



Environmental Law Update: PFAS, Staffing, SCOTUS & More

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PFEAS

PER- AND POLY-FLUOROALKYL SUBSTANCES

EPA PFAS Action Plan Unveiled Feb. 2019

- EPA Priority Actions from Leadership Summit
 - Initiate steps to evaluate need for MCL
 - Begin steps to propose haz substance listing
 - Develop GW cleanup recommendations
- Short-term Actions
 - Understanding and Addressing occurrence
 - Identifying and addressing Exposures
 - Risk Communication and Engagement
- Long-term actions
 - Listing PFAS on Toxic Release Inventory (EPCRA)
 - Develop Ambient Water Quality Criteria for Human Health (CWA)
 - Regulation of Industrial Sources through National ELGs (CWA NPDES)
 - Nationwide Drinking Water Monitoring in next UCMR cycle



What About the Legislative Branch?

- *Congressional PFAS Task Force*
 - Announced Jan. 2019
 - Bipartisan effort to more urgently address public health threat and protect communities
- *PFAS Action Act of 2019*
 - Introduced in Jan. by Rep. Debbie Dingell, D-MI
 - To require EPA to designate PFAS as a CERCLA hazardous substance within 1 year

CERCLA: The SuperFUND Statute

- WHEN:** Where there is a release or threatened release of a hazardous substance
That causes the incurrence of response costs
- WHO:** Owners/operators of facility where hazardous substances were disposed
Arrangers for transportation, treatment or disposal
Transporters
- LIABLE FOR:** All costs of removal, remedial actions incurred by state or feds not inconsistent with NCP
Any other necessary costs of response incurred by any other person consistent with the NCP
NRDs
Costs of health assessment or health effects studies

Toxic Tort/personal injury

Takings/nuisance/ trespass

Superfund litigation

Product liability/design defect/failure to warn

Occupational injury/take-home injury

Citizen suits

Evolving standards of care
(worker training, PPE, product safety)

