

Idaho Pollutant Discharge Elimination System

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



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Acknowledgments

9 Compliance Monitoring Activities

IPDES permits require permittees to conduct periodic evaluations of compliance with established effluent limits and report these to DEQ. Sections **Error! Reference source not found.** and **Error! Reference source not found.** 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.ⁱ 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.ⁱⁱ 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.ⁱⁱⁱ 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.^{iv} By signing the report, that individual is certifying the information provided is accurate and complete.^v

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 **Error! Reference source not found.**, “Time Computation”).^{vi} 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 2016c). 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 2016d) 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* (2016c). 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. General information about who performed the inspection, the persons present during the inspection, and the type of inspection conducted (e.g., comprehensive inspection) will be provided in the letter. Documentation will include:

- 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 the an additional informal or formal enforcement letter as well as any corrective actions necessary for a return to compliance. 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* (2016d) 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, DEQ will send a letter documenting that the facility was found to be in compliance. the inspection cover letter will provide documentation of this determination. Once a facility returns to compliance after the inspection, DEQ will send a letter acknowledging that return to compliance no further action is required by the facility in regards to 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.^{vii} 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.^{viii} 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).^{ix} 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 1). 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 1. Technical review criteria pollutant list.

Conventional Pollutants		
TRC = 1.4		
Oxygen Demand Biochemical oxygen demand Chemical oxygen demand Total oxygen demands Total organic carbon Other	Solids Total suspended solids (residues) Total dissolved solids (residues) Other	Nutrients Inorganic phosphorus compounds Inorganic nitrogen compounds Other
Detergents and Oils methylene blue active anionic substances Nitrilotriacetic Acid Oil and grease Other detergents or algaecides	Minerals Calcium Chloride Fluoride Magnesium Sodium Potassium Sulfur Sulfate Total alkalinity Total hardness Other minerals	Metals Aluminum Cobalt Iron Vanadium
Toxic Pollutants		
TRC = 1.2		
Metals (all forms) Other metals not specifically listed above	Inorganic Cyanide Total residual chlorine	Organics All organics are Group II except those specifically listed under Group I.

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 1. Chronic violations of any monthly effluent limit of the pollutants listed in Table 1 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).^x 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).^{xi}

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.^{xii}

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)^{xiii}
- 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 discharge^{xiv}

- 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.^{xv}

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 1 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).

