATCHES, CLOCKS AND WATCHCASES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3911 | 3911 | JEWELRY, PRECIOUS METAL | 433 | A | METAL FINISHING | 1 | 9 | 2 |
| 3911 | 3911 | JEWELRY, PRECIOUS METAL | 471 | D | PRECIOUS METAL FORMING | 1 | 10 | 1 |
| 3914 | 3914 | SILVERWARE AND PLATED WARE | 433 | A | METAL FINISHING | 1 | 9 | 0 |

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|----------------------|---------------------|--------------------------------------|-------------|--------------------|----------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 3914 | 3914 | SILVERWARE AND PLATED WARE | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3915 | 3915 | JEWELER'S MATERIALS & LAPIDARY WORK | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3915 | 3915 | JEWELER'S MATERIALS & LAPIDARY WORK | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3931 | 3931 | MUSICAL INSTRUMENTS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3931 | 3931 | MUSICAL INSTRUMENTS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3942 | 3942 | DOLLS | | NR | | 1 | 1 | 99 |
| 3944 | 3944 | GAMES, TOYS AND CHILDREN'S VEHICLES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3944 | 3944 | GAMES, TOYS AND CHILDREN'S VEHICLES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3949 | 3949 | SPORTING AND ATHLETIC GOODS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 1 |
| 3949 | 3949 | SPORTING AND ATHLETIC GOODS, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3949 | 3949 | SPORTING AND ATHLETIC GOODS, NEC | 433 | A | METAL FINISHING | 1 | 1 | 2 |
| 3951 | 3951 | PENS AND MECHANICAL PENCILS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3951 | 3951 | PENS AND MECHANICAL PENCILS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3952 | 3952 | LEAD PENCILS AND ART GOODS | | NR | | 1 | 1 | 99 |
| 3953 | 3953 | MARKING DEVICES | | NR | | 1 | 1 | 99 |
| 3955 | 3955 | CARBON PAPER AND INKED RIBBONS | | NR | | 1 | 1 | 99 |
| 3961 | 3961 | COSTUME JEWELRY | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3961 | 3961 | COSTUME JEWELRY | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3962 | 3999 | ARTIFICIAL FLOWERS | | NR | | 1 | 1 | 99 |
| 3964 | 3965 | NEEDLES, PINS AND FASTENERS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3964 | 3965 | NEEDLES, PINS AND FASTENERS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3991 | 3991 | BROOMS AND BRUSHES | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3991 | 3991 | BROOMS AND BRUSHES | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3993 | 3993 | SIGNS AND ADVERTIZING DISPLAYS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3993 | 3993 | SIGNS AND ADVERTIZING DISPLAYS | | NR | | 1 | 1 | 99 |
| 3993 | 3993 | SIGNS AND ADVERTIZING DISPLAYS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3995 | 3995 | BURIAL CASKETS | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 3995 | 3995 | BURIAL CASKETS | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 3996 | 3996 | HARD SURFACE FLOOR COVERINGS | | NR | | 1 | 1 | 99 |
| 3996 | 3996 | HARD SURFACE FLOOR COVERINGS | 443 | D | LINOLEUM & PRINTED ASPHALT FELT | 1 | 1 | 0 |
| 3999 | 3999 | MANUFACTURING INDUSTRIES, NEC | | A | METAL FINISHING | 1 | 9 | 0 |
| 3999 | 3999 | MANUFACTURING INDUSTRIES, NEC | | NR | | 1 | 1 | 99 |
| 4172 | 4173 | BUS TERMINAL AND SERVICE FACILITIES | | NR | | 1 | 1 | 99 |
| 4226 | 4226 | SPECIAL WAREHOUSE & STORAGE, NEC | | NR | | 1 | 1 | 99 |
| 4231 | 4231 | TRUCKING TERMINAL FACILITIES | | | | 5 | 5 | 0 |
| 4469 | 4493 | WATER TRANSPORTATION SERVICES, NEC | | | | 5 | 5 | 1 |
| 4469 | 4959 | WATER TRANSPORTATION SERVICES, NEC | | | | 5 | 5 | 2 |
| 4469 | 4499 | WATER TRANSPORTATION SERVICES, NEC | | | | 5 | 5 | 3 |
| 4612 | 4612 | CRUDE PETROLEUM PIPELINES | | NR | | 8 | 8 | 0 |
| 4911 | 4911 | ELECTRICAL SERVICES | 423 | A | Hydro Electric Pwr Gen. (w/ SAN. WST.) | 6 | 6 | 1 |
| 4911 | 4911 | ELECTRICAL SERVICES | 423 | A | STEAM ELECTRIC POWER Generating | 6 | 6 | 2 |
| 4931 | 4931 | ELECTRIC AND OTHER SERVICES COMBINED | 423 | A | Hydro Electric Pwr Gen. (w/ SAN. WST.) | 6 | 6 | 1 |
| 4931 | 4931 | ELECTRIC AND OTHER SERVICES COMBINED | 423 | A | STEAM ELECTRIC POWER Generating | 6 | 6 | 2 |
| 4941 | 4941 | WATER SUPPLY | | | | 7 | 7 | 0 |
| 4952 | 4952 | SEWERAGE SYSTEMS | | | | 1 | 1 | 0 |
| 4953 | 4953 | REFUSE SYSTEMS | | | | 7 | 7 | 1 |
| 4953 | 4953 | REFUSE SYSTEMS | | | | 10 | 10 | 2 |
| 4959 | 4959 | SANITARY SERVICES, NEC | | | | 1 | 1 | 0 |
| 4961 | 4961 | STEAM SUPPLY | | | | 1 | 1 | 0 |
| 5052 | 5052 | COAL & OTHER MINERALS & ORES | | | | 8 | 8 | 0 |
| 5093 | 5093 | SCRAP & WASTE MATERIALS | | | | 10 | 10 | 0 |
| 5143 | 5143 | DAIRY PRODUCTS | 405 | A | RECEIVING STATIONS | 1 | 1 | 0 |
| 5161 | 5169 | CHEMICALS AND ALLIED PRODUCTS | | | | 10 | 10 | 0 |
| 5171 | 5171 | PETROLEUM BULK STATIONS & TERMINALS | | | | 8 | 8 | 0 |