Class actions

Due diligence in transactions

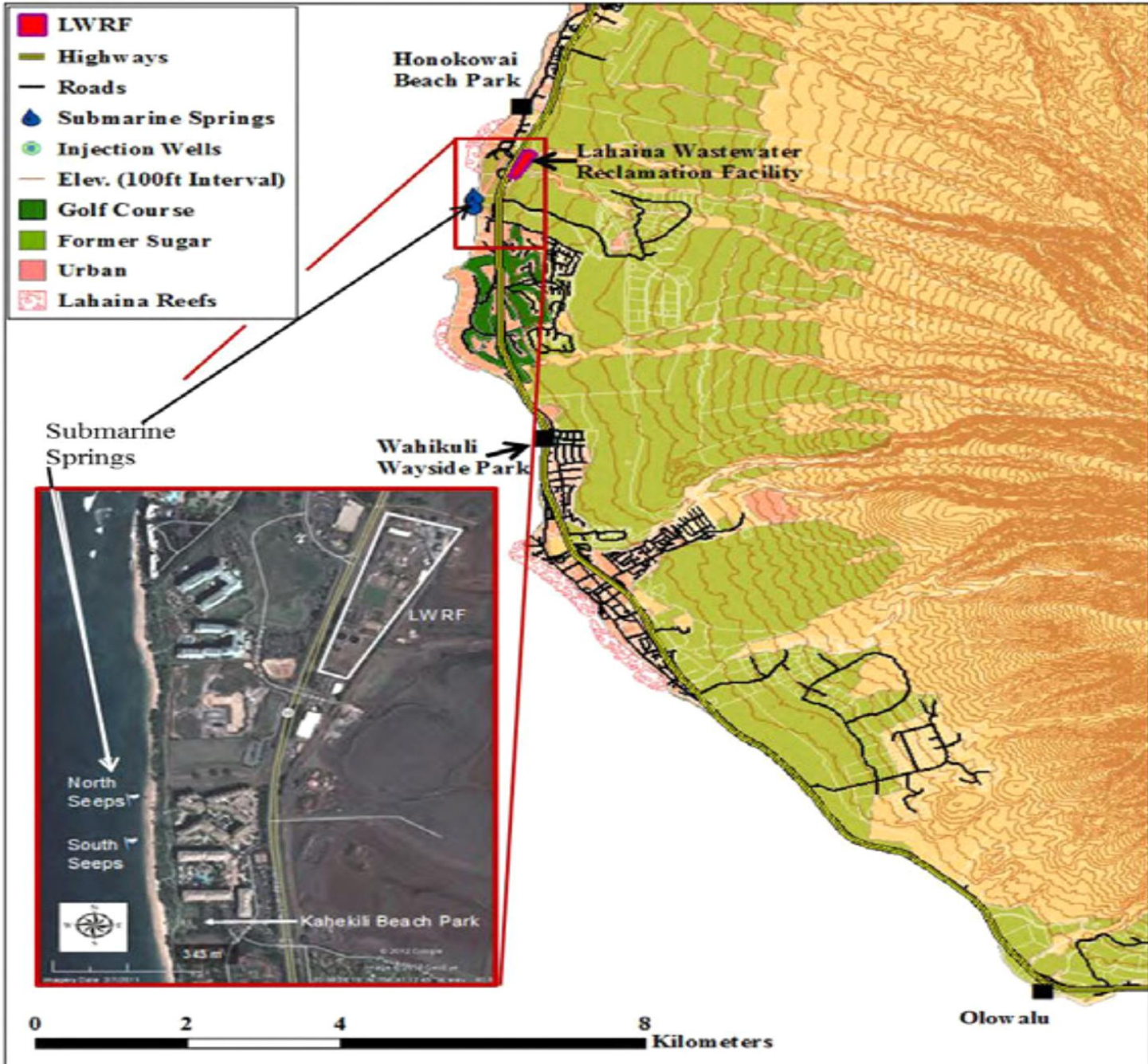
Sovereign immunity





Hawai'i Wildlife Fund v. County of Maui

- County has 4 wells at Lahaina Wastewater Reclamation Facility
- County concedes that effluent from all 4 wells reaches ocean and has known since facility inception
- Tracer Dye Study showed 64% of treated wastewater injected into Wells 3 and 4 discharges to ocean



County's Defense

- Wells are a PS, but PS itself must convey pollutants into navigable water to be a PS discharge into WOTUS and require permit
- How pollutants travel from the original PS to navigable waters matters

9th Circuit Decision

- CWA doesn't require that PS itself convey pollutants directly into navigable water.
- If pollutants are fairly traceable from PS to a navigable water such that discharge was functional equivalent of discharge into navigable water and pollutant levels were more than *de minimis*, then you need NPDES

OHIO MS4 PERMIT RENEWAL

- Ohio EPA to require updates of local ordinances consistent with CGP. Ohio EPA to evaluate language regarding construction site plan review and inspection to ensure a thorough process and documentation of requirements, and require local enforcement protocol, i.e. NOV and enforcement escalation.
- Ohio EPA to require communities to address local TMDLs, i.e. if a community is dealing with a nitrogen TMDL, it would need to meet a programmatic condition or address through technologies Ohio EPA determines appropriate to achieve improvement. This could involve selection from BMPs to address a specific loading issue. Ohio EPA does not anticipate monitoring or sampling compliance measures.
- Ohio EPA to identify priority illicit discharges that require immediate notification to the Agency, i.e. cross-connections and sewage releases.

LAKE ERIE BILL OF RIGHTS

- Demands mandatory action to protect fundamental rights of Lake Erie
- Enforceable against private and public actors
- Unlawful for any corporation or government to violate LEBOR, and makes any permit to a corporation that would violate LEBOR invalid within City
- Requires maximum fines and criminal treatment
- City or Toledo resident may enforce by action in Lucas County in the name of the Lake Erie Ecosystem, with damages at cost of remediating injury
- Strict liability for any government or corporation
- Deems corporations not to be “persons” to extent they would interfere with LEBOR and they shall not have power to overturn or challenge LEBOR
- Rejects any state statute or rule that violates LEBOR
- Defines Lake Erie Ecosystem to mean “all natural water features, communities of organisms, soil as well as terrestrial and aquatic sub ecosystems that are part of Lake Erie and its watershed.”

OPERATOR STAFFING

- I. EXPANDED MINIMUM STAFFING RULES COME AT AN INOPPORTUNE TIME FOR MANY WATER/SEWER UTILITIES
 - A. Ohio's water and sewer authorities estimated to need a capital investment of \$9.68 and \$11.16 billion, respectively, over the next 20 years to upgrade or replace aging water and wastewater infrastructures (<https://www.infrastructurereportcard.org/state-item/ohio/>)
 - B. Policy Matters Ohio, a non-partisan research institute, estimates that Ohio's local communities are operating with more than one billion less today in annual revenues than in 2010, due to elimination of Ohio's estate tax, ending reimbursements for business taxes, and cutting Ohio's Local Government Fund in half (<https://www.policymattersohio.org>)

- C. Many older water and sewer utilities that are confronting these financial realities also face declining water use and reduced sewer discharges, due to a variety of reasons, including recycling and conservation measures and effective I/I programs, thus reducing much-needed revenue streams
- D. At the same time, many utilities are operating with smaller, aging workforces, and are having substantial difficulty attracting replacements, particularly for their most experienced operators

- E. These financial and workforce stresses faced by many utilities are intensified by rules that Ohio EPA has adopted and expanded over many years, the last expansion effective in August of 2018, establishing minimum staffing, reporting, and recordkeeping requirements for all publicly-owned water and wastewater treatment plants, and water distribution and sewer collection systems
- F. The rules, codified at O.A.C. Chapter 3745-7, are admittedly designed to achieve a very important, praiseworthy goal:
 1. The relationship between an operator's qualifications, the amount of weekly oversight provided by qualified operators, and protection of water quality and delivery of safe, reliable potable water, cannot be questioned

