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June 14, 2017

Troy Smith, IPDES Rules Coordinator
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Idaho Department of Environmental Quality
1410 N Hilton
Boise, ID 83705

Re: IPDES Effluent Limit Development Guidance (ELDG) Additional Content - "Watershed Bubble Permitting"

Dear Mr. Smith/Troy and Mr. Maupin/A.J.

The Association of Idaho Cities (AIC) serves to advance the interests of the cities of Idaho through legislative advocacy, technical assistance, training, and research. Idaho cities play an important role as the primary implementers of the Clean Water Act and have a significant interest in the development of rules and guidance related to IPDES rules and guidance. AIC is actively engaged in water quality issues through the work of our Environment Committee, chaired by Boise City Councilmember Elaine Clegg.

AIC and our member cities are pleased to provide you with some additional content for the IPDES ELDG. AIC appreciates the opportunity to provide this content and to continue providing comments during the development of the IPDES program. We look forward to working with our state and other partners in the development of these important resources for city officials. Should you have questions concerning our attached comments, please feel free to contact me.

Sincerely,

Seth Grigg

Executive Director

cc: Elaine Clegg, AIC Environment Committee Chair
Johanna Bell, AIC Policy Analyst
Tom Dupuis, AIC Environmental Consultant
Steve Burgos, Boise City Public Works Director
Dale Bolthouse, Meridian City Public Works Director

4.9 WATERSHED AND BUBBLE PERMITTING

Watershed-based NPDES permitting is a process that addresses a variety of related water quality stressors within a hydrologically-defined drainage basin, rather than individually addressing pollutant sources. Watershed-based permitting can encompass a variety of activities such as synchronizing permits within a basin; utilizing water quality-based effluent limits from multiple discharger modeling and analysis (e.g., Total Maximum Daily Loads, TMDLs); or apportioning a total ("bubble") load among multiple facilities to foster intra-municipal trading. The type of permitting activity will vary depending on the unique characteristics of the watershed and the sources of pollution. The ultimate goal of watershed permitting is to develop and issue NPDES permits that better protect entire watersheds (EPA, 2014).

Suitable applications for watershed permitting may exist in a number of Idaho watersheds and provide advantages over the preparation and renewal of individual permits. In particular, permits driven by watershed management efforts and TMDLs for nutrients that transcend individual mixing zones and reflect broader water quality objectives may be especially appropriate. Watershed permitting provides flexibility in compliance and implementation efforts while applying creative approaches that meet entire watershed goals. Opportunities for collaboration and optimization of management efforts can be supported with watershed permitting for individual entities interested in shared responsibility for watershed-based bubble limits.

This section summarizes EPA policy on watershed permitting and provides summary discussions of a number of case study examples of important receiving waters that have employed watershed permits.

4.9.1 EPA POLICY

EPA has published a significant amount of information about the watershed approach to permitting (e.g. EPA, 1996; EPA, 2003a; EPA, 2007). EPA released four policy statements regarding watershed-based NPDES permitting during the 2002 to 2003 period.

In December 2002 EPA Office of Water Assistant Administrator Mehan released the memorandum titled "Committing EPA's Water Program to Advancing the Watershed Approach" to office directors and regional water division directors (Mehan, 2002). Mehan argued that although the watershed approach had been embraced by EPA for nearly a decade, substantial gaps in actual implementation existed. The memorandum announced creation of a Watershed

Management Council with the charge of implementing a series of specific initiatives regarding the watershed approach including:

- Integrating and focusing internal EPA programs.
- Funding local watershed strategies and building local capacity.
- Providing assistance to States and Tribes.
- Fostering innovations.

As part of the last initiative, Mehan requested that efforts to develop and issue NPDES permits on a watershed basis be accelerated. Specifically, Mehan asked the Office of Wastewater Management to issue the watershed-based permitting policy statement and to work with the Regions to accomplish the following:

"Develop and implement a "roadmap" for advancing watershed-based NPDES permitting activities. Implement the watershed-based NPDES permitting policy immediately in those Regions that administer the NPDES permit program. Have regions identify watershed-based permit case studies; if no regional examples already exist, create watershed-based pilots. Include watershed-based permitting approaches as priority decision criteria for Water Quality Cooperative Agreement funding. Characterize the permit universe to determine permits or groups of permits that may be a high priority for reissuance based on watershed specific goals, impacts, and specific results."

In January 2003, EPA Office of Water Assistant Administrator Mehan released the memorandum titled "Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Policy Statement" to regional water division directors (Mehan, 2003a). In the memorandum Mehan states:

"For this Policy, watershed-based permitting is defined as an approach that produces NPDES permits that are issued to point sources on a geographic or watershed basis to meet watershed goals. This policy statement communicates EPA's policy on implementing NPDES permitting activities on a watershed basis, discusses the benefits of watershed-based permitting, presents an explanation of the process and several mechanisms to implement watershed-based permitting, and outlines how EPA will be encouraging watershed-based permitting."

Mehan emphasized that the recommendations in the memorandum are not binding and that the memorandum does not substitute for provisions or regulations (i.e., CWA and EPA's NPDES implementing regulations).

In May 2003, EPA released the document "Watershed-Based NPDES Permitting: Rethinking Permitting as Usual." The document (EPA, 2003) is a summary fact sheet describing the process and differs from the memoranda because specific nutrient case studies are mentioned.

In December 2003, EPA Office of Water Assistant Administrator Mehan released the memorandum titled "Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Implementation Guidance" to regional water division directors (Mehan, 2003b). This memorandum provided the implementation guidance document as an attachment, and also referenced the December 2002 and January 2003 memoranda. The implementation guidance focuses on program implementation, but not technical, procedural, or administrative actions related to permit issuance. Mehan indicated that the Office of Wastewater Management would work with regional directors and the states to develop the technical guidance.