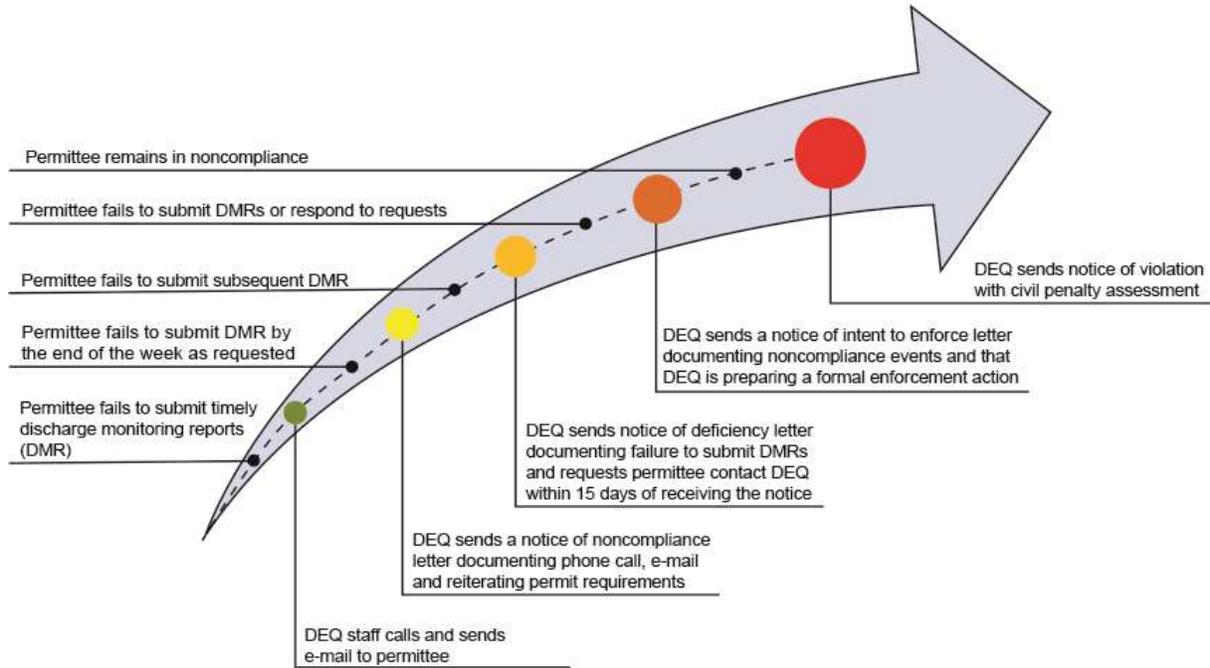


Figure1. Example of an Escalating Enforcement Response

Figure 1. Example of an escalating enforcement response.

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.

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 an NONC or NOD letter and before a notice of violation (NOV). In some instances, DEQ may issue an NOIE after an 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 an 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 **Compliance No Further Action**

DEQ will issue a notice of **compliance no further action (NONFA)** once it has been determined that a facility **is in, or has returned to, complete compliance has adequately addressed the documented noncompliance.** This notice documents that **all known the documented noncompliance has been adequately addressed by the facility, and that Issuance of a NONFA by DEQ will does not preclude the agency from taking further enforcement action regarding those specific noncompliance events up to the statute of limitations. This notice may also be sent to a facility after an inspection when no items of concern or violations were documented.**

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.^{xvi} 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.^{xvii} 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^{xviii}

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.^{xix} 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.^{xx} 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).^{xxi}

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.^{xxii} 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.^{xxiii} 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.^{xxiv}
- 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.^{xxv}

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.^{xxvi}

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.^{xxvii} 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.^{xxviii}

10.5 Civil Penalties

Any person^{xxix} 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 greater^{xxx}

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 greater^{xxxix}

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.^{xxxix}

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 environment^{xxxix}

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.^{xxxix}

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.^{xxxv} 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 2016a), and DEQ will not oppose intervention by any citizen when permissive intervention may be authorized by statute, rule, or regulation.^{xxxvi} DEQ will publish notice and provide at least 30 days for public comment before finalizing a settlement agreement, including payment of civil penalty.^{xxxvii}

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.^{xxxviii} 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.

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 increases 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, including:

- Determining if water bodies are achieving water quality standards;
- Estimating effluent concentrations and variability for permit development and compliance; and
- Estimating background concentrations for total maximum daily load (TMDL) wasteload allocations (WLAs).

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 **Quality Assurance**

Project Plan (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, published data) and existing data collected by contractors or external organizations, unless specifically excluded by state or federal rules.

These 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 antiquated, stale, or represent the appropriate environmental conditions suitable for use in permitting. For example, some permits have been administratively extended for such a period of time that permit re-application data no longer reflect current conditions. Situations may also arise when reference information becomes outdated and needs to be refreshed before being 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
- The 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. in comparison to current water quality criteria)
- Seasonality and flow periods
- The 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, non-representative data, or data not meeting quality objectives)
- Any other information that may help identify data grouping and analyses to appropriately develop permit limits

These data and potential groupings (e.g., flow periods, seasonality) may need to be statistically verified, as well as based on references and familiarity of the location, flow management, and other site-specific circumstances. Data older than five 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 contemporary information.

12.2 Statistical Software

DEQ's *Statistical Guidance for Determining Background Ground Water Quality and Degradation* (DEQ 2014) identifies that the development of robust statistical analysis requires clear documentation of software used in the analysis, including version numbers and relevant information on the software source and publisher. DEQ will avoid the use of nonstandard methodologies to minimize interpretational problems or inappropriate conclusions. All software should be well documented and widely accepted as to its utility in the kind of statistical analyses performed for developing effluent limits.

DEQ may utilize 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 available for 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

Throughout this section, the terms MDL and ML always refer to the MDL or ML identified 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 58.01.25, unless otherwise specified in the IPDES permit. When used for compliance, procedures for conducting clean and ultra-clean metal analysis, and procedures for conducting biological tests must be based on EPA-approved procedures ^{xxxix} as described in IDAPA 58.01.02.090.02—03.

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 “ultra-clean 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).

Issues may also arise regarding:

- 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 Effluent Limit Development Guidance \(2017 draft\) sections 4 and 5](#).