WE CAN:



WE CAN:



OR WE CAN:

 Get Educated 

II. SUMMARY OF OEPA'S MINIMUM STAFFING RULES (PRE-8/2018)

- A. The rules classify Ohio's water/wastewater treatment plants (WWTP or WTP) and distribution/collection systems into one of five classes (A, I, II, III, or IV) based primarily on a combination of:
1. Design capacity of the plant;
 2. Population served by the distribution system;
 3. Complexity of treatment provided;
 4. Stringency of permit limits; and
 5. With respect to sewer collection systems, classification assigned to the treatment plant

- B. Classification of Ohio's water and sewer utilities is not new
 - 1. For decades OEPA has classified plants and distribution/collection systems, which determine the minimum level of operator license required to "be in charge" of the plant or system and sign periodic reports submitted on behalf of the utility
- C. What started out as little more than a one-sentence rule has undergone several significant revisions, each time expanding the requirements to "be in charge" of a plant or distribution/collection system
- D. Utilities now must submit forms to Ohio EPA identifying at least one designated operator of record (DOR) in charge of each individual WWTP, WTP, and distribution/collection system, and either the utility or the DOR must file a new form within 3 days of terminating the DOR or employing a new one

- E. With limited exceptions, the utility must ensure that each DOR maintains a valid, unexpired license equal to or greater than the classification assigned to the plant or system
- F. With respect to treatment plants, utilities must ensure that a DOR is “physically present” at the plant to:
 1. Perform “technical operations,” defined as making process control or system integrity decisions which directly impact the quality or quantity of water or wastewater effluent, and
 2. Fulfill the following minimum weekly staffing requirements assigned to each plant based on its classification:

- a) For a Class A WWTP, the minimum staffing requirement is at least 2 days a week and a total of at least 1 hour
- b) For a Class A WTP, the minimum staffing requirement is at least 2 days a week and a total of at least 1 hour, or 1 day a week and at least 30 minutes, depending on whether treatment is provided by something beyond just a filter
- c) For a Class I WWTP or WTP, the minimum staffing requirement is at least 3 days a week and a total of at least 1.5 hours
- d) For a Class II WWTP or WTP, the minimum staffing requirement is at least 5 days a week and a total of at least 20 hours
- e) For a Class III or IV WWTP or WTP, the minimum staffing requirement is at least 5 days a week and a total of at least 40 hours

CAVEAT: Regardless of the minimum number of staffing hours or days required weekly, each WWTP and WTP must be “visited” at least once a day, 5 days a week (WWTP) or 7 days a week (WTP), when in operation, by a “representative” of the utility (not necessarily the DOR), and each visit recorded in the O&M records

These “visits” cannot be a “drive by.” The term “visit” is defined in the rules as one of sufficient duration to perform routine sampling, maintenance, and inspection of processes to ensure proper operation and compliance

G. O&M records required to be kept for all WWTP, WTP, and distribution/collection systems, including, among other information, data sufficient to demonstrate that minimum staffing requirements are met, but flexibility was provided for utilities to choose one or combination of hardbound books, time cards, separate O&M records, or organized computer logs

H. Responsibilities of the DOR include:

1. Providing “responsible and effective” on-site management and supervision of the technical operation of the plant or system over which he or she is the DOR, and
2. Informing the owner of the plant or system, and if applicable Ohio EPA, of events that require notification under a permit, Ohio Revised Code Chapters 6109 (water) or 6111 (wastewater), or rules adopted thereunder

I. Exceptions to minimum staffing requirements:

1. Limited reduction in minimum staffing requirements at WWTP and WTP can be approved based on the level of automation and continuous monitoring, or achieving a certain level of staffing redundancy
2. Limited exceptions when a DOR is unable to fulfill minimum staffing requirements applicable to his or her designated plant:

- a) Temporary situations up to 30 days, without notice to or approval by Ohio EPA needed, if a backup operator is present to fulfill the minimum staffing requirements, and has a license no lower than one classification below the DOR
 - 1) The temporary exception is not meant to be used to cover the first 30 days of a longer period that requires OEPA approval
- b) A longer period, with the Agency's approval, when, for example, the DOR retires, is off on military leave or long-term illness, or departs employment, etc.