APPENDIX A
SIC Code Cross Reference
and Total and Human Health Toxicity Number

| 1977 SIC Code | 1987 SIC Code | 1987 Title | CFR Part | CFR Sub Part | Sub-part title | Human Health Toxicity Number | Total Toxicity Number | Industry Subcat Number |
|---------------------|---------------------|------------------------------------------|-------------|--------------------|------------------------------------|---------------------------------------|-----------------------------|------------------------------|
| 5191 | 5191 | FARM SUPPLIES | | | | 6 | 6 | 0 |
| 5423 | 5421 | MEAT AND FISH (SEAFOOD) MARKETS | 432 | E | SMALL PROCESSOR | 1 | 1 | 1 |
| 5423 | 5421 | MEAT AND FISH (SEAFOOD) MARKETS | 432 | F | MEAT CUTTER | 1 | 1 | 2 |
| 5423 | 5421 | MEAT AND FISH (SEAFOOD) MARKETS | 432 | G | Sausage & Luncheon Meats PROCESSOR | 1 | 1 | 3 |
| 5423 | 5421 | MEAT AND FISH (SEAFOOD) MARKETS | | NR | OTHER MARKETS W/O PROCESSING | 1 | 1 | 99 |
| 7211 | 7211 | POWER LAUNDRIES, FAMILY & COMMERCIAL | 444 | 3 | POWER LAUNDRIES | 3 | 3 | 0 |
| 7213 | 7213 | LINEN SUPPLY | 444 | 9 | LINEN SUPPLY | 6 | 6 | 0 |
| 7214 | 7219 | DIAPER SERVICE | 444 | 5 | DIAPER SERVICE | 3 | 3 | 0 |
| 7215 | 7215 | COIN-OPERATED LAUNDRIES & DRY CLEANING | 444 | 1 | COIN-OPERATED LAUNDRIES | 3 | 3 | 0 |
| 7216 | 7216 | DRY CLEANING PLANTS, except RUG CLEANING | 444 | 2 | DRY CLEANING PLANTS | 3 | 3 | 0 |
| 7217 | 7217 | CARPET & UPHOLSTERY CLEANING | 444 | 4 | CARPET & UPHOLSTERY CLEANING | 3 | 3 | 0 |
| 7218 | 7218 | INDUSTRIAL LAUNDERERS | 444 | 8 | INDUSTRIAL LAUNDRY | 6 | 6 | 0 |
| 7219 | 7219 | LAUNDRY, GARMENT SERVICES, NEC | 444 | 6 | LAUNDRY, GARMENT SERVICES NEC | 1 | 1 | 0 |
| 7342 | 7342 | DISINFECTING & EXTERMINATING SERVICE | | | | 10 | 10 | 0 |
| 7391 | 8731 | RESEARCH & DEVELOPMENT LABORATORIES | | NR | | 1 | 1 | 99 |
| 7395 | 7384 | PHOTOFINISHING LABORATORIES | 459 | A | PHOTOGRAPHIC PROCESSING | 1 | 1 | 0 |
| 7397 | 8734 | COMMERCIAL TESTING LABORATORIES | | | | 1 | 1 | 0 |
| 7542 | 7542 | CAR WASHES | 444 | 7 | CAR WASH | 3 | 3 | 0 |
| 7699 | 7699 | REPAIR SHOPS, NEC | 433 | A | METAL FINISHING | 1 | 9 | 0 |
| 7699 | 7699 | REPAIR SHOPS, NEC | | NR | NO ELECTROPLATING | 1 | 1 | 99 |
| 7819 | 7819 | SERVICE ALLIED TO MOTION PICTURE PRGD. | 459 | A | PHOTOGRAPHIC PROCESSING | 1 | 1 | 0 |
| 8062 | 8062 | GEN. MEDICAL/SURGICAL HOSPITALS | | | | 10 | 10 | 0 |
| 8069 | 8069 | SPECIALTY HOSPITALS | | | | 10 | 10 | 0 |
| 8071 | 8071 | MEDICAL LABORATORIES | | | | 10 | 10 | 0 |
| 8922 | 8733 | NONCOMMERCIAL RESEARCH ORGANIZATIONS | | | | 7 | 7 | 0 |

