MARYLAND DEPARTMENT OF THE ENVIRONMENT

WATER MANAGEMENT ADMINISTRATION

1800 Washington Boulevard, Suite 455

Baltimore, MD 21230-1708

Response to Public Comments

Regarding

General Permit for Discharges from Marinas Including Boat Yards and Yacht Basins

Discharge Permit Project No. 16MA

NPDES Permit No. MDG990000

Final: May 4, 2017

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Introduction

The Maryland Department of the Environment (MDE), herein referred to as "Department", has made a final determination to reissue the State/National Pollution Discharge Elimination System (NPDES) General Permit for Discharges from Marinas Including Boat Yards and Yacht Basins., Permit No. 16MA (NPDES No. MDG990000).

A public notice on the tentative determination to reissue the permit was published on October 28, 2016 in the Maryland Register and in twenty-two newspapers throughout the state of Maryland between October 28 and November 4, 2016. The Department held a public hearing concerning the tentative determination on Friday, December 2, 2016 at 1 PM in the Terra Conference Room, located at 1800 Washington Blvd, Baltimore, MD 21230, and received comments on the draft permit through December 9, 2016. About 25 people attended the hearing - mostly industry representatives and current registrants. Eleven people made comments on the Tentative Determination that are being addressed in this document.

The Final Determination was published in the Maryland Register on May 26, 2017 and will be effective August 1, 2017. A categorized summary of the significant comments and Department's responses are listed below. The comments received on the draft permit and the associated responses have in some cases resulted in changes to the final permit. Changes from Tentative Determination (TD) are noted in the response.

Should there be any conflicts between this Response Document and the Fact Sheet, this document should be considered primary.

Summary of Changes

Based on the comments we received, one significant revision from the tentative determination has been made for the final determination. We have revised the new chlorine limits for dock washing to only apply when greater than 350 gallons per day per pier will be used. We also made minor changes to add a definition for plume, correct minor typographical errors and provide clarifications to make the permit consistent with other general permits. All other terms and conditions of the tentative determination remain unchanged. The tentative determination notice is incorporated by reference into this notice and may be found here: http://9nl.at/MD-MAGP.

The following table provides a brief synopsis of each of these items. The detailed comments are found in a separate document, *"Categorized Public Comments Regarding General Permit for Discharges from Marinas Including Boat Yards and Yacht Basins"*. The responses to those comments are found later in this document along with our rationale.

Response Number	Change Made?	Description
1	Yes	We describe why the dock washing provisions in the permit are necessary and that we consider chlorine in all of our discharge permits where potable water is used. We will incorporate new volume based chlorine limits for potable water used in dock washing.
2	Yes	Water use analysis is provided. We describe how the chlorine provisions are derived and how are they stipulated based on the volume of wash water used per dock washing. The language in the draft has been modified.
3	Yes	We provide examples of marina surveys we have conducted and how data collected supports the implementation of the new chlorine limits. The language in the draft was changed.
4	No	We concur with the registrant comment. We discuss that discharges from testing of fire hydrants are permitted activities subject to chlorine limits as per COMAR 26.08.03.06. No change is necessary.
5	No	We discuss that all discharge permits need to treat potable water for chlorine. We also reason why of chlorine levels for dock washing is not required in the permit. No change.
6	Yes	Explanation of chlorine toxicity is provided. The language has been modified to limit chlorine as per previous responses.
7	No	We explain what the types of endorsements are acceptable for No Exposure Certification. No modification to the draft language is necessary.

Comments and Responses

Concern 1. Imposing a Chlorine Limit on Marinas Require Other Facilities to Implement Similar Controls.

The concern is adding limits for dock washing creates a trigger for other activities to now be regulated.

Response 1. Imposing Chlorine Limit on Marinas Require Other Facilities to Implement Similar Controls.

Many operators mentioned how common this activity is, and the current permit does not address this activity at all. What may not be clear is that we consider chlorine in all of our discharge permits where potable water is used. The intent of including the option in this permit is not to increase our regulatory authority, but is actually, to allow the marinas to perform this activity without additional involvement from the Department. With the 10MA, when we get requests to allow power washing of docks, we have no good options under which we could allow this activity in the current permit. By providing the specific limits in new permit we allow dock washing to be performed and the registrant will be authorized for this activity under the permit.

Concern 2. Low Volumes of Wash Water Generated and Infrequent Wash Events Have No Measurable Impact on Receiving Waters.

The concern is that there is no proper understanding of the volume (15-71 gallons) of chlorinated water used to wash the docks and its impact on receiving waters.

Response 2. Low Volumes of Wash Water Generated and Infrequent Wash Events Have No Measurable Impact on Receiving Waters.

We do benefit by hearing comments on our draft permit. In this case many marina owner/operators indicated that dock washing is a common practice and they provided estimates of the amount of water used. We understand this and support the practice of routine cleaning. We have addressed this in the permit. In response we have modified the final permit with a minimum threshold where the limits in the permit must be taken into account.