The four documents from EPA on watershed permitting lay the foundation for a watershed framework for NPDES permitting, but provide flexibility for state permit writers by not dictating a "one size fits all" type of framework. Watershed goals are often mentioned, implying that TMDLs and/or WQS are necessary. This suggests that a given state has developed nutrient TMDLs and/or WQS that result in the need for nutrient discharge permitting in a given watershed.

4.9.1.1 CASE STUDY WATERSHED PERMITTING EXAMPLES

EPA has provided several examples of watershed-based NPDES permitting (EPA, 2014). Nationwide, there are a number of widely recognized receiving waters where watershed permitting has been applied in creative ways that may illustrate potentially applicable approaches for consideration in Idaho. Case study examples of watershed permitting for nutrients that highlight some key features are summarized in the following sections for these watersheds:

- Tualatin River, Oregon
- Long Island Sound , New York and Connecticut
- Jamaica Bay, New York
- Chesapeake Bay, Virginia
- Las Vegas Wash, Nevada
- San Francisco Bay, California

The discussions presented in the following sections highlight both the unique nature of watershed permitting as it is applied to individual watersheds, as well as some similarities in characteristics. It is clear that watershed permitting has been an attractive approach to stakeholders in many diverse watersheds across the country. The discussions that follow highlight the broader watershed considerations. The details of the resulting individual permit structures can be found in the permits themselves (see Reference list), and in other reports (Clark, 2016).

4.9.2 TUALATIN RIVER, OREGON

Clean Water Services of Washington County operates four treatment plants in the suburban Portland, Oregon area with innovative discharge permits. In 1988 Total Maximum Daily Loads (TMDLs) were established for ammonia and TP to address low dissolved oxygen (DO) and high pH levels in the Tualatin River, a subbasin of the Willamette River in Oregon. While the ammonia TMDL addressed low DO levels, the phosphorus TMDL addressed nuisance algal growth and accompanying high pH levels. The TMDLs were updated in 2001 and expanded to include new parameters (water temperature, bacteria, and DO in tributaries).

In the late 1990s and early 2000s, several individual NPDES permits were expiring, allowing a unique opportunity for the Oregon Department of Environmental Quality (OR DEQ) to consolidate Clean Water Services' permits for 4 wastewater facilities and their stormwater discharges with the Municipal Separate Storm Sewer System (MS4) permit into a single watershed NPDES permit (OR DEQ, 2004). Oregon DEQ issued a single, watershed-based, integrated NPDES permit to Clean Water Services. This permit incorporated the NPDES requirements for four advanced wastewater treatment facilities, one municipal separate storm sewage system (MS4) permit and individual storm water permits for the Durham and Rock Creek Advanced Wastewater Treatment Facilities.

In 2012, a revised TMDL to address dissolved oxygen and phosphorus also included creation of a new phosphorus trading program (OR DEQ, 2012). Phosphorus wasteload allocations (WLAs) for the treatment facilities were revised, and trading of phosphorus load among the facilities was implemented under the watershed permit reissued in April 2016. The 2012 amendment to the 2001 TMDL provided new phosphorus allocations for the Forest Grove and Hillsboro discharge locations, and provides daily load equivalents for the monthly targets set out in the 2001 TMDL (WLAs for the Rock Creek and Durham facilities are unchanged from the 2001 TMDL). The 2012 TMDL update provided a bubble allocation for the Forest Grove, Hillsboro, and Rock Creek facilities, which placed a ceiling on the allowable discharge load from multiple sites combined. The bubble allocation provides Clean Water Services with the flexibility to adopt innovative treatment at one, or both, of the upstream treatment plants, knowing that minor variations in phosphorus treatment at the upstream plants can be offset by proven advance treatment technology already in place at the Rock Creek facility (OR DEQ, 2012). While the Forest Grove and Hillsboro facilities were online at the time of the 2001 TMDL, they had not been discharging during the summer months. Instead, during the summer, raw wastewater from these treatment plants are conveyed to the Rock Creek facility. As population in the Tualatin Basin increases, Clean Water Services proposes (OR DEQ, 2012) to increase treatment capacity by maintaining the current capacity at its two downstream facilities, the Rock Creek and Durham plants, and by commencing summertime discharges at its two upstream facilities at Forest Grove and Hillsboro (along with proposed plant upgrades to reduce nutrients prior to summer discharge). The Rock Creek and Durham facilities will increase capacity as needed once Forest Grove and Hillsboro are operating at full capacity during the summer.

For the initial implementation of the 2012 TMDL, Clean Water Services has elected to apply the bubble concept to the Forest Grove and Rock Creek facilities. In addition, Clean Water Services has recently implemented a Natural Treatment System at the Forest Grove facility to provide additional tertiary treatment and other environmental benefits for the watershed.

This type of trading, also called intra-municipal trading, allows Clean Water Services to manage multiple discharges as a system, apportioning a total load among multiple facilities. In this case, DEQ had already issued a watershed permit that includes all four discharges under a single permit order. Describing the phosphorus allocation as a bubble load in this TMDL will enable the permit writer to incorporate intra-municipal trading in subsequent watershed permits for CWS. One requirement for this type of trade is a demonstration that localized impacts are not expected at any of the discharge locations (OR DEQ, 2012). This was demonstrated by extensive water quality modeling and assessment for the 2012 TMDL and 2016 permit reissuance.

The phosphorus bubble limits in the 2106 permit are shown below (note: Outfall D001 is Durham, R001 is Rock Creek, and F001A is the Forest Grove facility):

Table 4-1. Phosphorus Limits in Clean Water Services Watershed Permit.