III. NEW/REVISED (POST-8/2018) MINIMUM STAFFING RULES

A. Minimum staffing now expanded to water distribution and sewer collection systems:

1. Utilities must ensure that the DOR or another licensed operator “visits” (as defined above) some portion of each water distribution and sewer collection system at least 3 or 5 days each week, depending on whether the system is classified as I or II, respectively, under the rules
2. Visits must be recorded in an O&M record for the system, and if visits are performed by an operator other than the DOR, the utility must document the individual’s authorization, and that operator must report all problems to the DOR

ALERT: Owners of distribution/collection systems cannot apply to OEPA for a reduced level of minimum staffing of the system

B. Requirement for O&M/records or log book now revised to delete use of time cards, and to specify that if records are maintained in a computer log, it must have programming sufficient to automatically document the time, date, and person making each entry, and prevent the removal or deletion of data

1. New rules also add that a failure to document times of arrival and departure for the operators of record constitutes prima facie* evidence that the minimum staffing requirements are violated unless the DOR presents “acceptable” documentation to substantiate otherwise

**i.e.*, sufficient to prove that a violation has occurred unless proved otherwise

- C. Responsibilities added for each DOR of a WWP, WTP, or distribution/collection system:
1. The DOR must ensure that all recordkeeping requirements are met;
 2. Together with any qualified operator that may serve from time to time as a backup to the DOR, the DOR must ensure that the minimum staffing requirements are met for the plant or system for which he or she is designated as the operator of record;
 3. The DOR must display his or her valid license for public examination at the water or wastewater treatment plant; and
 4. The DOR must report monthly to Ohio EPA the data required to substantiate the minimum staffing requirements for the plant, using new eDWR form developed for drinking water reports and new eDMR form developed for wastewater discharge monitoring reports. The new minimum staffing requirements for distribution/collection systems are recorded in the “comment section” of the eDWR form, and using the collection system “parameter code” on the eDMR form

- D. Clarification of responsibilities for qualified operators that serve as backup to the DOR:
 - 1. Qualified backup operators are responsible for all violations of the responsibilities of the DOR while serving in a backup capacity to the DOR



IV. QUESTIONS POSED TO ME UNDER THE MINIMUM STAFFING RULES

- A. If a WWTP is classified as Class IV, does the backup operator of record have to possess a Class IV license? Can a Class III operator also serve as the backup operator of record at a Class IV WWTP?

Required oversight/staffing of a Class II, III, or IV WWTP or WTP or Class II distribution/collection system can be performed by a backup certified operator with a classification one level below the plant or system up to 30 consecutive days at a time without notification to OEPA, but the rule clarifies that this allowance may not be misused to circumvent the oversight/staffing obligation of the DOR over his/her designated plant or system. In addition, with respect to these plant and systems, if the DOR has an established flex work schedule of 4 days of 10 hours each, the 5th day can be overseen/staffed by a qualified backup operator indefinitely

Other than not abusing the backup operator provision and not exceeding 30 consecutive days of using a backup operator as the DOR without OEPA approval, there are no limitations on the use of backup operators. This allows backups to be used whenever a DOR of record is on vacation, taking a personal day, out due to illness, or if he or she needs to be elsewhere for a meeting on a day when they would ordinarily be at their designated WWTP or WTP

B. Does a DOR have any responsibilities when his or her oversight duties are being fulfilled by a qualified backup operator?

No. Under the rules, a DOR **or** backup operator must be “available” during all periods of WWTP or WTP operation, defined as able to be contacted as needed 24/7 to make operational decisions in a timely manner. However, OEPA’s view is that once the DOR returns he or she is responsible for confirming that the backup properly completed the staffing obligations

C. When a DOR is performing duties for another plant under his or her direction, but is not physically at his or her designated plant, does that time count? For example, a DOR is entering and submitting data for one plant while located at another plant. Another example, a DOR is attending a meeting at the main office, but the meeting pertains to a project at the DOR's designated plant.

No. The rules specify that the DOR shall be physically present at his or her designated WWTP or WTP plant to fulfill the staffing requirements, except that any time spent working on equipment within the service area of a plant, if part of the DOR's normal job responsibilities, counts toward the minimum staffing requirements

D. Is the work week specified as Sunday to Saturday? If so, a DOR takes a personal day on Monday. Must the DOR make the day up either the Sunday before or the Saturday after the personal day?

The 2018 revised rules added a definition of “week” as the 7 days from Sunday to the following Saturday. If a qualified backup operator is available on the day the DOR takes a personal day, the backup operator can fulfill the minimum number of hours of staffing/oversight on the day in question, and there is no need for the DOR to make up the lost day. That situation is one of the purposes for which the allowance for backup operators was provided

As long as the use of a backup operator is not being abused in a way that circumvents the intent for a DOR to be the primary person overseeing the technical operation of an assigned plant, there is nothing wrong with a qualified backup operator filling in when the DOR is, for whatever reason, off work or busy at some other location. The hours/days of the backup count toward the minimum weekly amount

There is also no limit to the number of backup operators for a particular plant. As long as they have a license no lower than one level below the classification of the applicable treatment plant, multiple operators can serve as backups