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Appendix C. Outline of IPDES Individual Permit Development and Issuance Process

1) DEQ Makes an Application Completeness Determination

- a) Assess permit application
 - i) Identify application deficiencies
 - ii) Review past permit file
 - iii) Investigate surface water and wastewater changes
- b) Discuss findings with permit applicant
 - i) Request additional information from applicant, or
 - ii) Determine application complete
- c) Publish DEQ's completeness determination

2) DEQ Determines Application Complete, Proceeds to Issue a Permit

- a) Review files
 - i) Permit file (e.g., previous permits, DMRs, inspections, annual reports, and noncompliance reporting)
 - ii) Compliance files
 - iii) Other deliverables
 - (1) Ambient water data
 - (2) Mixing zone study
- b) Review application
 - i) Facility design flow
 - ii) New construction or treatment capabilities

3) Establish Contacts

- a) Discuss permit development and determine any major issues with:
 - i) Regional office
 - ii) Water quality standards
 - iii) TMDL
 - iv) Wastewater
 - v) EPA
- b) Contact permittee
 - i) Call to notify that DEQ starting to work on draft permit. See if they have any:
 - (1) Questions
 - (2) Outstanding issues
 - (3) Noncompliance
 - (4) Additional information that was not available/provided in application
 - ii) Inform about all data required to submit (e.g., the DMR may only have averages for some parameters)
 - (1) Inquire about effluent data available on a spreadsheet.

(2) Request all sample analyses

4) Data Collection

- a) Review existing permit and fact sheet (or similar permits/fact sheets for new discharges)
 - i) Did the permit have technology-based effluent limits?
 - ii) Did the permit have water quality-based effluent limits?
 - iii) Flow and dilution assumptions
 - (1) Dilution modeling or percentage of the river?
 - (2) River gauges to calculate 1Q, 7Q10, etc. (may need to infer from best available information)?
 - iv) Ambient monitoring conducted (which parameters, frequency, etc.)?
 - v) Effluent monitoring-only parameters?
 - vi) Compliance schedules?
 - vii) Special studies?
- b) DMR data
 - i) Generally look at the last 5 years of DMR, ICIS, ECHO, and CRIPS data.
 - ii) Summarize data (database reports, spreadsheets, etc.)
- c) Receiving water body
 - i) Flowing and nonflowing water body data
 - ii) Water quality
 - (1) Beneficial uses
 - (2) Water quality standards
 - (3) Water quality status (e.g., impaired or other)
 - iii) TMDL review
 - (1) Status of TMDL
 - (2) Wasteload allocations
 - (a) Does facility have a wasteload allocation?
 - (b) Does TMDL have a reserve for growth?
- d) Type of facility
 - i) Industrial
 - (1) Major/minor
 - (2) Review industry, treatment processes, ELGs, standards, etc.
 - (a) Similar permits
 - (b) Industry information
 - ii) POTW and other municipal (e.g., pretreatment and MS4)
 - (1) Major/minor
 - (2) Review treatment process
 - (3) I/I, reported SSOs, O&M, collection systems, etc.
- e) Outfall information
 - i) Location, characteristics
 - ii) Latitude/longitude

- f) Determine whether to conduct a site visit

5) Draft Permit and Fact Sheet Development

- a) Receiving water
 - i) Critical flows
 - ii) Mixing zone
- b) Develop permit conditions
 - i) Limits
 - (1) Technology-based permitting (TBELs)
 - (a) ELGs
 - (b) BPJs
 - (2) Water quality-based effluent limits (WQBELs)
 - (a) Conduct reasonable potential analysis (RPA)
 - (b) Determine if there is a reasonable potential to exceed (RPTE)
 - (c) Develop appropriate WQBELs
 - ii) Other conditions
 - (1) Compliance schedules
- c) DEQ Internal review
 - i) IPDES compliance, inspection, and enforcement
 - ii) Surface water
 - iii) Wastewater
 - iv) Regional office
 - v) Attorney General
 - vi) Others as appropriate

6) Preliminary Draft

- a) Post notice of preliminary draft on DEQ web page and web page RSS feed.
- b) Provide preliminary draft to permittee for review of errors and omissions. Include:
 - i) Letter (use template)
 - ii) Preliminary draft permit
 - iii) Draft fact sheet
- c) After preliminary review period, revise draft, as appropriate.