Any test result used should be representative of 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 the evaluation of 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 utilizing EPA definitions of MDL and ML in the absence of establishing its own list of approved test methods and definitions, with corresponding detection and quantitation levels. EPA defines MDL as [xi](#) ([Appendix B of 40 CFR 136](#)):

...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 in accordance with the procedures in that part.

EPA defines ML as [xii](#) ([40 CFR 136](#)):

...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 as [xiii](#) ([79 FR 49001](#)):

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 rulemaking^{xliii}, 79 FR 49001, 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 assure 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, DEQ^{xliv} IDAPA 58.01.25.106.02.a identifies an EPA-approved method as sufficiently sensitive when:

- 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 sensitive^{xlv} (IDAPA 58.01.25.106.02.b).

When there is no EPA-approved analytical method, and is not otherwise required by DEQ, 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 method^{xlvi} (IDAPA 58.01.25.106.02.c).

Not all parameters have MDLs or MLs (e.g., temperature, 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 concept^{xlvii} (79 FR 49001).

For example, EPA 1600 series method provides MLs. EPA guidance (1996e) 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 as:

$$\text{IML} = \text{MDL} \times 3.18$$

ML is more appropriate for methods that use calibration curves. IML is applicable 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 be applicable because the method is gravimetric.

Reporting levels, instead of IMLs, may be more appropriate for parameters such as Biochemical Oxygen Demand (BOD), temperature, and dissolved oxygen. The IML applied as a reporting level may also be applicable to methods using factory calibrated spectrophotometers (e.g. Hach methods used for COD, 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 it has 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 dilution^{xlvi} (79 FR 49001).

For example, there are several different methods 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 being 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 use of 1631E for biosolids would decrease the accuracy of the measurement due to the need for dilutions required to get the sample into the analytical range.

12.3.3 Calculating and Reporting Values < MDL or ML

Subsections 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 the 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 mass loads use Equation 2:

$$\text{Average Flow (mgd)} * \text{Average Concentration (mg/L)} * 8.34 \text{ ((lbs * L)/(mg*MG))} = \text{Average Mass (lbs/day)}$$

Equation 1. Average mass load.

Use the following when calculating mass load:

- When concentration data are below the MDL, use the MDL to calculate the mass load, and report as less than (<) the calculated mass. For example, if flow is 2 mgd and the reported sample result is <0.001 mg/L (the permit limits are expressed as 0.002 mg/L and 0.03 lbs/day):
 - Mass load on the DMR = 0.001 mg/L * 2 mgd * 8.34
 - Mass load on the DMR = 0.01668 lbs/day
 - Round to 0.02 (e.g., 0.02 provides the same unit of precision as the permit limit; 1/100 lbs/day)
 - Report “< 0.02 lbs/day”)
- When concentration data are below the ML, use the ML to calculate the mass load, and report as less than (<) the calculated mass. For example, if flow is 2 mgd and the reported sample result is <0.005 mg/L (the permit limits are expressed as 0.006 mg/L and 0.1 lbs/day):
 - Mass load on the DMR = 0.005 mg/L * 2 mgd * 8.34
 - Mass load on the DMR = 0.0834 lbs/day
 - Round to 0.08 (e.g., 0.08 provides the same unit precision as the permit limit; 1/100 lbs/day)
 - Report “<0.08 lbs/day”)

When concentration data are equal to or greater than the ML, use the laboratory reported value to calculate the mass load.

To calculate average concentrations use Equation 1:

$$\frac{(\text{Conc.}_1) + (\text{Conc.}_2) \dots (\text{Conc.}_n)}{(n \text{ Measurements})} = \text{Average Conc.} \left(\frac{\text{mg}}{\text{L}} \right)$$

Equation 1. Average concentration.

To calculate average mass loads use Equation 2:

$$\frac{(\text{Flow}_1 \times \text{Conc.}_1) + (\text{Flow}_2 \times \text{Conc.}_2) \dots (\text{Flow}_n \times \text{Conc.}_n)}{(n \text{ Measurements})} \times 8.34 = \text{Average Mass (lbs/day)}$$

Equation 2. Average mass load.

***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 lbs/day
- MDL is 0.010 and ML is 0.022 mg/L
- Measured flows and concentrations are:
 - 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 as:

$$\frac{\left(0 \frac{mg}{L}\right) + \left(0.030 \frac{mg}{L}\right) + \left(0.010 \frac{mg}{L}\right)}{3} = 0.01333 \dots \frac{mg}{L}$$

- Report < 0.022 mg/L because the average concentration is greater than the MDL but less than the ML.