Table A7: Phosphorus Limitations

Outfall Number	Parameter	Monthly Median Limit	Seasonal Median Limit	Applicable Time Period
D001	Total Phosphorus	0.11 mg/L	Not Applicable	May 1 – October 15**
R001	Total Phosphorus	0.10 mg/L	Not Applicable	May 1 – September 30**
F001A	Total Phosphorus	81.6 lbs/day – (calculated monthly median total phosphorus mass load from R001 [lbs/day])*	66.1 lbs/day – (calculated seasonal median total phosphorus mass load from R001 [lbs/day])*	May 1 – September 30**

* Phosphorous limitations for F001A based upon Table 2-13 in Chapter 2 of 2012 Tualatin TMDL. The monthly median limit at F001A will be calculated as follows: [Monthly median load (81.6 pounds per day) - ((Monthly median Rock Creek discharge concentration of total P mg/L) × (Actual monthly median Rock Creek effluent volume MGD) × (8.34 conversion factor))]. The seasonal median limit at F001A will be calculated as follows: [Seasonal median load (66.1 pounds per day) - ((Seasonal median Rock Creek discharge concentration of total P mg/L) × (Actual seasonal median Rock Creek effluent volume MGD) × (8.34 conversion factor))].

** Phosphorus limitations do not apply after September 15th provided diversions to Lake Oswego have ceased and the 7-day-average river flow at the Farmington Gauge is ≥ 130 cfs.

4.9.3 LONG ISLAND SOUND, NEW YORK AND CONNECTICUT

Low DO levels in Long Island Sound have been attributed to excess nitrogen originating from New York and Connecticut. Both states collaborated to develop a nitrogen TMDL to achieve each state's respective water quality standards (CT DEEP, 2000). In Connecticut, 79 publically owned treatment works (POTWs) were issued a nitrogen WLA. A nitrogen general NPDES permit and a Nitrogen Credit Exchange Program were developed in 2002. The general permit addresses TN discharges from the 79 POTWs and sets TN limits for each facility. The exchange

program was developed to allow purchase of credits for POTWs that have difficulty meeting their individual TN limits.

The general permit for Connecticut POTWs was reissued for the 2011-2015 period (CT DEEP, 2010). Annual discharge limits (pounds/day) were issued based in part on how far an individual POTW was located from the Long Island Sound via an "equivalency factor", which means a ratio of the unit response of dissolved oxygen to nitrogen in Long Island Sound for each POTW based on the geographic location of the specific POTW's discharge point divided by the unit response of the geographic area with the highest impact. The 2015 WLAs for each POTW are equivalent to the final WLAs set forth in the TMDL (CT DEEP, 2000).

Table 4-2 summarizes the annual total nitrogen discharge from a select group of Connecticut facilities from each of the Water Pollution Control Facilities (WPCFs) in the 6 zones in the general permit for nitrogen discharges. The table illustrates the nitrogen loadings and the equivalency factors assigned to individual dischargers. The annual discharge limits are expressed in pounds per day allocated at the end-of-pipe from each facility. Compliance with the annual discharge limits is based either discharging less than the mass in the general permit, or by securing nitrogen credits equivalent to the amount exceeding the annual discharge load assigned to an individual facility. The limits are subject to revision in the course of the permit as new information becomes available about the achievement of the aggregate wasteload allocation for the Long Island Sound TMDL.

Table 4-2. Annual Discharge Limits for Select Facilities Under Connecticut General Permit for Nitrogen Discharges (CT DEEP, 2010)

Zone	Publicly Owned Treatment Works	Equivalency Factor	Total Nitrogen (Pounds/Day)				
			2011	2012	2013	2014	2015
1	New London WPCF	0.18	**424**	**404**	**395**	**386**	**386**
2	Hartford WPCF	0.20	**2,611**	**2,491**	**2,431**	**2,377**	**2,377**
3	New Haven East WPCF	0.60	**1,722**	**1,643**	**1,603**	**1,568**	**1,568**
4	Waterbury WPCF	0.60	**1,109**	**1,058**	**1,049**	**1,049**	**1,049**
5	Bridgeport West WPCF	0.85	**1,144**	**1,091**	**1,065**	**1,041**	**1,041**
6	Stamford WPCF	1.00	**1,017**	**970**	**947**	**926**	**926**

The Connecticut Department of Energy and Environmental Protection (DEEP) purchases all of the equivalent nitrogen credits generated by facilities that achieve compliance and discharge less than their nitrogen load limit. The number of equivalent nitrogen credits required to achieve compliance is calculated by subtracting the annual mass loading of nitrogen discharged by a facility from the annual mass loading limit and multiplying the result by the equivalency factor for the facility. Facilities must purchase the equivalent nitrogen credits needed to achieve a zero equivalent nitrogen credit balance by July 31 to remain in compliance with the permit.

4.9.4 JAMAICA BAY, NEW YORK

Jamaica Bay is located at the southern end of Brooklyn and Queens, and abuts the JFK airport. The Bay has experienced dissolved oxygen water quality standard violations associated with ongoing hypoxia issues. The primary driver of the hypoxia is nitrogen input from the watershed. Four major New York City wastewater treatment plants discharge into Jamaica Bay (Coney Island, Jamaica, Rockaway, and 26th Ward). To address the hypoxia issue, the four treatment plants are subject to a total nitrogen limit that is imposed through the First Amended Nitrogen Consent Judgment (NYSC, 2011). The limit is an aggregate 12 month rolling average mass limit, with incremental TN limits to be implemented as performance-based limits following completion of treatment plant upgrades which provide biological nitrogen removal (Table 4-3). The performance-based total nitrogen limits incrementally step down in phases 19 months after commencement of operations of the upgraded facilities. The schedule for wastewater treatment plant upgrades is outlined in a compliance schedule (NYSC, 2011), which anticipates completion of upgrades for the Jamaica and 26th plants by 2016, and completion of upgrades for the Rockaway and Coney Island plants by 2020.