7) Public Notice of Draft Permit

- a) Prepare the permit for public notice. Default public notice period is 30 days.
- b) Call permittee and EPA to notify of public notice.
- c) Review mail and RSS feed, add names as necessary
- d) Coordinate the public notice with the DEQ Environmental Management and Information (EMI) Division for:
 - i) Appropriate media notification (e.g., local newspaper, e-mail, and social media)
 - ii) Post draft permit package on DEQ web page
- e) Submit public notices. The draft permit package includes:
 - i) Draft permit w/attachments

- ii) Draft fact sheet
- iii) Public notice
- iv) Cover letter to facility
- f) Schedule public meeting, if appropriate.

8) Respond to Comments

- a) Once the public notice period is closed:
 - i) Request additional information from permittee in response to comments received.
 - ii) Revise permit in response to comments received.
- b) Prepare response to comments document
- c) Prepare proposed permit (if necessary)
 - i) Provide proposed permit to EPA for review (if necessary)

9) Prepare Final Permit Package

- a) Prepare and validate the Administrative Record.
 - i) Final permit w/attachments
 - ii) Final fact sheet
 - iii) Permit application and supplemental information
 - iv) Issue letter to facility
 - v) IPDES Permit Rating Work Sheet (non-POTW)
 - vi) Comments received and response to comments
 - vii) Correspondence
- b) Finalize the response to comments document.
- c) DEQ internal review (same personnel as draft review).
- d) Finalize Permit. Fill in:
 - i) Issuance date
 - ii) Effective date
 - iii) Expiration date
 - iv) Reapplication date
- e) Review mail RSS feeds and facility contacts, add names as necessary
- f) Prepare issuance letter to permittee from templates, “Permit Issued – Public Comments Received” or “Permit Issued – No Public Comments Received”
- g) Final permit package (administrative record) includes:
 - i) Final permit w/attachments
 - ii) Final fact sheet
 - iii) Permit application and supplemental information
 - iv) Issue letter to facility
 - v) IPDES Permit Rating Work Sheet (non-POTW)
 - vi) Comments received and response to comments
 - vii) Correspondence
- h) Letter to commenters; DEQ may cc the commenters on the issuance letter to the facility.
- i) Submit final permit package.

- j) Coordinate the public notice with the EMI Division and IPDES data management coordinator for:
 - i) Appropriate media notification (e.g., local newspaper, e-mail, and social media)
 - ii) Post permit package on DEQ web page
- k) Verify/validate posting

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Appendix D. Outline of IPDES General Permit Development and Issuance Process

1) DEQ Determines Need to Develop and Issue a General Permit

- a) Review potential permittees
 - i) Facility design flows
 - ii) New construction or treatment capabilities
- b) Review files
 - i) Existing permit files
 - ii) Compliance files
 - iii) Other deliverables
 - (1) Ambient water data
 - (2) Mixing zone studies
- c) Aggregate suitable facilities or activities to be covered

2) Establish Contacts

- a) Discuss permit development and determine any major issues with:
 - i) Regional office
 - ii) Water quality standards
 - iii) TMDL
 - iv) Wastewater
 - v) EPA
- b) Potential permittees and the public
 - i) Notify that DEQ is investigating the applicability of a draft general permit. See if they have any:
 - (1) Questions
 - (2) Outstanding issues
 - (3) Noncompliance
 - (4) Other comments
 - ii) Inquire about available effluent data.

3) Data Collection

- 1) Review existing permits and fact sheets (or similar permits/fact sheets for new discharges)
 - i) Did the permits have technology-based effluent limits, including BMPs?
 - ii) Did the permits have water quality-based effluent limits?
 - iii) Flow and dilution assumptions
 - (1) Model dilution of the receiving water bodies (if mixing zone is authorized)?
 - (2) Critical flow calculations: 1Q, 7Q10, etc. (may need to infer from best available information)?
 - iv) Ambient monitoring conducted (which parameters, frequency, etc.)?

- v) Effluent monitoring-only parameters?
- vi) Influent monitoring?
- vii) Compliance schedules?
- viii) Special studies?
- m) DMR data
 - i) Generally look at the last 5 years of DMR, ICIS, ECHO, and CRIPS data.
 - ii) Summarize data (database reports, spreadsheets, etc.)
- n) Receiving water bodies
 - i) Flowing and nonflowing water body data
 - ii) Water quality
 - (1) Beneficial uses
 - (2) Water quality standards
 - (3) Water quality status (e.g., impaired or other)
 - iii) TMDL review
 - (1) Status of TMDLs
 - (2) Wasteload allocations
 - (a) Do facilities have wasteload allocations?
 - (b) Do TMDLs have reserve for growth?
- o) Type of facilities or activities
 - i) Industrial
 - (1) Major/minor
 - (2) Similar permits
 - (3) Industry information
 - (4) Treatment processes
 - (5) O&M, etc.
 - ii) Municipal
 - (1) Major/minor
 - (2) Similar permits
 - (3) Receiving water body attributes
 - (4) Treatment processes
 - (5) I/I, SSOs, collections systems, etc.
- p) Outfall information
 - i) Locations, characteristics
 - ii) Latitude/longitude
- q) Determine whether to conduct a site visits
- 4) Develop Draft Permit, Fact Sheet, and NOI Requirements**
 - a) Receiving waters
 - i) Critical flows
 - ii) Mixing zones or other analyses
 - b) Develop permit conditions