To develop this threshold we back calculated a safe discharge volume using a conservative scenario of a typical dock washing situation. We then used this scenario to determine the maximum amount of chlorinated water that could be used before water quality was potentially threatened. We determined that 356 gallons could be safely discharged per pier per day. For ease of use by all stakeholders we rounded this number down to an even 350 gallons per day per dock.

We arrived at this number in the following manner. Based on the received comments we settled on a scenario dock of 700 linear feet long and 5 feet wide. Typical water depth under a dock is anywhere from

2 to 5 or more feet. For our calculations we used a conservative depth of 2 feet. This gave a volume of water directly under the dock of 7,000 cubic feet or 198,218 liters. Utilizing only the volume of water directly below the dock was additionally conservative since it is highly likely that during washing water would spray out beyond that width and length. It is also known that some of the chlorine in the potable water will be dissipated just by the aeration caused by being sprayed. However, our calculations do not assume any loss by this vector. For the concentration of chlorine coming out of the hose we used 1 mg/L, a typical value for potable water supplies. Since this is an intermittent activity we were concerned with acute impacts only. We set the background concentration of chlorine in the receiving water at half the acute water quality standard, 0.00675 mg/L. Then we solved for the maximum amount of chlorine containing wash water that could be used without potentially endangering the lowest acute chlorine water quality standard. Thus the standard used was 13 µg/L (or 0.013 mg/L), the acute salt water standard.

Thus the concentration of chlorine in the receiving stream is given by the following simplified equation.

$$Cra = \frac{Mrb + Mh}{Vrb + Vh}$$

To determine the maximum amount of chlorinated water that could be used we solved for V_h using the values detailed in the table below.

Variable	Value	Units	Description of Variable
C_h	1	mg/L	Chlorine concentration in the potable water coming out of a hose.
V_{rb}	198,218	Liters	Receiving water volume directly under the pier (liters) before mixing.
M_{rb}	1,338	mg	Mass of chlorine in receiving water, before mixing.
C_{rb}	0.00675	mg/L	Set background chlorine concentration in the receiving water (before mixing) to be half of acute chlorine water quality standard (WQS), i.e. 0.5 x 0.013 mg/L.
M_h	1,346	mg	Mass of chlorine coming out of the hose. M_h is equal to C_h x V_h.
C_{ra}	0.013	mg/L	Maximum receiving water chlorine concentration (i.e. chlorine saltwater acute water quality standard), after mixing.
V_h	**356**	Gallons	Solved for volume of water coming out of a hose that would raise chlorine to WQS (gallons).

Compliance with this 350 gallons limit can be evaluated based on observing the time of washing the dock. The average flow rate from a garden house was measured by one of the commenters at approximately 3.57 gallons per minute. Thus as long as a user does not unceasingly washing with a standard garden hose for more than 98 minutes no further action. Exceeding that time/volume, though, would require abiding by the chlorine best management practices required by the permit.

Concern 3. No Survey of Marina Practices Was Conducted to Determine the Quantitative Effect of Dock Washing.

The concern is that no public survey of marinas practices was conducted to determine the quantitative impact of dock washing on water quality.

Response 3. No Survey of Marina Practices Was Conducted to Determine the Quantitative Effect of Dock Washing.

We did access the necessity of dock washing during permit development. During the cycle of the previous permit (10MA) we received multiple requests from marina owners, from the Department of Natural Resources and from professionals who wanted approval to wash docks at marinas. Comments received on the tentative determination also confirmed that this practice was common.

We also understand that there is a difference between spot washing and professional cleaning. We have heard that common power washing uses 8 gallons/minute of water and uses about 2,500 gallons of water wash a 700 foot long dock. One practice used is heating the water prior to pressure washing for more effective washing. The heat of the water can be above 100 degrees with minimum pressure set at 800 lbs. Inspectors reported water quality violations associated with this activity, like plumes in the water, trash and solids washed off, and use of large volumes of chlorinated water and detergents. We also understand that docks washing needs to be done as it's is a safety issue. Our intent isn't to change behavior normally found at marinas, but we felt compelled to address how this needed activity should be authorized in the new permit.

As a part of our information gathering, we did visit several marinas when we were writing the permit. The marinas visited included large and small marinas with and without boat maintenance. It included a marina with a professional power washing company on-site. We also visited marinas that are not regulated under the permit. With regards to washing of docks, we understand the need to keep the marina presentable and safe. Our intent isn't to change behavior normally found at marinas in the state. Visits to marinas, and feedback from professionals and inspectors who work with marina owners, and testimony from marina owners has been an incredibly valuable tool when updating the permit.

Concern 4. Dock Washing Discharges at Marinas Are Negligible Compared to Baltimore City Flushing of Fire Hydrants.

