

Managing OEPA, DSW Rules for a Plant Upgrade or Expansion Project

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Overview

208 Planning

Defines area of Service
Promotes dialog between entities

Antidegradation Rule

New loadings or constituents in discharge
Non Degradation
Minimal Degradation
Preferred Alternative

Sludge Rule

Stabilization
Storage
Management

Section 401/404 Requirements

Wetlands and sensitive habitats
Outfall sewers

Overview

Compliance Management	Concentration limits Loading limits Sludge management SSOs CSOs (less than 4 per year)
Enforcement Drivers	CSO Storage CMOM Programs - Region IV
Permitting Strategies	Problem Avoidance and Mitigation Schedule Management Cost Management

208 Planning

- Section 208 is out of the Clean Water Act at refers to the development of water quality management plants of the Clean Water Act.
- These plans describe and promote efficient and comprehensive programs to handle point and non point sources in a defined geographical area.
- 208 Planning becomes a big issue if there are neighboring communities, vying for the same service areas.

208 Planning

- The easiest thing to do is to consult with the local representative of the Ohio EPA to understand what 208 Planning has been done in an area.
- 208 Plans are supposed to make sense and base decisions on who is best positioned to serve a geographical area. They are not to serve politicians and “power plays” or “land grabs.”
- The Ohio EPA has published a facilities planning checklist, which may be helpful.

Concentration versus Loading Limits

- The common pitfall is to focus exclusively on concentration limits
- It is important to know that loading limit violations need to be minimized
- Governed by the formula: $\text{Flow in MGD} \times 8.34 \times \text{mg/l concentration}$
- High flows due to wet weather
- Strategies to eliminate SSOs by increasing flows into the WWTP, without a corresponding increase in rated capacity can be a problem

Sludge Management

Three key areas for sludge management are: Stabilization, Storage, and Management

Other points of interest:

- Stabilization defines level of treatment and “designation” achieved—no class, Class B, and Class A (exceptional quality)
- At the present time, many entities are providing aerated storage, dewatering and going to a sanitary landfill.

Sludge Management

- Plans need to be flexible to provide treatment in the event that landfills deny access to untreated sludge.
- The Ohio EPA currently has an unfavorable opinion on lime stabilization
- Storage to deal with periods when winter application is not allowed. Even if the plan is go haul to a landfill, some on site storage is desirable
- The Ohio EPA is seeking to prohibit application between December 15 and March 1.

BADCT and BAT

BADCT

- BADCT is “Best Available Demonstrated Control Technology”

The Rule was rewritten after a 1992 Supreme Court decision and overhauled to its “near present” form in 1996.

- The Antidegradation Rule (OAC 3745-1-05) requires that the “best technology” be used to treat loadings, which are discharged to receiving streams

- The Rule places covers discharge of substances, which are not presently in the waste stream such as constituents typically associated with industries.

BADCT and BAT

For municipal WWTP applications, BADCT is defined in the terms of effluent limits:

CBOD ₅	10 mg/l
TSS	12 mg/l
Ammonia-N	1 mg/l (summer)
Ammonia-N:	3 mg/l (winter)

In future, the Rule will include limits for TN and TP:

TN	10 mg/l
TP	2 mg/l

BADCT and BAT

- From a practical standpoint, these limits can be achieved by a well designed and flexible activated sludge process operated at a moderately high SRT and followed by well designed final clarifiers.
- As we learned from WERF representatives in the Government Affairs Workshop, an activated sludge process operated at long SRT has some potential to provide treatment to refractory organic compounds found in personal care products.
- The goal is to do the best thing possible to protect water quality: for granting approval for increased loading, the Ohio EPA thinks that one should install the best (demonstrated) technology.

BADCT and BAT

BAT

- BAT is Best Available Technology
- BAT is the term used in the PTI Rules (OAC 3745-42-07)
- BAT was originally called “new source performance standards”
- For all practical purposes, BADCT and BAT are the same thing.

Loading Limit Considerations

- The abandoning of an existing process in favor of a new one will require that BADCT limits be implemented even if the receiving stream does not require them.
- If a community currently meets advanced secondary treatment requirements, and installs a new process, it will be required to meet BADCT.
- This would change concentration limits in the following manner:

<u>Parameter</u>	<u>Existing</u>	<u>New</u>
CBOD ₅	15 mg/l	10 mg/l
TSS	15 mg/l	12 mg/l
Ammonia-N (S)	3 mg/l	1 mg/l
Ammonia-N (W)	None	3 mg/l
TN	None	10 mg/l
TP	None	2 mg/l

Loading Limit Considerations

Example:

A community wishes to increase its rated capacity from 4.0 MGD to 6.0 MGD and is currently a secondary discharger. The currently operate a trickling filter process and wish to install a membrane bioreactor. The community has a separate sanitary sewer system, and wet weather flows, which produce 24 hours sustained flows of 10 MGD.

Current loading for CBOD₅: $15 \text{ mg/l} \times 8.34 \times 4.0 \text{ MGD} = 500 \text{ PPD}$

Future loading for CBOD₅: $10 \text{ mg/l} \times 8.34 \times 6.0 \text{ MGD} = 500 \text{ PPD}$

So, for a 50% increase in rated capacity, the allowable discharge loading is not increased for CBOD₅. (We need to look at TSS and Ammonia-N also.)