- i) Limits
 - (1) Technology-based permitting (TBELs)
 - (a) ELGs
 - (b) BPJs
 - (c) BMPs
 - (2) Water quality-based effluent limits (WQBELs)
 - ii) Other conditions
 - (1) Compliance schedules
 - iii) NOI requirements
 - (1) Corporation, business, individual
 - (2) Location (lat/long)
 - (3) Start/end dates, if applicable
 - (4) Proposed activity
 - c) DEQ Internal review
 - i) IPDES compliance, inspection, and enforcement
 - ii) Surface water
 - iii) Wastewater
 - iv) Regional office
 - v) Attorney General
 - vi) Others as appropriate
- 5) Public Notice of Draft Permit**
- a) Post notice of forthcoming draft permit
 - b) Prepare the permit for public notice. Default public notice period is 30 days
 - c) Call EPA to notify of public notice, and provide draft permit and fact sheet
 - d) Review mail and RSS feed, add names as necessary
 - e) Coordinate the public notice with the DEQ Environmental Management and Information (EMI) Division for:
 - i) Appropriate media notification (e.g., local newspaper, e-mail, social media)
 - ii) Post draft permit package on DEQ web page
 - f) Submit public notices. The draft permit package includes:
 - i) Draft permit with attachments
 - ii) Draft fact sheet
 - iii) NOI forms
 - iv) Public notice
 - g) Schedule public meeting, if appropriate.
- 6) Respond to Comments**
- a) Once the public notice period is closed:
 - i) Revise draft permit, fact sheet, and NOI requirements in response to comments received.
 - ii) Prepare response to comments document

- b) Prepare Proposed Permit (if necessary)
 - i) Provide proposed permit to EPA for review (if necessary)

7) Prepare Final Permit Package

- a) Prepare the Administrative Record.
- b) Finalize the Response to Comments document.
- c) DEQ internal review.
- d) Finalize Permit. Fill in:
 - i) Issuance date
 - ii) Effective date
 - iii) Expiration date
 - iv) Reapplication date
- e) Review mail RSS feeds and facility contacts, add names as necessary.
- f) Prepare issuance letter to permittees from templates, “Permit Issued – Public Comments Received” or “Permit Issued – No Public Comments Received.”
- g) Final permit package (administrative record) includes:
 - i) Final permit w/attachments
 - ii) Final fact sheet
 - iii) NOI requirements and supplemental information
 - iv) Issue letter to facility
 - v) IPDES Permit Rating Work Sheet (non-POTW)
 - vi) Comments received and response to comments
 - vii) Correspondence
- h) Letter to commenters; DEQ may cc the commenters on the issuance letter to the facilities.
- i) Submit final permit package.
- j) Coordinate the public notice with the EMI Division and IPDES data management coordinator for:
 - i) Appropriate media notification (e.g., local newspaper, e-mail, and social media).
 - ii) Post permit package on DEQ web page.
- k) Verify/validate posting

Endnotes: IDAPA and CFR References

- ¹ IDAPA 58.01.25.050
- ² IDAPA 58.01.25.101.03
- ³ IDAPA 58.01.25.130.b
- ⁴ IDAPA 58.01.25.130.01.a
- ⁵ IDAPA 58.01.25.010.51
- ⁶ IDAPA 58.01.25.370 and 40 CFR 403
- ⁷ IDAPA 58.01.25.380 and 40 CFR 503
- ⁸ 40 CFR 122.26(b)(14)(i–xi)
- ⁹ IDAPA 58.01.25.010.01
- ¹⁰ IDAPA 58.01.25.010.35
- ¹¹ IDAPA 58.01.25.110.a.i–iii
- ¹² IDAPA 58.01.25.110.02.a.i–iii
- ¹³ IDAPA 58.01.25.110.02.b
- ¹⁴ IDAPA 58.01.25.110.02, IDAPA 58.01.25.110.03.a, and IDAPA 58.01.25.110.04
- ¹⁵ IDAPA 58.01.25.110.03.b.ii
- ¹⁶ IDAPA 58.01.25.110.03.c
- ¹⁷ IDAPA 58.01.25.110.05.a
- ¹⁸ IDAPA 58.01.25.110.05.b and IDAPA 58.01.25.110.05.b.i
- ¹⁹ (IDAPA 58.01.25.110.05.b.ii)
- ²⁰ IDAPA 58.01.25.110.05.b.iii
- ²¹ IDAPA 58.01.25.110.03.b.i
- ²² IDAPA 58.01.25.110.05.c
- ²³ IDAPA 58.01.25.106.01
- ²⁴ IDAPA 58.01.25.110.06
- ²⁵ IDAPA 58.01.25.110.07.a
- ²⁶ IDAPA 58.01.25.110.07.b
- ²⁷ IDAPA 58.01.25.104
- ²⁸ IDAPA 58.01.03
- ²⁹ IDAPA 58.01.17
- ³⁰ IDAPA 58.01.25
- ³¹ IDAPA 58.01.21.012.01.a
- ³² IDAPA 58.01.25.102.02 and IDAPA 58.01.25.090.01
- ³³ IDAPA 58.01.25.002.02
- ³⁴ 40 CFR 2.302
- ³⁵ 40 CFR 136
- ³⁶ IDAPA 58.01.02
- ³⁷ IDAPA 58.01.02.051.02
- ³⁸ IDAPA 58.01.05
- ³⁹ IDAPA 37.03.03
- ⁴⁰ IDAPA 58.01.25
- ⁴¹ IDAPA 58.01.01
- ⁴² IDAPA 58.01.01
- ⁴³ IDAPA 58.01.01
- ⁴⁴ IDAPA 58.01.16.650
- ⁴⁵ IDAPA 58.01.03
- ⁴⁶ IDAPA 58.01.17
- ⁴⁷ IDAPA 58.01.25.103
- ⁴⁸ IDAPA 58.01.25.103.05
- ⁴⁹ IDAPA 58.01.02.052 and IDAPA 58.01.02.052
- ⁵⁰ IDAPA 58.01.02.060
- ⁵¹ IDAPA 58.01.02.400
- ⁵² IDAPA 58.01.25.105.03