1. If for whatever reason no qualified backup is available, how the lost day would be made up depends on the minimum staffing required for the plant
 - a) For a Class III or IV plant, which requires a minimum of 40 hours and 5 days of oversight by the DOR, taking a personal day on Monday could be addressed in any way that adds up to 40 hours and at least 5 visits during the 7-day week, including working some on the Sunday preceding the personal day, or on the following Saturday
 - b) ***Nothing in the rules requires that each of the 5 daily visits to a Class III or IV plant be for 8 hours to reach the total of 40. A DOR can, for example, spend two hours at a Class III or IV plant on Sunday, take Monday off, and then spend 9.5 hours each of the following Tuesday through Friday, to reach 40. As long as the amount of time spent at a plant on a given day meets the definition of a “visit,” it counts as one of the 5 days***

E. Does this situation change if the plant is not normally staffed on weekends? Does missing a day mid-week (M-F) for a Class II, III or IV plant, each of which requires 5 days of staffing, where no qualified backup operator was available to fill in, mean that the DOR or a qualified backup operator must make up the lost day or hours on the weekend (or a holiday), even if the plant is not normally staffed on weekends or holidays?

The rules do not address this question. Nor is it addressed in the standard NPDES permit language relating to staffing, and there is no guidance or policy that addresses it

In all, or nearly all, NPDES permits is the following standard language:

C. All parameters, except flow, need not be monitored on days when the plant is not normally staffed (Saturdays, Sundays, and Holidays). On those days, report "AN" on the monthly report form.

If a plant's permit parameters and other permit monitoring requirements need not be sampled or monitored when the plant is not normally staffed, logic would say that the plant's minimum staffing requirements also do not apply when the plant is not normally staffed, and that the AN code can be used for those days on the new operator staffing e-DMR form. However, it is OEPA's view that the rules require that the utility make the DOR or a backup operator work the weekend or holiday to make up the lost time

In addition, because the rules do not limit the number of qualified backup operators that a utility can have, OEPA's position is that it is up to each utility to have sufficient qualified backup operators available to fill in when a DOR is for any reason unable to fulfill the minimum staffing requirements for the week

PRACTICE POINTER: Because Class IV licenses are difficult to obtain, and there is reportedly already a shortage of Class IV operators in Ohio, utilities should encourage as many operators as possible to obtain their Class III or IV license, and then organize them as a group, as if on call, to fill in as backup operators whenever needed for a DOR for a Class IV plant. Because Class II and III plants also require 5 days of staffing, the same thing should be encouraged for operators to obtain their Class I and II certifications, respectively

F. How is staffing information recorded when there is a mix of DOR and backup operator staffing for a given day during the week?

If a DOR takes part of a day off that would normally be included in the minimum staffing requirement for his or her designated plant, and a qualified backup operator steps in that day, both operators' respective days (date), hours (time in and time out) and name and certification number (just the middle 7 digits for the eDMR form) are recorded on the O&M record book or log for the plant, and included in the eDWR or eDMR form submitted to OEPA

G. For a plant requiring 20 hours a week/5 days a week for the DOR, on Mon, Tue, Wed, I work 4 hours totaling 12 hours. On Thurs. I work 7 hours and Fri. 1 hour, for a total of 20 hours in 5 days. Is this satisfactory or must I work 5 days for 4 hours each day?

Yes. The total hours needed each week need not be evenly distributed. There is no minimum number of hours of staffing each day, as long as the amount of time spent at the plant on any of the required staffing days is sufficient to meet the definition of a “visit” (see above)

In this example, even if the DOR works 10 hours on Mon. and Tues., he or she (or a qualified backup operator) must still spend sufficient time at the plant Wed. through Fri. to, at a minimum, meet the definition of a “visit”

H. While submitting data into the eDWR or eDMR form, how do we enter time data for a specific plant if the DOR was there in the morning, then left, and returned later in the afternoon? Can we enter multiple times which is common practice for a DOR?

Based on the e-DMR instructions, yes, the DOR is expected, if needed, to make multiple entries on the same day for each set of time in and time out that may occur throughout the day. The form allows multiple entries on the same day, as well as multiple operators, such as when the DOR and a backup operator both have time on the same day at the same plant that will count toward the minimum total of hours for the week

- I. On a holiday, such as Thanksgiving Day and the day after Thanksgiving, can I work Mon, Tues, and Wed. as scheduled, then submit the “AN” code to OEPA on the monthly report for Thurs. and Fri. since they are holiday days?

No, at least not in OEPA’s view. As discussed above, even if a Class II, III or IV plant is not normally staffed during weekends or holidays, the Agency interprets the rules to require a utility to staff the plant with the DOR or a qualified backup operator sufficient to meet the minimum 5 days of staffing required for such plant, and that the AN code cannot be used for the holidays of the week if the minimum staffing hours are not met for the week

J. Does a DOR's travel time to the plant count?

No, only time physically present at a plant by the DOR or a qualified backup operator counts toward the minimum staffing requirements. Apparently even if the DOR has a daily commute to the plant of, for example, 45 minutes, and spends that time on a cell phone dealing with plant issues, the time does not count

K. The biggest issues arise when a DOR is off unexpectedly due to, for example, illness, personal day, vacation, jury duty, etc., when the pool of qualified backup operators is small and they not only must cover the DOR's time, but often have their own designated plants to cover as a DOR.