Table 4-3. Total Nitrogen Interim Effluent Limits for Jamaica Bay (NYDEC, 2013)

Effective Date	**Jamaica Bay Limits** – These interim limits are step-down aggregate limits for all four Jamaica Bay WWTPs, expressed as a 12 month rolling average.
November 1, 2009	41,600 lbs/day
January 1, 2012 (19 months after commencement of operation of the Level 2 upgrade at the 26th Ward WWTP on June 1, 2010).	36,500 lbs/day
19 months after commencement of operation of the interim chemical addition facility for AT#3 at the 26th Ward WWTP.	Performance-Based Limit.
19 months after the last of commencement of: (a) the Level 3 BNR upgrades at the 26th Ward WWTP, or (b) the Level 2 BNR upgrades at the Jamaica WWTP.	Performance-Based Limit.
19 months after the last of: (a) construction completion of the Level 1 BNR upgrade at Coney Island WWTP; or (b) construction completion of the Level 1 BNR upgrade at the Rockaway WWTP.	Performance-Based Limit.

A final aggregate nitrogen limit of 7,400 lbs/day was established for the four Jamaica Bay treatment plants (NYDEC, 2013). A comprehensive report (NYC DEP, 2006) determined that the nitrogen discharges from the four treatment plants would have to be equal, or close to zero, in

order to attain water quality standards for dissolved oxygen. The aggregate limit was calculated from the current limit of technology for nitrogen treatment which reflects a concentration of 3.0 mg/L and a projected flow of 296 mgd for the four Jamaica Bay plants in 2045. The report was approved by the NYC DEC and the projected 2045 flows were used in additional modeling efforts for projected performance to include impacts from population increases.

4.9.5 CHESAPEAKE BAY, VIRGINIA

In 2000, the states in the Chesapeake Bay watershed signed an agreement to reduce nitrogen and phosphorus loads into the Bay (CBP, 2000), with wasteload allocations assigned to major river basins in each state. The Virginia DEQ developed strategies for each of its tributaries entering the Bay (Eastern Shore, Potomac, Rappahannock, York, and James), assigning nutrient load allocations to both point and nonpoint sources. A watershed based general permit was developed to encompass 125 dischargers in 2006 (EPA, 2007; VA, 2014), as well as a nutrient trading program.

A “delivery factor” has been assigned to each of the dischargers, much like was done for Connecticut with respect to “equivalency factors”. For a given facility, different delivery factors are assigned for TN and TP. To date, all five river basins have met and exceeded their WLAs assigned in the general permit for TN, TP, as well as TSS. It is anticipated that the existing general permit will be extended.

Dischargers have two basic options for compliance, either directly meet their annual wasteload allocation for N and P in their discharge, or obtain N and P credits to offset N and P loads exceeding their wasteload allocations. Effluent limits in the permit are set as annual wasteload allocations (i.e., lbs/yr of TN and TP). Concentration limits typically are included in individual VPDES permits when the treatment plant has received state Water Quality Improvement fund grants or revolving load funds to construction nutrient removal upgrades. The concentration limits are set as annual average (mg/l) limits and are technology-based and depend upon what the wastewater utility indicates to the state that the treatment process is designed to achieve. The technology-based concentration limits are used to ensure that the facility is operating the nutrient removal process as intended. Since most discharge flows are below the plant design flow (upon which the wasteload allocation is based), concentration-based limits also help ensure that dischargers are able to generate nitrogen and phosphorus credits for trading.

In 2010 EPA finalized the Chesapeake Bay TMDL for nitrogen, phosphorus, and sediment (EPA, 2010). As part of compliance requirements, each state in the watershed is required to develop Phase I and Phase II Watershed Implementation Plans (WIPs), which contain details on how each state intends to implement TMDL provisions in their own NPDES permitting programs and consider trading and other strategies. For example, the Virginia Phase I WIP (VA, 2010) included creation of a watershed cap on nutrient loads from significant point source dischargers. The Virginia Phase II WIP (VA, 2012) focuses primarily on agricultural, stormwater, and septic issues,

but also reports on the expansion of the nutrient credit trading program. Regarding wastewater, the Phase II WIP provides some technical changes to Phase I WIP strategies and presents an updated approach for permitting of combined sewer overflows (CSOs).

4.9.5.1 NUTRIENT EXCHANGE

The Virginia State Water Control Board issued a general VPDES watershed permit for total nitrogen and total phosphorus discharges and nutrient trading in the Chesapeake Bay watershed in Virginia. The general permit establishes annual effluent loading limits for nitrogen and phosphorus, and establishes the conditions by which credits (the difference in pounds between the facility's limit and the mass actually discharged) may be exchanged, or offsets (an alternate nutrient removal mechanism) may be purchased by existing facilities that have exceeded their allocation, or by new and expanded facilities not assigned a waste load allocation.

The Virginia Nutrient Credit Exchange uses voluntary, market-based nutrient credit trading as a means of achieving compliance and prepares an annual update to the Chesapeake Bay Nutrient Credit Exchange Program Compliance Plan. The initial focus of the Exchange was on nutrient removal upgrades for compliance with the Chesapeake Bay nitrogen and phosphorus waste load allocations. Since compliance was achieved in 2011 the focus has shifted to maintaining compliance through an ongoing program of additional facility upgrades.

Virginia DEQ is required to prepare a report on the total annual mass loads of nitrogen and phosphorus discharged to the Chesapeake Bay watershed by each permitted facility by April 1st each year. The actual loads and delivered loads are identified for each discharger and compared with the corresponding wasteload allocation. Virginia DEQ determines the number of point source nitrogen and phosphorus credits generated, or required, by each facility in the previous calendar year. If there are insufficient point source credits available for exchange to provide for full compliance by every permittee, then DEQ determines the number of credits to be purchased from the Water Quality Improvement Fund.