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- 53 IDAPA 58.01.25.101.02
 - 54 IDAPA 58.01.25.106.04.b
 - 55 IDAPA 58.01.25.106.04.a
 - 56 IDAPA 58.01.25.101.02
 - 57 IDAPA 58.01.25.106.01
 - 58 IDAPA 58.01.25.106.01
 - 59 IDAPA 58.01.25.106.05.c
 - 60 IDAPA 58.01.25.106.05
 - 61 IDAPA 58.01.25.105.03.e
 - 62 IDAPA 58.01.25.106.02
 - 63 IDAPA 58.01.25.106.02
 - 64 IDAPA 58.01.25.106.03
 - 65 40 CFR 125.3
 - 66 IDAPA 58.01.25.302.03 and 40 CFR 122.29(d)
 - 67 40 CFR 122.44(d)(1)(v)–(vi)
 - 68 IDAPA 58.01.02.051
 - 69 40 CFR 133, 40 CFR 133.102, and 40 CFR 133.105
 - 70 40 CFR 401–471
 - 71 IDAPA 58.01.02.210.03
 - 72 IDAPA 58.01.25.302.06.a.ii.(2)
 - 73 IDAPA 58.01.02.051 and IDAPA 58.01.02.052
 - 74 IDAPA 58.01.02.060
 - 75 IDAPA 58.01.02.060.01.i
 - 76 IDAPA 58.01.25.302.06.a.i
 - 77 IDAPA 58.01.25.302.06
 - 78 IDAPA 58.01.25.302.06.a.v
 - 79 IDAPA 58.01.25.302.06.a.vi
 - 80 IDAPA 58.01.25.302.06.a.vii
 - 81 IDAPA 58.01.25.302.06.a.vii
 - 82 IDAPA 58.01.25.303.06
 - 83 40 CFR 125.3
 - 84 IDAPA 58.01.25.303.01
 - 85 IDAPA 58.01.25.303.02
 - 86 40 CFR 136 and IDAPA 58.01.25.303.03
 - 87 40 CFR 125.3
 - 88 IDAPA 58.01.25.303.06
 - 89 IDAPA 58.01.25.303.06
 - 90 IDAPA 58.01.25.303.08
 - 91 IDAPA 58.01.25.303.09
 - 92 IDAPA 58.01.25.200.02
 - 93 IDAPA 58.01.25.108.b.vii and IDAPA 58.01.25.108.b.ix
 - 94 IDAPA 58.01.25.304.01.b
 - 95 IDAPA 58.01.25.304.01.a
 - 96 IDAPA 58.01.25.304.01.g and IDAPA 58.01.25.304.01.h
 - 97 IDAPA 58.01.25.304.01.c and IDAPA 58.01.25.304.02
 - 98 IDAPA 58.01.25.304.02.a and IDAPA 58.01.25.304.02.e
 - 99 IDAPA 58.01.25.300.12
 - 100 IDAPA 58.01.25.302.13
 - 101 IDAPA 58.01.25.305 and IDAPA 58.01.02.400
 - 102 40 CFR 122.29(d)(4)
 - 103 IDAPA 58.01.25.305
 - 104 IDAPA 58.01.25.305.02
 - 105 IDAPA 58.01.25.300
 - 106 IDAPA 58.01.25.107.01
 - 107 IDAPA 58.01.25.109