Calculate average mass as:

$$\frac{\left(2.0 \text{ mgd} \times 0 \frac{mg}{L}\right) + \left(2.1 \text{ mgd} \times 0.030 \frac{mg}{L}\right) + \left(2.2 \text{ mgd} \times 0.010 \frac{mg}{L}\right)}{3} \times 8.34 = 0.2363 \left(\frac{lbs}{day}\right)$$

- Round the result and report 0.24 lbs/day, based on significant figures and the permit limit level of precision (1/100 lbs/day).

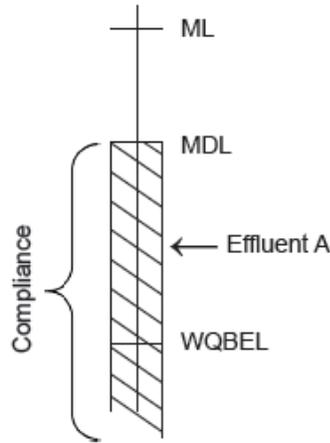
12.4 Compliance with WQBELs below MDL or ML

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 2). 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 the 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.

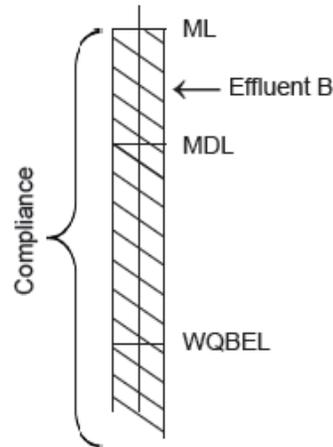
WQBEL < MDL < ML

A. Effluent < MDL = Compliance



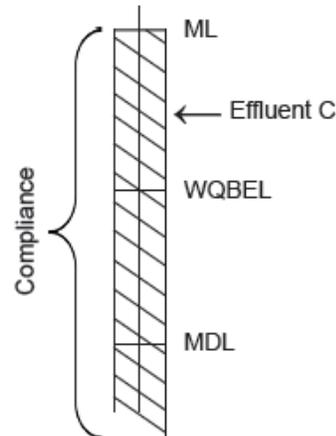
B. Effluent > MDL = Compliance

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 2. 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 section 12.5 was adapted from the Oregon's *The Use of Significant Figures and Rounding Conventions in Water Quality Permit* (ODEQ 2013).

12.5.1 Significant Figures

Regardless of the measuring device, there is always uncertainty 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 g indicates the measurement is accurate to the nearest 0.1 g (i.e., the actual mass is between 1.0 and 1.2 g), but if the measurement is 1.10 g it is accurate to the nearest 0.01 g. This has implications both for permit limit development and for establishing compliance with a permit limit. Table 2 lists the significant figure conventions used by the IPDES Program.

Table 2. IPDES conventions for significant figures.

Conventions	Examples	Number of Significant Figures
1. All non-zero digits (1-9) are counted as significant.	23	2
	231	3
2. All zeros between non-zero 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 non-zero 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. There is no way to know what was intended unless there is a note that explicitly states how many significant figures there are.

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. And 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 ppb to 0.010 ppm to clarify the number of significant figures associated with the MCL.

As a result, IPDES permits will identify for each effluent limit, 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 3 lists the IPDES rounding conventions used.

Table 3. IPDES conventions for rounding calculated and measured values.

Conventions for Rounding	Examples	
	Rounding Off Calculated Values	Rounding Off Measured Values
1. If the digit being dropped is 1, 2, 3 or 4, leave the preceding number as-is.	1.11 → 1.1 1.12 → 1.1 1.13 → 1.1 1.14 → 1.1	Same
2. For calculations: if the digit being dropped is 5, round the preceding digit up.	1.15 → 1.2 1.25 → 1.3	N/A
3. For measurements: If the digit being 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 being dropped is 6, 7, 8 or 9, increase the preceding digit by one.	1.16 → 1.2 1.17 → 1.2 1.18 → 1.2 1.19 → 1.2	Same

A shorthand version of the information presented is as follows:

- Calculated values– the digit 5 should be rounded up, unless the permittee has chosen to follow the convention for measured values. The permittee must do so on a consistent basis.
- Measured values – the digit 5 should be rounded to the nearest even number.