4.9.5.2 HRSD BUBBLE PERMIT EXAMPLE

Table 4-4 presents an example of the annual loading analysis for the Hampton Roads Sanitation District (HRSD) facilities discharging to the James River in 2013. HRSD has a "bubble" allocation for 7 facilities discharging to the James River in the Chesapeake Bay watershed. These facilities have an aggregated mass load limit referred to as an "owner bubble" and compliance is determined on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

Table 4-4. Hampton Roads Sanitation District (HRSD) 2013 Nitrogen and Phosphorus Wasteload Allocations and Delivered Loadings for the James River

Facility	Design Flow, mgd	Total Nitrogen			Total Phosphorus		
		Wasteload Allocation, lbs	Delivery Factor	2013 Discharged Load, lbs	Wasteload Allocation, lbs	Delivery Factor	2013 Discharged Load, lbs
HRSD James River Aggregate		**6,000,000**	**--**	**5,169,763**	**373,247**	**--**	**335,408**
Boat Harbor STP	20	740,000	1.0	925,895	53,239	1.0	26,671
James River STP	25	1,250,000	1.0	312,511	42,591	1.0	39,428
Williamsburg STP	22.5	800,000	1.0	241,899	47,915	1.0	33,924
Nansemond STP	30	750,000	1.0	283,001	63,887	1.0	82,696
Army Base STP	18	610,000	1.0	1,006,188	38,332	1.0	31,590
Virginia Initiative STP	40	750,000	1.0	798,691	85,183	1.0	69,656
Chesapeake-Elizabeth STP	24	1,100,000	1.0	1,601,578	51,110	1.0	51,443
2013 Delivered Nitrogen Exceedance/ (Credit) (lbs)				**-830,237**	**2013 Delivered Phosphorus Exceedance/ (Credit) (lbs)**		**-37,839**

Table 4-4 shows that for both nitrogen and phosphorus, the aggregate of the actual discharges from HDRSD facilities to the James River was less than the “bubble” and therefore credits were generated. Individual facilities actual discharges varied in comparison to their individual wasteload allocations. For example, the Boat Harbor STP exceeded its individual nitrogen allocation and the James River STP was far below its nitrogen allocation. The HRSD aggregate James River nitrogen wasteload allocation was 6 million pounds and the actual 2013 discharge was 5.17 million pounds, which results in the generation of a 0.83 million pound credit. HRSD can make transfers within the “owner bubble” based on the actual performance of individual facilities. If credits are generated, the owner may pledge a percentage of credits to the Exchange. If loads exceed the bubble, credits must be purchased from the exchange to comply with the aggregate delivered wasteload allocation.

4.9.6 LAS VEGAS WASH, NEVADA

Wastewater facilities serving City of Las Vegas, Clark County Water Reclamation District, and the City of Henderson discharge into the Las Vegas Wash, which ultimately flows into Lake Mead and the Colorado River. TMDLs were developed for total ammonia as nitrogen and phosphorus in 1989. Seasonal phosphorus and ammonia limitations apply to the dischargers and mass load allocations to the Las Vegas Wash are shared between three wastewater utilities. The dischargers were allocated individual wasteload allocations and a cumulative total loading, as shown in Table 4-5.

Table 4-5. Las Vegas Wash Wasteload Allocations for Phosphorus and Ammonia

Constituent	City of Las Vegas IWLA	Clark County Sanitation District IWLA	City of Henderson IWLA	Sum of Waste Load Allocations ΣWLA
Total Phosphorus	**123 lb/day**	**173 lb/day**	**38 lb/day**	**334 lb/day** Note: This WLA only applies March 1 - October 31; no limit applies the rest of the year. Non-point source load is 100 lb/day.
Total Ammonia	**358 lb/day**	**502 lb/day**	**110 lb/day**	**970 lb/day** Note: This WLA only applies April 1 - September 30; no limit applies the rest of the year. No non-point source load.
IWLA = Individual Waste Load Allocation				

The associated NPDES permits include language which allows allocation trading between the dischargers. This permit condition constitutes a cooperative agreement between the utilities to allow discharge flexibility. Each facility has an Individual Waste Load Allocation (IWLA) and there is a Sum of Waste Load Allocations (∑WLA) defined for all three of the facilities.

Annually, the dischargers may modify their individual allocations by transferring or receiving loadings from another discharger. The annual re-allocation must be documented and signed by all three dischargers and is to be submitted to the state May 31st. The notification is required to include the flow, waste load discharged, and treatment plant removal efficiency. An annual re-allocation is considered a minor modification to the permit as long as the cumulative total load allocation is not changed.

Temporary trading of loadings is allowed and is again required to be documented in writing and signed by all three dischargers. The documentation must include the amount of the individual load allocation transferred, the length of time the transfer is effective, and the basis for the transfer to identify the last monthly flows and waste load discharged for each discharger.

Transfers are binding on the parties and cannot be revoked without a notification signed by all three dischargers. The transferred load reverts back to the original permittee at the end of the specified time.

4.9.7 SAN FRANCISCO BAY, CALIFORNIA

The San Francisco Bay estuary has long been known to be nutrient-enriched. Despite this, the abundance of phytoplankton in the estuary is lower than would be expected due to a number of factors, including strong tidal mixing; high turbidity, which limits light penetration; and high filtration by clams. The estuary ecosystem is quite complex, with food web components being influenced by both anthropogenic and natural drivers over decadal time scales (Cloern and Jassby, 2012). While nutrient discharges to the San Francisco Bay have not yet resulted in impairment problems (e.g., excessive algal growth), recent studies have shown that the Bay's historic resilience to nutrient loading may be weakening. As a result, nutrients are a growing concern for the health of the ecosystem.