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- 108 IDAPA 58.01.25.109.01
109 IDAPA 58.01.25.109.01.d, IDAPA 58.01.25.109.02.b., and IDAPA 58.01.25.109.01.i
110 IDAPA 58.01.25.109.02.h
111 40 CFR 123.44
112 IDAPA 58.01.25.107.04
113 IDAPA 58.01.25.204
114 IDAPA 58.01.25.600.02
115 IDAPA 58.01.25.130.05.b.iv
116 IDAPA 58.01.25.103
117 40 CFR 125.3
118 40 CFR 122.44(d)(1)(v)–(vi)
119 IDAPA 58.01.02.051
120 40 CFR 401–471
121 IDAPA 58.01.02.210.03
122 IDAPA 58.01.25.302.06.a.ii.(2)
123 IDAPA 58.01.02.051 and IDAPA 58.01.02.052
124 IDAPA 58.01.25.302.06.a.i
125 IDAPA 58.01.25.302.06.a.vii
126 IDAPA 58.01.25.302.06.a.vii
127 IDAPA 58.01.25.303.06
128 40 CFR 125.3
129 IDAPA 58.01.25.303.01
130 40 CFR 136 and IDAPA 58.01.25.303.03
131 40 CFR 125.3
132 IDAPA 58.01.25.303.06
133 IDAPA 58.01.25.303.06
134 IDAPA 58.01.25.303.08
135 IDAPA 58.01.25.303.09
136 IDAPA 58.01.25.200.02
137 IDAPA 58.01.25.108.b.vii and IDAPA 58.01.25.108.b.ix
138 IDAPA 58.01.25.304.01.b
139 IDAPA 58.01.25.304.01.a
140 IDAPA 58.01.25.304.01.g and IDAPA 58.01.25.304.01.h
141 IDAPA 58.01.25.304.01.c and IDAPA 58.01.25.304.02
142 IDAPA 58.01.25.304.02.a and IDAPA 58.01.25.304.02.e
143 IDAPA 58.01.25.300.12
144 IDAPA 58.01.25.302.13
145 IDAPA 58.01.25.109.01
146 IDAPA 58.01.25.109.01.d, IDAPA 58.01.25.109.02.b., and IDAPA 58.01.25.109.01.i
147 40 CFR 123.44
148 IDAPA 58.01.25.102.02 and IDAPA 58.01.25.090.01
149 IDAPA 58.01.25.130.04
150 IDAPA 58.01.25.130.05.b.xi
151 IDAPA 58.01.25.130.05.b.ii
152 IDAPA 58.01.25.130.03
153 IDAPA 58.01.21.012.01.a
154 IDAPA 58.01.25.002.02
155 40 CFR 2.302
156 IDAPA 58.01.25.106.01
157 IDAPA 58.01.25.130.05.b.xii
158 IDAPA 58.01.25.130.05.d
159 IDAPA 58.01.25.130.05.c
160 IDAPA 58.01.25.130.05.c
161 IDAPA 58.01.25.130.05.d
162 IDAPA 58.01.25.130.05.e

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- 163 IDAPA 58.01.25.130.05.f
 - 164 IDAPA 58.01.25.201.01.a
 - 165 IDAPA 58.01.25.201.02.d
 - 166 IDAPA 58.01.25.202
 - 167 IDAPA 58.01.25.203
 - 168 IDAPA 58.01.25.201.02.b
 - 169 IDAPA 58.01.25.201.01.b.ii
 - 170 IDAPA 58.01.25.201.03
 - 171 40 CFR 122.42(e)(6)
 - 172 IDAPA 58.01.25.201.01.b.ii
 - 173 IDAPA 58.01.25.201.02.c.i
 - 174 IDAPA 58.01.25.201.02.c.ii
 - 175 IDAPA 58.01.25.201.02.c.ii(1)
 - 176 IDAPA 58.01.25.120
 - 177 IDAPA 58.01.25.201.02.c.ii(2)
 - 178 IDAPA 58.01.25.201.02.c.iii
 - 179 IDAPA 58.01.25.201.01 or IDAPA 58.01.25.203.01
 - 180 IDAPA 58.01.25.201.01 or IDAPA 58.01.25.203.01
 - 181 IDAPA 58.01.25.201.02.c.iv
 - 182 IDAPA 58.01.25.201.02.c.xiii and IDAPA 58.01.12,
 - 183 IDAPA 58.01.25.201.02.c.v
 - 184 IDAPA 58.01.25.310
 - 185 IDAPA 58.01.25.201.02.c.vi
 - 186 IDAPA 58.01.25.201.02.c.vii
 - 187 IDAPA 58.01.25.201.02.c.viii
 - 188 IDAPA 58.01.25.201.02.c.ix
 - 189 IDAPA 58.01.25.201.02.c.x
 - 190 IDAPA 58.01.25.201.02.c.xi
 - 191 IDAPA 58.01.25.201.02.c.xii and IDAPA 58.01.25.302.08
 - 192 40 CFR 122.34(b) and IDAPA 58.01.25.201.02.c.xiv
 - 193 IDAPA 58.01.25.201.02.c.xv
 - 194 IDAPA 58.01.25.201.02.c.xvi
 - 195 IDAPA 58.01.25.201.02.c.xviii
 - 196 IDAPA 58.01.16.650
 - 197 IDAPA 58.01.25.380
 - 198 IDAPA 58.01.25.201.01.a
 - 199 IDAPA 58.01.25.201.01.b
 - 200 IDAPA 58.01.25.201.01.b.ii
 - 201 IDAPA 58.01.25.201.02.d
 - 202 IDAPA 58.01.25.201.02.c
 - 203 IDAPA 58.01.25.202
 - 204 IDAPA 58.01.25.201.02.d.i
 - 205 IDAPA 58.01.25.201.01.a
 - 206 IDAPA 58.01.25.201.01.b.iii
 - 207 IDAPA 58.01.25.201.01.b
 - 208 IDAPA 58.01.25.203.02
 - 209 IDAPA 58.01.25.203.03
 - 210 IDAPA 58.01.02.051
 - 211 IDAPA 58.01.02.052
 - 212 IDAPA 58.01.23
 - 213 IDAPA 58.01.25.310
 - 214 IDAPA 58.01.25.310
 - 215 40 CFR 125.30–32
 - 216 IDAPA 58.01.25.310.01.b
 - 217 40 CFR 125.70–73