Loading Limit Considerations

But the real test comes in wet weather when the discharge flow is at least doubled:

Wet weather load: $10 \text{ mg/l} \times 8.34 \times 12 \text{ MGD} = 1,000 \text{ PPD}$

Compliance is measured on 7 day criteria:

500 PPD must be made up for in at least 3 other samples.

$500 \text{ PPD} / 3 \text{ Sample Days} = 167 \text{ PPD/Day}$

Discharge concentrations for other days sampled must be have CBOD_5 readings that average 5.0 mg/l to not exceed the 7-day loading limit

Process Selection Considerations

- For plants, which implement a total process change, it may be advantageous to sample more frequently to make up for days when loads are higher.
- If possible, maintain the existing process and optimize if possible. The advantage will be a “blended” effluent limit of 13.3 mg/l for CBOD₅.
- If choosing a new process, implement an activated sludge based process , which can be operated at a high SRT can meet future TN and TP limits
- Depending upon layout of the collection system, consider implementing a satellite WWTP to handle new loadings and do not change the process and the existing WWTP.

CWA Sections 401 and 404

- While the two sections are different they are related to the point where they are considered almost inseparable.
- Be aware that wetlands can greatly impact alternative analysis
- Be prepared to demonstrate decisions based on alternative analysis, which considers minimal degradation alternatives and non- degradation alternatives to avoid wetlands.
- The reason that we need to take this wetland to construct a storage tank to meet a requirement of the NPDES permit may not be compelling justification.

CWA Sections 401 and 404

- We tend to think that 401/404 Permits impact only wetlands
- They can be associated with the relocation of outfall sewers which are common in many projects.
- The reality is that for construction to occur a portion of the stream banks will need to be cleared. Trees with exfoliating bark can be habitat to the Indiana Bat, which is a Federally Endangered species, can impose a significant issue for permitting.
- The best strategy to deal with the Indiana Bat is to remove these trees between late October and early April, before the breeding season begins.

CWA Sections 401 and 404

- The Ohio EPA will require that the development of the following alternatives for avoidance/minimization:

Preferred Alternative

Non-Degradation

Minimal Degradation

- The Preferred Alternative is what you would like to do. It is often the lowest cost and the most sound from an engineering point of view.
- Non-degradation is full avoidance, and is also associated with No Action. In many instances, this is not possible.
- The Minimal Degradation Alternative is what you "can do" to provide better protection of a resource to minimize its impact.

CWA Sections 401 and 404

- The Section 401 Permit may require a public hearing if interested parties respond with legitimate concerns.
- Watch out for review times. Some may require many months and others (Section 404) will involve multiple agencies such as US Fish and Wildlife or the State Historical Preservation Office. All of which take time and money.
- Depending upon cultural resources uncovered, Native American Tribes may become involved, where they may perform ceremonies
- Budget requirements to deal with meeting permitting requirements can be significant. Some projects require mussel surveys where mussels need to be captured, inventoried, numbered, and relocated.
- All of these actions may require extensive amounts of time and significant cost.

Isolation Distance

- The new Rule (3745-42-08) stipulates an isolation distance of 300 feet
- Some allowances to this may be made on a case by case basis for existing facilities, equipment and systems inside buildings, and for odor control.
- The lack of isolation distance may be a sufficient driver to consider moving to another site.
- This is a hard issue to overcome if isolation distance is inadequate. Provisions to remediate isolation distance may be costly.

Working with Permitting Agencies

- The rights and needs of all permits must be satisfied equally by all involved. No permit takes precedence over another.
- The onus to secure all permits is the responsibility of the applicant.
- The best way to manage the permitting process is to prepare a management plan that identifies the needs and requirements of each permit.
- Early coordination is helpful and can help avoid costly and time consuming mistakes. It can form relationships, which may be helpful later on.
- Despite costs of permitting, the cost of not paying attention to special permitting requirements may be much more costly in terms of time and money.

Working with Permitting Agencies

- Some applications require a similar effort in the type of information required. This can help save money in preparation associated with duplication of effort.
- Be prepared to be flexible. Identify and evaluate different alternatives, and seek creative ways to minimize impact in advance. This type of preparedness is useful in negotiations and defending decisions made for the preferred alternative.
- We often forget that agencies are required to defend their decisions to the public.
- One way to deal with permitting is to prepare a permitting plan. An example of part of one is the table on the next page.

Working with Permitting Agencies

WWTP Upgrade and Expansion Project Environmental Permits Requirements			
Permit	Agency	Submittal Requirement	Additional Considerations
Section 208 Planning	Ohio EPA	Project must conform with 208 Plan	Contact the Ohio EPA during facilities planning to see if the area has a 208 Plan
Ohio EPA Permit to Install (PTI)	Ohio EPA	Approximately 90% design complete	Detailed structural work and some electrical, HVAC, and plumbing work is not needed.
NPDES Permit Renewal	Ohio EPA, District Office	Concurrent with PTI	Timing should be discussed with Ohio EPA on appropriate time to submit the NPDES Permit Renewal
Section 401, Water Quality Certification	Ohio EPA, Division of Surface Water	Approximately 50% design complete and concurrent with Section 404 Permit	US Fish and Wildlife may require mussel survey in the Ohio River for new outfall
Section 404, Dredge and Fill	USACOE	Concurrent with Section 401 Permit	Section 404 permit will track with the Section 401 permit. Supplemental Indiana Bat studies are not anticipated.
Stormwater Pollution Prevention Plan (SWP3)	Ohio EPA, Division of Surface Water	Prior to construction	This permit is required due to the fact that > 1 acre of ground is disturbed.
Flood Plain Compliance	FEMA or local floodplain coordinator	As early as is possible once the level of impact is determined	Depending upon level of review and action required, approval process may take one year
Building Permits	City or County	Contact Local Authority. Should be consulted early in the design process	Review times may vary but most are within 30 days.