The rounding methodology employed should be identified in the laboratory or monitoring QAPP.

For calculated results, rounding of 5 is consistent with the convention used by Microsoft Excel software, which is utilized extensively by the IPDES Program **and permittees** to perform RPA-**and reporting-r**elated 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 of 5 to the nearest even number is consistent with *Standard Methods for the Examination of Water and Wastewater* (APHA, AWWA, WEF 1999).

However, if a permit writer or permittee chooses to use the same convention for calculated values as for measured values, they may do so, provided they consistently do so. 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:

- Compliance is determined based on the results of a laboratory or field measurement; and

- 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 4).

Permit writers should include in IPDES permits, ~~the following or similar language,~~ clarifying how permittees should report significant figures on the ~~discharge monitoring report (DMR)~~ (also see ~~DEQ 2017 draft –Appendix A~~).

~~The permittee shall report the same number of significant figures or precision as the permit limit for a given parameter. Regardless of the rounding conventions used by the permittee, the permittee shall use the conventions consistently, and shall ensure that consulting laboratories employed by the permittee use the same conventions.~~

Table 4. 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>$2.5 \times 3.42 = \underline{8.55}$ 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 (shown in the example on the right by an underline).</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) $= \underline{8.55} + 13.681 - 0.5$ 2) Next perform addition - rule 2 above $= 22.\underline{231} - 0.5$ 3) Then subtraction – rule 2 above $= 21.\underline{731}$ 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, and 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 included in the determination of the final number of significant figures. Here are some examples of exact values:</p> <ol style="list-style-type: none"> 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. Conversion factors. These should be selected so that the number of 	<p>Example 1:</p> <p>For a POTW with a design flow of 1.5 mgd, the mass load of a pollutant measured at 5.25 mg/L is calculated as follows:</p> <p>$5.25 \text{ mg/L} \times 1.5 \text{ mgd flow} \times 8.34 = 65.7 \text{ lbs}$</p> <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</p>

<p>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 the determination of 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>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 three concentrations: 4.6 mg/L, 2.3 mg/L and ≤ MDL or ML</p> <p>Where MDL = 0.1</p> <p>Answer: $(4.6 + 2.3 + 0)/3 = \leq 2.3$ mg/L</p> <p>The number of significant figures is equal to the number of significant figures for the detected concentrations.</p> <p>The 0 MDL value and the 3 in the denominator (a counted value) do not affect the number of significant figures or decimal places in the final rounding.</p>
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12.5.4 Permit **and Discharge** Calculation Examples

The following are examples 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 lbs/day = 8.34

The allowable mass load for ammonia from this facility is calculated as follows:

$$1.25 \text{ mgd} \times 5.0 \text{ mg/L} \times 8.34 = 52.13 \text{ lbs/day} \rightarrow 52 \text{ lbs/day}$$

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 lbs/day instead of 52.13 lbs/day, the permit limit would have been rounded up to 53 lbs/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 2017 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
- 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 2017 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 4).

Note that the nondetect is treated as zero and it 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 lbs/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 lbs/day = 8.34

The allowable mass load for ammonia from this facility is calculated as follows:

$$0.85 \text{ mgd} \times 5.0 \text{ mg/L} \times 8.34 = 35.5 \text{ lbs/day} \rightarrow 36 \text{ lbs/day}$$

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 are only representative of 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 collection of 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 **for permit writers**, include:

- EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance* (EPA 2009) recommends a minimum of 8 to 10 independent samples be available to estimate the standard deviation of a parametrically distributed statistical population (e.g., normal, gamma or lognormal distributions).
- EPA (2004d) 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, 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

¹ where 95% of future samples will fall within the interval

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 3 provides an example of a lognormal distribution of effluent pollutant concentrations and projection of a critical effluent pollutant concentration (C_d).