Agreed. Unscheduled absences by a DOR can be problematic if the pool of qualified backup operators is small, or the qualified backup operators have their own DOR assignments at other plants. In such scenario, a plant may not achieve its required number of days and hours for a given week. But unless a utility chronically fails to achieve the minimum staffing requirements, or makes little or no effort to establish a pool of qualified backup operators, it is unlikely that OEPA take enforcement

Requirements for minimum staffing days/hours per week cannot be applied in a vacuum. They must be applied with the understanding that human beings, not robots, are the operators. A myriad of different things can occur, with little or no notice, that could cause a DOR to miss a day, leave early, head to another location for an important meeting, etc., and not every time this occurs will there be a qualified backup operator ready to step in at a moment's notice

V. RECOMMENDATIONS

- A. Develop a written staffing plan (including a succession plan) for each treatment plant and distribution/collection system
- B. Identify areas of weakness in coverage
- C. Plan with the understanding to expect the unexpected
- D. Gaps in coverage are almost certain to occur
- E. Create a pool of qualified backup operators as on call
- F. When undergoing a capital upgrade, include additional automation and continuous monitoring to support a reduction in staffing

- G. Document efforts to encourage operators to obtain higher levels of license
- H. Better to be accurate and miss a weekly staffing requirement than to falsify or misrepresent staffing data
- I. Understand that OEPA's minimum staffing rules do not, and cannot, function as a rigid, strictly enforced set of rules, but instead can only function as a "rule of reason" designed to improve compliance, protect water quality, and ensure a safe and reliable potable water supply

NUTRIENT UPDATE

- I. CURRENT NUTRIENT CONTROLS FOR POINT SOURCES IN URBAN AREAS
 - A. For the most part, focused on NPDES permits issued for POTWs
 - 1. Nutrient limits derived from one or combination of different existing sources:
 - a. Great Lakes Water Quality Agreement (GLWQA) (U.S./Canada)
 - (1) Lake Erie basin only
 - (2) OAC 3745-1-37, Table 37-1 and OAC 3745-33-06(C)(1) (1.0 mg/l TP current limit)
 - (3) Annex 4 to the GLWQA
 - (a) Ohio's June 2015 commitment to achieving 40% reduction in current loadings into Lake Erie by 2025, with an aspirational goal of a 20% reduction by 2020
 - (b) August 2018 Ohio Domestic Action Plan designed to achieve the reductions

- b. Total Maximum Daily Loads (TMDLs)
 - (1) Statewide program to address water quality-impaired waters in specific waterbodies, including nutrient-related impairments manifested by:
 - (a) low biological (fish/bug) scores;
 - (b) nuisance conditions (fish kills, algal blooms)
 - (c) elevated microcystins (cyanobacteria)
 - (2) TP limits recommended for point sources, usually 1.0 mg/l TP, but some as low as 0.8 mg/l TP
 - (3) 2018 impairment listing for Western Basin of Lake Erie
 - (a) Relationship to the GLWQA 40% reduction commitment and the separate Maumee River (main stem) TMDL

- c. Individual nutrient limits (typically TP only) to address site-specific nuisance conditions or biological nonattainment in the absence of a TMDL
- d. Technology-based nutrient limits
 - (1) OAC 3745-33-05(E) (PTI-based design criteria)
- e. Antidegradation-based nutrient limits (OAC 3745-1-05)
 - (1) Once nutrient limits are in place, strict application of the antidegradation rule ratchets the limits down each time the treatment plant increases its capacity, in order to keep nutrient loadings constant

II. POTENTIAL NEW SOURCES OF NUTRIENT CONTROLS ON POINT SOURCES IN URBAN AREAS

A. SNAP – Stream Nutrient Assessment Procedure for small rivers and streams

1. Basically a weight of evidence, numeric matrix of variables that indicate nutrient enrichment and potential for biological impairment
2. Draft completed in 2017, but not yet implemented through rulemaking

B. Large river nutrient matrix – Early stakeholder outreach (ESO) issued by OEPA in September 2018

1. Similar to SNAP but some different variables
2. Interested party review and/or preliminary draft rule expected mid to late 2019

III. CURRENT NUTRIENT CONTROLS FOR NONPOINT SOURCES IN URBAN AREAS

- A. Basically limited to BMP-based guidance issued by U.S. EPA and other sources that indirectly reduce nutrients in urban runoff
 - 1. Example – “National Management Measures to Control Nonpoint Source Pollution from Urban Areas” U.S. EPA 2005 (available at https://www.epa.gov/sites/production/files/2015-9/documents/urban_guidance_0.pdf)
 - a. Focus on ways to reduce impervious surfaces, increase pervious surfaces and reduce hydraulic connectivity between impervious surfaces; promote urban forestry, vegetative buffers, rooftops and rain gardens; increase on-site retention/detention; reduce erosion; and provide education and training to the community

IV. ARE POINT SOURCE CONTROLS (POTWS) AND NONPOINT SOURCE BMP GUIDELINES SUFFICIENT TO ADEQUATELY CONTROL NUTRIENT IMPAIRMENTS IN URBAN AREAS?