Since 2006, the California State Water Resources Control Board (SWRCB) and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) have been facilitating development of Nutrient Numeric Endpoints (NNEs) for the Bay. Additional activities include examination of nutrient management strategies (SFRWQCB, 2012) and development of a nutrient assessment framework (SFRWQCB, 2013).

The Bay Area Clean Water Agencies (BACWA) is a joint powers agency formed under the California Government Code by the five largest wastewater treatment agencies in the San Francisco Bay Area (BACWA, 2014). The BACWA, SFRWQCB, and the San Francisco Estuary Institute (SFEI) have had a strong working relationship for many years. One of the initial efforts was to better understand the nutrient loadings to the Bay. SFEI compiled data which found municipal wastewater treatment plants represent about 63% of the annual nitrogen load to the Bay (SFEI, 2013). About 90% of the annual nitrogen load from municipal wastewater treatment plants is from facilities that have a permitted design flow of 10 mgd or greater.

In 2012, BACWA requested a nutrient watershed permit concept evaluation (Grovhoug et al., 2012a). The evaluation considered seven different regulatory approaches and five different overarching frameworks, along with several evaluation criteria. It was concluded that there were three best apparent alternatives for the regulatory approach to nutrient management (individual NPDES permits, nutrient watershed permit, and narrative objective implementation) and two for the overarching framework (Basin Plan Amendment and Memorandum of Agreement/ Memorandum of Understanding (MOA/MOU)). A follow-up evaluation (Grovhoug et al., 2012b) examined implementation of a narrative objective implemented in a nutrient watershed permit (i.e., regulatory approach) with an MOA/MOU and subsequent basin plan amendment (i.e., overarching framework).

4.9.7.1 SAN FRANCISCO NUTRIENT WATERSHED PERMIT

BACWA then approached the SFRWQCB with a proposal for a nutrient watershed permit. Many ideas were exchanged between BACWA and the SFRWQCB regarding the content of the NPDES permit, with little involvement from the EPA. The nutrient watershed permit was signed in April 2014 (SFRWQCB, 2014) with an effective date of July 1, 2014 and an expiration date of June 30, 2019. Thirty-seven dischargers with cumulative permitted discharge capacity nearing 860 mgd are participating in this permit. The design flows and existing nutrient loadings from the five largest dischargers who are the Principal Members of BACWA out of the total group of 37 dischargers are summarized in Table 4-6.

Table 4-6. Design Flows and Existing Nutrient Loadings from Principal Members of Bay Area Clean Water Agencies (BACWA)

Discharger	Design Flow, mgd	Average Annual Load, kg/day	
		Total Nitrogen	Total Phosphorus
San Jose/Santa Clara WPCP	167	5,233	332
City and County of San Francisco (Southeast Plant)	150	8,307	101
East Bay Municipal Utility District (EBMUD)	120	10,583	973
East Bay Dischargers Authority (EBDA)	107.8	8,641	555
Central Contra Costa Sanitary District (CCCSD)	53.8	4,187	138

Special provisions of the nutrient watershed permit require that each facility conduct or support the following three main areas to address nutrient reduction and receiving water quality:

1. **Evaluation of Potential Nutrient Discharge Reduction by Treatment Optimization and Side-Stream Treatment**.

   This evaluation focuses on options and costs for nutrient discharge reduction by optimization of current treatment works and side-stream treatment opportunities.

   - Describe the treatment plant, treatment plant process, and service area.
   - Evaluate site-specific alternatives, along with associated nitrogen and phosphorus removal levels, to reduce nutrient discharges through methods such as operational adjustments to existing treatment systems, process changes, or minor upgrades.
   - Evaluate side-stream treatment opportunities along with associated nitrogen and phosphorus removal levels.
   - Describe where optimization, minor upgrades, and sidestream treatment have already been implemented.

- Evaluate beneficial and adverse ancillary impacts associated with each optimization proposal, such as changes in the treatment plant's energy usage, greenhouse gas emissions, or sludge and biosolids treatment or disposal.
- Identify planning level costs of each option evaluated.
- Evaluate the impact on nutrient loads due to treatment plant optimization implemented in response to other regulations or requirements.

2. **Evaluation of Potential Nutrient Discharge Reduction by Treatment Upgrades or Other Means**.

This evaluation focuses on identification of options and costs for potential treatment upgrades for nutrient removal.

- Identify potential upgrade technologies for each treatment plant category along with associated nitrogen and phosphorous removal levels.
- Identify site-specific constraints or circumstances that may cause implementation challenges or eliminate any specific technologies from consideration.
- Include planning level capital and operating cost estimates associated with the upgrades and for different levels of nutrient reduction, applying correction factors associated with site-specific challenges and constraints.
- Describe where Dischargers have already upgraded existing treatment systems or implemented pilot studies for nutrient removal. As part of this description, document the level of nutrient removal the upgrade or pilot study is achieving for total nitrogen and phosphorus.
- Evaluate the impact on nutrient loads due to treatment plant upgrades implemented in response to other regulations and requirements.
- Evaluate beneficial and adverse ancillary impacts associated with each upgrade, such as changes in the treatment plant's energy use, changes in greenhouse gas emissions, changes in sludge and biosolids treatment or disposal, and reduction of other pollutants (e.g., pharmaceuticals) through advanced treatment.

Nutrient removal by other means includes evaluation of ways to reduce nutrient loading through alternative discharge scenarios, such as water recycling or use of wetlands, in combination with, or in-lieu of, the treatment plant upgrades to achieve similar levels of nutrient load reductions.