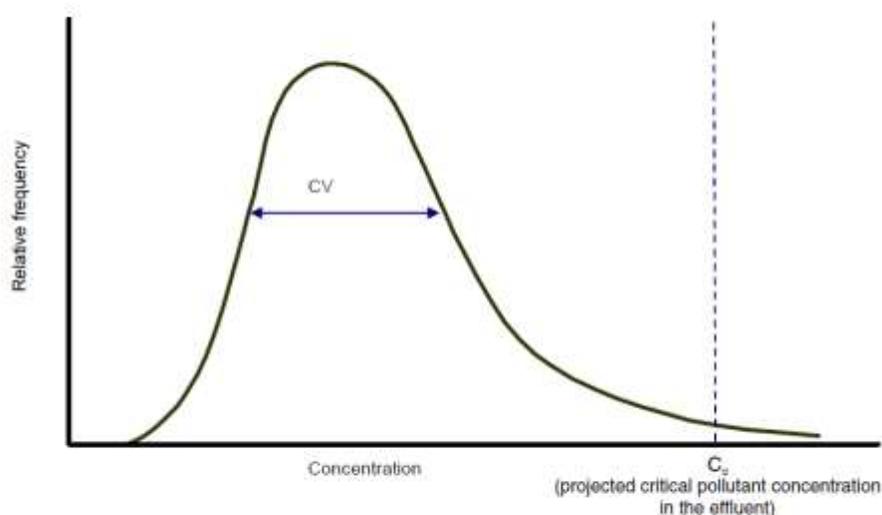


Figure 3. Example of lognormal distribution of effluent pollutant concentrations and projection of critical concentration (C_d) (EPA 2010).

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 non-parametric) (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 datasets with $n \geq 25$ and Dixon's test is used for datasets 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 in order to verify or confirm the initial measurement.

Permit-required data that ~~DEQ have been determined~~ to be outliers and ~~excluded~~ from analyses must be explained in the fact sheet so as not to be excluded from the administrative record.

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Endnotes: IDAPA and CFR References

ⁱ IDAPA 85.01.25.380 and 40 CFR 503

ⁱⁱ 40 CFR 136

ⁱⁱⁱ IDAPA 58.01.25.203 and IDAPA 58.01.25.400

^{iv} IDAPA 58.01.25.090.02

^v IDAPA 58.01.25.090.04

^{vi} IDAPA 58.01.25.050

^{vii} IDAPA 58.01.25.500.01 and Idaho Code §39-108 and 39-117

^{viii} 40 CFR 123.45

^{ix} 40 CFR 403.8(f)(2)(viii)

^x 40 CFR 403.8(f)(2)(vii)(A-H)

^{xi} 40 CFR 403.3(l)

^{xii} 40 CFR 403.3(l)

^{xiii} 40 CFR 403.3(l)

^{xiv} 40 CFR 403.8(f)(1)(vi)(B)

^{xv} IDAPA 58.01.25.300.05

^{xvi} Idaho Code §§39-101 through 39-130 and Idaho Code §39-175E

^{xvii} Idaho Code §39-108

^{xviii} Idaho Code §39-108(3)(a)

^{xix} Idaho Code §39-108(3)(a)(ii)

^{xx} Idaho Code §39-108(3)(a)(vi)

^{xxi} Idaho Code §39-108(3)(a)(vi)

^{xxii} Idaho Code §39-116A

^{xxiii} Idaho Code §39-109

^{xxiv} IDAPA 58.01.25.500.02 and Idaho Code §39-117

^{xxv} IDAPA 58.01.25.500.03 and Idaho Code §39-117

^{xxvi} Idaho Code §39-109

^{xxvii} Idaho Code §39-109

^{xxviii} Idaho Code §39-108(8)

^{xxix} IDAPA 58.01.25.010.64

- xxx Idaho Code §39-108(5)(a)
- xxxI Idaho Code §39-117(1)
- xxxii Idaho Code §39-117(3)
- xxxiii Idaho Code §39-108(5)(b)
- xxxiv Idaho Code §39-101, et. seq
- xxxv 40 CFR 123.27
- xxxvi IDAPA 58.01.25.500.04.b
- xxxvii IDAPA 58.01.25.500.04.c
- xxxviii IDAPA 58.01.25.500.04.a
- xxxix **IDAPA 58.01.02.090.02 – 03**
- xl **Appendix B of 40 CFR 136**
- xli **40 CFR 136**
- xlii **79 FR 49001**
- xliii **79 FR 49001**
- xliv **IDAPA 58.01.25.106.02.a**
- xlv **IDAPA 58.01.25.106.02.b**
- xlvi **IDAPA 58.01.25.106.02.c**
- xlvii **79 FR 49001**
- xlviii **79 FR 49001**