A. According to OEPA, the answer is clearly “no”:

“Point source nutrient controls at POTWs will not solve Ohio’s nutrient problems. Solutions must integrate overall watershed management....[P]ollutant laden stormwater degrades water quality and results in unnatural flow regimes that result in loss of sensitive faunal species, increased dominance of pollutant tolerant species, increased algal biomass, and increased dominance of eutrophic algal species.” [Point Source & Urban Runoff Nutrient Workshop Final Report and Recommendations, p. 9 Ohio EPA August 2012]

B. Ranking of urban runoff as a source of water quality impairment:

Table 0.1: Leading sources^b of water quality impairment related to human activities for rivers, lakes, and estuaries (USEPA, 2002b).

Rivers and Streams	Lakes, Ponds, and Reservoirs	Estuaries
Agriculture (48%) ^a	Agriculture (41%) ^a	Municipal point sources (37%) ^a
Hydrologic modifications (20%)	Hydrologic modifications (18%)	Urban runoff/storm sewers (32%)
Habitat modifications (14%)	Urban runoff/storm sewers (18%)	Industrial discharges (26%)
Urban runoff/storm sewers (13%)	Misc. nonpoint source pollution (14%)	Atmospheric deposition (24%)

^aValues in parentheses represent the percentage of assessed river miles, lake acres, or estuary square miles that are classified as impaired. States assessed 19% of stream miles, 43% of lakes, ponds, and reservoirs, and 36% of square mileage of estuaries.

^bExcluding unknown, natural, and “other” sources.

C. Sources of nutrients in an urban watershed:



Fig. 1 Overview of pathways and sources of nutrients in urban environment. (A) Urban stormwater runoff is generated when precipitation from rain/snowmelt events over impervious surfaces. (B) Runoff water then makes its way into storm drains and discharges into streams, rivers, and estuaries untreated. (C) Excessive amounts of nutrients in water bodies can cause eutrophication, often leading to fish

kills. The potential nutrient sources in urban stormwater runoff include (1) atmospheric deposition, (2) pet waste, (3) improperly functioning septic systems, (4) landscape irrigation, (5) use of chemical fertilizers on lawns, (6) soil and decomposition plant materials, (7) leaking sanitary sewers, and (8) microbial sources

[Nutrients in Urban Stormwater Runoff: Current State of the Science and Potential Mitigation Options, Yun-Ya Yang and Mary G. Lusk, *Current Pollution Reports* (2018) 4:112-127]

- D. How point source nutrient limits for POTWs are impacted by urban stormwater runoff:
1. In Ohio, point source nutrient limits (phosphorus and nitrogen) for POTWs are **not** driven by the need to comply with numeric water quality standards for nutrients (at least so far....). Instead, they are driven primarily by:
 - a. The need to comply with OEPA's numeric biological water quality standards for fish and bugs (macroinvertebrates) applicable to the river or stream that runs through the urban watershed, and
 - b. Scientific studies demonstrating that excessive amounts of nutrients cause abnormal growth in aquatic plants and algae (referred to as eutrophication or enrichment) that leads to depleted dissolved oxygen levels that stress aquatic populations, resulting on lower scores for fish and bugs

2. Two components of urban stormwater runoff (sediments and high flows) also significantly contribute to nutrient enrichment and depressed biological scores in an urban river or stream:
 - a. Sediments
 - (1) Phosphorus and nitrogen are two of the three primary ingredients in fertilizers applied in all urban landscapes
 - (2) Phosphorus is rapidly adsorbed onto soil particles, even when fertilizer is applied at low application rates, particularly in soils of the type found in Ohio with high clay content
 - (3) Excessive sediments in urban runoff carry a substantial nutrient load to urban rivers and streams

- (4) Effect of sediment nutrient loading is not just short-term
 - (a) As summertime temperatures increase and instream flows decrease, stratification of water occurs, creating an anoxic (low oxygen) zone at the bottom, which promotes certain heterotrophic bacteria whose feeding cycle releases phosphorus and nitrogen from sediments into the water column
 - (b) Excessive springtime sediment loadings from urban runoff can be the single greatest cause of late summer enrichment conditions (algal blooms, high chlorophyll levels, and low DO or wide daily DO swings) in an urban stream
 - (c) Compounded by the fact that biological scores are almost always collected in late summer, low flow conditions

- (5) Excessive sediment loads also cause external deformities, erosion, lesions, and tumors (DELT anomalies) in fish (which is a separate biological score), and degrade natural substrates used by bugs to populate, leading to depressed bug scores
- b. Excessive flow
- (1) Every waterbody has a natural watershed drainage area and natural carrying capacity
 - (2) Excessive flow is detrimental even when the water is clean
 - (a) Scouring the natural substrates
 - (b) Widening the stream and eroding the banks and the natural canopy
 - (c) Increasing pooling/stagnation of flows
 - (d) Increasing temperature during summertime low-flow conditions