- Reduction in potable water use through enhanced reclamation.
- Creation of additional wetland or upland habitat.
- Changes in energy use, greenhouse gas emissions, sludge and biosolids quality and quantities.
- Reduction of other pollutant discharges.
- Impacts to existing permit requirements related to alternative discharge scenarios.
- Implications related to discharge of brine or other side-streams associated with advanced recycling technologies.

3. **Monitoring, Modeling, and Embayment Studies**.

This provision focuses on science plan development and implementation, as well as monitoring nutrients in receiving waters.

- Support the science plan development and implementation.
- Support receiving water monitoring for nutrients.

The NPDES permit allows the wastewater facilities to perform the permit tasks collectively as a group, or individually. All 37 participating facilities decided to perform the efforts collectively as a group. The first two tasks are being performed by a consulting firm team, whereby a report for each facility will be produced to address these task requirements for nutrient removal optimization and upgrade.

The third task, supporting the science plan is an on-going effort led by SFEI. The key elements that comprise the science plan are as follows:

1. Monitoring special studies (e.g., algal toxin pigment studies).
2. Modeling of San Francisco Bay.
3. Loads analysis (e.g., moored sensors data).
4. Developing a water quality assessment framework.
5. The emphasis is to integrate across the plans to develop an overarching nutrient strategy framework for San Francisco Bay.

4.9.8 MISSISSIPPI RIVER- LAKE PEPIN, MINNESOTA

The Mississippi River - Lake Pepin watershed extends over 205,747 acres and includes the metropolitan Minneapolis area. Lake Pepin is 21 miles long and is the naturally widest part of the Mississippi River bordered by the states of Minnesota and Wisconsin. Lake Pepin is impaired by high levels of nutrients that cause excessive growth of algae, as well as high levels of sediment. The Minnesota Pollution Control Agency (MPCA) prepared Lake Pepin Site Specific Eutrophication Criteria, which were adopted as part of amendments to state water quality standards and consist of the following:

- Total Phosphorus 100 ug/L
- Chlorophyll-a 28 ug/L

The Metropolitan Council Environmental Services (MCES) operates seven wastewater treatment facilities in the Minneapolis metropolitan area that discharge to the Mississippi River - Lake Pepin watershed. Over the past 15 years, MCES has made improvements to these facilities that have resulted in a dramatic reduction of effluent phosphorus loads discharged to the river. The implementation of biological phosphorus removal at the Metropolitan Wastewater Treatment Plant (Metro Plant) decreased the phosphorus effluent load by approximately 90 percent between 2000 and 2011. Metro Plant performance has been at, or

below 0.6 mg/L, operating under the historical effluent discharge limitation of 1 mg/L total phosphorus.

4.9.8.1 METROPOLITAN COUNCIL TOTAL PHOSPHORUS PERMIT

In September 2015, the MPCA issued a total phosphorus discharge permit for the 5 MCES wastewater facilities discharging to, or upstream of, the Mississippi River Pools 2, 3, and 4 and Lake Pepin. This permit defined the specific conditions to implement a combined Total Phosphorus Water Quality Based Effluent Limit (WQBEL) for the 5 wastewater facilities covered by the permit.

The Total Phosphorus Water Quality Based Effluent Limit covers the following MCES wastewater facilities: Eagles Point WWTP, Empire WWTP, Hastings WWTP, Metropolitan WWTP, and Seneca WWTP. Table 4.7 provides a summary of the wastewater facilities covered by the phosphorus bubble permit.

Table 4.7 MCES Wastewater Facilities Covered in Mississippi River Bubble Discharge Permit for Phosphorus

Facility Name	Average Wet Weather Design Flow, mgd	Treatment Process Description
Eagles Point	11.9	Biological Phosphorus Removal
Empire	28.6	Biological Phosphorus Removal
Hastings	2.69	Conventional Activated Sludge
Metropolitan	314	Biological Phosphorus Removal
Hastings	38	Biological Phosphorus Removal

The permit authorizes MCES to aggregate the total phosphorus limit among the 5 wastewater facilities with the total mass loading limits as shown in Table 4.8. The permit covers only the discharge of phosphorus. Individual permits for the five facilities address all other conditions associated with the discharges to the Mississippi River.

Table 4.8 MCES Total Phosphorus Limits for Five Facilities

Parameter	Limit	Limit Type	Effective Period	Sample Frequency
Total Phosphorus	159,349 kg/yr	12 Month Moving Total	Jan - Dec	1X Month
Total Phosphorus	916.8 kg/day	Calendar Month Average	Jan - Dec	1 X Month

[1]Combined limit for 5 MCES wastewater facilities included in Mississippi River Bubble Discharge Permit for Phosphorus

4.9.8.2 BUBBLE PERMIT APPEAL

In May of 2015 MPCA published a draft of the total phosphorous bubble permit for the five MCES facilities and the Minnesota Center for Environmental Advocacy (MCEA) submitted comments opposing the permit. MPCA responded to the MCEA comments and issued the permit in September 2015. MCEA petitioned to challenge the issuance of the permit. MCEA argued that the MPCA decision to issue the permit was arbitrary and capricious because the effluent limits relied on voluntary reductions in unregulated nonpoint source pollution and that the permit violated federal law by allowing discharges in excess of water quality standards.

The Minnesota Court of Appeals issued a ruling in June 2016 that affirmed the permit as issued by MPCA. The appeals court found that while MPCA must consider both point and nonpoint sources of pollution in setting effluent limits, the fact that the permit by itself does not ensure meeting water quality standards does not render the permit arbitrary and capricious. Further, the appeals court found that there was substantial evidence that voluntary reductions from nonpoint source have occurred in the past and can be reasonably expected to occur in the future. A Nutrient Reduction Strategy report that found that phosphorus pollution from nonpoint sources had been reduced by 8 percent in the Mississippi River basin since 2000 was cited. The appeals court also found that since the MPCA based the phosphorus limit on long-term summer concentrations, that the intent was not to focus on a single summer, and therefore MPCA did not act arbitrarily and capriciously in issuing the permit.