- 218 40 CFR 125.70–73
 219 IDAPA 58.01.25.310.01.e
 220 IDAPA 58.01.25.109.01.f–h
 221 IDAPA 58.01.02.260 and 40 CFR 131.10(g)
 222 IDAPA 58.01.02.102.02.a.vi and IDAPA 58.01.02.260.01.b.vi
 223 IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.08
 224 IDAPA 58.01.25.105.08.d and IDAPA 58.01.25.105.16.e
 225 IDAPA 58.01.25.105.11.b and IDAPA 58.01.25.105.17.a
 226 IDAPA 58.01.25.106.06
 227 IDAPA 58.01.25.106.07
 228 IDAPA 58.01.25.302.03.c
 229 40 CFR 127.15
 230 IDAPA 58.01.25.303.07
 231 IDAPA 58.01.25.303.07.b
 232 40 CFR 401–471
 233 IDAPA 58.01.25.303.07.c
 234 40 CFR 123.44, and 40 CFR 131.21
 235 IDAPA 85.01.25.380 and 40 CFR 503
 236 40 CFR 136
 237 IDAPA 58.01.25.203 and IDAPA 58.01.25.400
 238 IDAPA 58.01.25.090.02
 239 IDAPA 58.01.25.090.04
 240 IDAPA 58.01.25.050
 241 IDAPA 58.01.25.500.01 and Idaho Code §39-108 and 39-117
 242 40 CFR 123.45
 243 40 CFR 403.8(f)(2)(viii)
 244 40 CFR 403.8(f)(2)(vii)(A-H)
 245 40 CFR 403.3(l)
 246 40 CFR 403.3(l)
 247 40 CFR 403.3(l)
 248 40 CFR 403.8(f)(1)(vi)(B)
 249 IDAPA 58.01.25.300.05
 250 Idaho Code §§39-101 through 39-130 and Idaho Code §39-175E
 251 Idaho Code §39-108
 252 Idaho Code §39-108(3)(a)
 253 Idaho Code §39-108(3)(a)(ii)
 254 Idaho Code §39-108(3)(a)(vi)
 255 Idaho Code §39-108(3)(a)(vi)
 256 Idaho Code §39-116A
 257 Idaho Code §39-109
 258 IDAPA 58.01.25.500.02 and Idaho Code §39-117
 259 IDAPA 58.01.25.500.03 and Idaho Code §39-117
 260 Idaho Code §39-109
 261 Idaho Code §39-109
 262 Idaho Code §39-108(8)
 263 IDAPA 58.01.25.010.64
 264 Idaho Code §39-108(5)(a)
 265 Idaho Code §39-117(1)
 266 Idaho Code §39-117(3)
 267 Idaho Code §39-108(5)(b)
 268 Idaho Code §39-101, et. seq
 269 40 CFR 123.27
 270 IDAPA 58.01.25.500.04.b
 271 IDAPA 58.01.25.500.04.c
 272 IDAPA 58.01.25.500.04.a

273 IDAPA 58.01.25.204, 205, and 206
274 IDAPA 58.01.25.204.01
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277 IDAPA 58.01.25.204.01, 20, 21, 24
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279 IDAPA 58.01.25.204.05
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281 IDAPA 58.01.25.600
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284 IDAPA 58.01.25.204.09
285 IDAPA 58.01.25.204.10
286 IDAPA 58.01.25.204.16
287 IDAPA 58.01.25.204.17
288 IDAPA 58.01.25.204.24.a
289 IDAPA 58.01.25.204.24.c
290 IDAPA 58.01.25.204.26
291 Idaho Code §67-5273
292 Idaho Code §67-5272
293 IDAPA 58.01.25.204.27
294 IDAPA 58.01.25.130.05.c.
295 IDAPA 58.01.25.204.28 and 40 CFR 124.19
296 IDAPA 58.01.25.204.11
297 IDAPA 58.01.25.204.13.a
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306 IDAPA 58.01.25.205.04
307 IDAPA 58.01.25.206.01.a
308 IDAPA 58.01.25.206.01.a
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319 79 FR 49001
320 79 FR 49001