- (3) While reducing/controlling impervious surfaces and increasing stormwater retention/detention reduce excessive flow, arguably the single greatest contributor to flow-induced impacts is the failure to reduce the hydraulic connectivity of the urban landscape as a whole
 - (a) Still too much emphasis on treating the collection of stormwater the same as treating the collection of wastewater, i.e., a network of connected conveyances designed only to move the flow to a single endpoint (receiving stream or POTW)

- (4) Can stormwater flow be regulated under the Clean Water Act?
 - (a) Currently, the answer is no. Virginia Department of Transportation v. U.S. EPA, No. 1:12-CV-775 (E.D. Va. Jan. 3, 2013)
 - (i) Stormwater flow rate limitations in a TMDL struck down because “flow” is not a “pollutant” as defined under the statute
 - (b) But the statute allows the use of surrogate parameters
 - (i) BOD is a prime example (conductivity, TDS, TOC, turbidity)
- (5) Why excessive stormwater flow rate is a significant cause of poor urban water quality even when the water is clean

THIS:



URNS THIS:



INTO THIS:



- E. Because biological attainment is a primary objective of OEPA's nutrient control program, point source controls (POTWs) and stormwater runoff controls in urban areas are dependent on one another for success
 - 1. Evidence demonstrates that significantly reducing, and at times even eliminating, nutrient discharges from POTWs in urban areas will not eliminate biological nonattainment in urban waterways in the absence of a comprehensive, multifaceted, and carefully planned stormwater runoff control program

a. Lower Great Miami River Nutrient Model

(1) Eliminating all phosphorus from 10-15 POTWs along the LGMR and removing all eight lowhead dams in the Metropolitan Dayton area not enough to “move the biological needle” in the LGMR

(a) Combination of many factors:

(i) Urbanization of the watershed

(ii) Scouring and loss of natural banks and substrates

(iii) Loss of natural sinuosity

(iv) Loss of natural canopy

(v) Widening/shallowing, increased pooling of waters, and increased summertime temperatures stressing aquatic communities

(vi) Upstream nutrient loadings from the ag community

V. USING MS4 STORMWATER CONTROL PROGRAMS AS AN EFFECTIVE PARTNER IN URBAN NUTRIENT REDUCTION

A. Finding more ways to break the hydraulic connectivity cycle in the transport and delivery of stormwater to the receiving stream

B. Reducing flow rate impacts (scouring, erosion, siltation, etc.) by delivering runoff to the stream from multiple locations

C. Increasing retention/detention, but understanding that more is needed to reduce nutrient loading from seasonal application of fertilizers

1. Dissolved phosphorus and nitrogen are not removed by simple retention/detention of stormwater
 - a. Require large scale sources of fertilizers (parks, schools, universities, stadiums, etc.) to:
 - (1) Have employees trained in proper use/application of fertilizers
 - (2) Test soils before selecting/applying fertilizers

- (3) Limit application rates and timing/seasonal application
 - (4) Prohibit fertilizer application when top two inches of soil is saturated, or when local weather forecast is for greater than 50% chance of precipitation exceeding one inch in a 12 hour period
 - (5) Incorporate fertilizers into the soil with the application
 - b. These requirements already in place for NW Ohio farmers due to SB 1 (2015)
 - c. Similar controls on residential fertilizer application
 - (1) Education
- 2. Even retention/detention systems that effectively remove particulate phosphorus and nitrogen in sediments will, if not regularly cleaned out or dredged, release those nutrients to the water column in dissolved form during mid to late summer stagnant conditions

D. BETTER COORDINATION BETWEEN URBAN WASTEWATER AND STORMWATER CONTROL PROGRAMS

1. In Ohio many MS4 programs managed by the County Engineer
 - a. Historically, the County Engineer's focus on stormwater is to coordinate its collection and conveyance as part of the construction and management of roadways and bridges
2. Working together to promote a healthy urban watershed for fishing, canoeing, bikeways, trails, etc.

- E. What will the next MS4 permit look like in Ohio?
 - 1. OEPA's 5-year permit set to expire in September 2019
 - 2. OEPA's MS4 ESO Workshops (Spring 2019)
 - a. Not much by way of specifics, but lots of questions/discussions about potential ways to improve water quality through a revised permit
 - b. At a minimum, Agency intends to require nutrient-reduction BMPs when an urban watershed is the subject of a TMDL that requires point and nonpoint source nutrient reductions
 - 3. After the series of workshops, OEPA accepted comments on the current MS4 permit
 - a. Draft revised MS4 permit expected to be issued for public comment sometime late summer 2019

Frangipani
(*Plumeria*
rubra),
'also known
as the
Hawaiian
Lei flower



ALOHA AND THANK YOU!

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