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June 15, 2017

Troy Smith, IPDES Rules Coordinator
A.J. Maupin, Wastewater Program Engineering Lead
Idaho Department of Environmental Quality
1410 N Hilton
Boise, ID 83705

Re: IPDES Effluent Limit Development Guidance (ELDG) – Sector Specific Guidance for Publically Owned Treatment Works

Dear Mr. Smith/Troy and Mr. Maupin/A.J.

The Association of Idaho Cities (AIC) serves to advance the interests of the cities of Idaho through legislative advocacy, technical assistance, training, and research. Idaho cities play an important role as the primary implementers of the Clean Water Act and have a significant interest in the development of rules and guidance related to IPDES rules and guidance. AIC is actively engaged in water quality issues through the work of our Environment Committee, chaired by Boise City Councilmember Elaine Clegg.

AIC and our member cities are pleased to provide you with comments for the guidance content reviewed on June 7th, 2017. AIC appreciates the opportunity to provide these comments and to continue providing comments during the development and implementation of the IPDES program. We look forward to working with our state and other partners in the development of these important resources for city technical staff and officials. Should you have questions concerning our attached comments, please feel free to contact me.

Sincerely,

Seth Grigg

Executive Director

cc: Elaine Clegg, AIC Environment Committee Chair
Johanna Bell, AIC Policy Analyst
Tom Dupuis, AIC Environmental Consultant

Attachment

Comments for the User's Guide Volume 2

Meeting Date	Comment Date	Commenter	Comment No.	Section	Page	Topic	Comment
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	1	1.2	1	Relationship to Existing Rules and Guidance	Recommend a "cross-walk" table either in this section and in the first section of each specific sector describing: (1) the specific permit section; (2) where the regulations are located; (3) where the guidance is located (Vol 1 and ELDG sections).
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	2	2.1.	4	Basic Informaiton on permit application	The purpose of this section of the document is unclear and recommend that Section 4.2 of Vol. 1 be reiterated. We understand that Vol 2 is meant to be more specific with respect to sector-specific requirements and guidance, but it appears that Section 4.2 of Vol 1 would not be that much more information to incorporate here, especially since one half of it is already included.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	3	2.1.1	4	Basic Informaiton on permit application	Recommend adding a section for information that expands upon Section 4.2, Vol. 1 guidance. The purpose of this expansion would be to bring to the attention of the permit writer and permitt applicant additional information or considerations to be used when establishing permit limitations and conditions. Please review AIC's additional content provided to the IDEQ on May 19th, 2017 (Section 3.5.4 on Impracticable WQBELs). We recommend guidance be provided regarding monitoring for impracticable WQBELs, effluent congeners (e.g., for PCBs), fish tissue, etc. With respect to the application data entry, we recommend that information be allowed to be entered for different analytical methods.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	4	2.1.1	5	Effluent testing requirements	Recommend clarificaiton of the langauge in the second paragraph of the "Application Effluent Monitoring Requirements Based on Size and Category". The term scan is not used previously and is unclear. The number of grab samples to be collected and time frame are unclear. The volume of grab sample required should be left to the method procedures and not specified here.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	5	2.1.2	6	Map	Recommend map(s) to account for some facilites that have application sites not within the facility boundaries, etc.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	6	2.1.4	8	WET testing	Recommend removal of salinity in the WET test report and replace with specific conductance, add total residual chlorine and others required, hardness, etc.) - or just make text more generic, "report parameters that are required to be reported in WET manuals"
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	7	2.1.6.2	10	Pretreatment	Recommend considering providing references for program development. For example, for Pretreatment there is a Guidance Manual for POTW Pretreatment Program Development (EPA 1983), or reference other documents
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	8	2.1.8	12	Requests	Recommend strongly that a request for mixing zone consideration is the default on permit applications rather than the requirement to check the box. Smaller municipaliites may not run RPE analyses during the permit application process and may not realize that they need a mixing zone until DEQ performs the RPE analysis during permit development.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	9	2.2.3	13	Monitoring	Recommend adding a statement to clarify where effluent monitoring requirements for parameters with effluent limits will be included in the permit.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	10	2.2.3.4	15	Receiving water monitoring	Recommend the removal of the word temperature in the last sentence so that the definition may cover other parameters.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	11	2.2.5	18	Permit renewal	This was discussed at the IPDES meeting and Lauri indicated that this section was being revised (specifically the 240 day requirement for applicaton submittal). Recommend adding text encouraging permittees to submit earlier than that, but not required.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	12	2.2.6.1	19	Compliance notification	Recommend removing or clarifying the statement "within 14 days of a task's due date.....". Clarificaiton could be "within 14 days following".
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	13	2.2.6.2	19	Facility Planning	We suggest that the purpose of this section be clarified, and perhaps for the need for facility planning to be assessed based on a general list of factors and to be evaluated on a case by case basis. Facility planning requirements in POTW permits in Idaho have been inconsistently applied historically. The proposed language here has important policy implications for Idaho POTWs and more discussion is warranted regarding the most appropriate language and approach. For example, population increases or decreases would likely impact facility planning needs. And facility planning schedules would be best taylored to the specific facility needs.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	14	2.2.6.3	19	WET testing	Recommend IDEQ to avoid conditions that would require a major modificaiton by providing "sunset language" where initial monitoring requirements are reduced if no toxicity is demonstrated in the initial enhanced testing requirements.
6/7/2017	14-Jun-17	Associaiton of Idaho Cities	15	2.2.6.3	20	WET testing	Recommend clarification in Table 2. The species listed are not all required in WET tests. Typical PNW species include Ceriodaphnia dubia and the fathead minnow.