The commenter does not understand that the flushing of hydrants need permit.

Response 4. Dock Washing Discharges at Marinas Are Negligible Compared to Baltimore City Flushing of Fire Hydrants.

We generally agree with the comment. However the commenter may not have realized that flushing of fire hydrants discharging potable water is subject to regulation. This is actually a reason why we needed to clarify coverage for dock washing in this permit. Hydrant flushing requires a general permit and the

municipality is required to dechlorinate the water that as a discharge. It is considered potentially polluted by residual chlorine. A typical hydrant flush is about 200 gallons. Per COMAR 26.08.03.06, the discharge shall not contain chlorine or chlorine-containing compounds except in non-detectable levels. The non-detectable levels shall be less than 0.1 mg/L.

Concern 5. Other Maryland General Wastewater Permits Allow Potable Water Discharges.

The argument is that Maryland general permits allow potable water discharges without dechlorination.

Response 5. Other Maryland General Wastewater Permits Allow Potable Water Discharges.

The comment is incorrect. Any permit that authorizes direct discharges of potable water needs to have limits for chlorine (COMAR 26.08.03.06). Many marinas have well water and do not chlorinate, and therefore have little potential to impact receiving waters. Marinas use potable municipal water, such as those in the City of Baltimore, have any number of options for dechlorination, including in-line filters available for use with a house, chemical additions, controlling the discharge rate, or holding of the effluent so that chlorine residuals dissipate to non-detectable levels, absorption onto activated carbon, or any other method approved in advance by the Department. Regarding chlorine, we have chosen to limit chlorine based on technology, not based primarily on sampling. Chlorine is a fairly easy pollutant to control, with readily available technology or by allowing chlorine to dissipate prior to using. The practicality of testing the water for such infrequent use suggests the best approach is to rely on best management practices to effectively limit the toxic impacts.

Concern 6. There is no Scientific Evidence that Potable Water Discharges Threaten Aquatic Life.

One commenter was concerned about lack of scientific evidence demonstrating that potable water used in dock washing could affect aquatic life.

Response 6. There is no Scientific Evidence that Potable Water Discharges Threaten Aquatic Life.

Pollutants have been evaluated by the EPA since the writing of the Clean Water Act. MDE uses the data to establish limits to protect Waters of this State. Regarding chlorine, results of tests were reported February 15, 1984, when the EPA announced through Federal Register notices, the publication of 65 individual ambient water quality criteria listing 'Total Residual Chlorine or TRC' as toxic under section 307((a)(1) of the Clean Water Act. If water is drawn from a potable water supply system, there will be residual chlorine. The parameter is TRC, because chlorine may be present either as free chlorine or as an organic compound, such as trihalomethane - of which both are toxic to aquatic life. That's why we're concerned about it.

Thirty-three freshwater species in 28 genera have been exposed to TRC and the acute values range from 28 µg/L for Daphnia magna to 710 µg/L for the threespine stickleback. Fish and invertebrate species had similar ranges of sensitivity. Freshwater chronic tests have been conducted with two invertebrate and one fish species and the chronic values for these three species ranged from less than 3.4 to 26 µg/L, with

acute-chronic ratios from 3.7 to greater than 78. The acute sensitivities of 24 species of saltwater animals in 21 genera have been determined for CPO, and the LC50 range from 26 µg/L for the eastern oyster to 1,418 µg/L for a mixture of two shore crab species. This range is very similar to that observed with freshwater species, and fish and invertebrate species had similar sensitivities. Only one chronic test has been conducted with a saltwater species, Menidia peninsulae, and in this test the acute chronic ratio was 1.162. The available data indicate that aquatic plants are more resistant to chlorine than fish and invertebrate species.

Based on the extensive and peer reviewed studies published in the EPA Gold Book, water quality criteria has been established for all 50 states, and for the territories of the US. The criteria recommended by EPA and now regulated in Maryland are: 19 µg/L as acute criteria, 11 µg/L as chronic criteria for fresh water; and 13 µg/L as acute criteria, 7.5 µg/L as chronic criteria for salt water. An acute criterion is the concentration that is toxic or kills organisms in the water if exposed for 4 hours. The chronic criteria are an exposure that impacts the health of the organism over a longer period. For dock pressure washing, we are most interested in acute criteria, as the chlorine will dissipate over 4 hours to less than the chronic standard for tap water. In other words, the impact of chlorine on aquatic organisms is well documented and understood and regulated in the United States. This was also discussed under response 2.

Concern 7. Endorsement by Landscape Architect Shouldn't Take Place of Professional Engineer.

One commenter was concerned about the types of endorsement (professional engineer vs. landscape architect) required for the No Exposure Certification.

Response 7. Endorsement by Landscape Architect Shouldn't Take Place of Professional Engineer.

The purpose of requiring endorsement by a professional was just so that the Department knew that a capable, unbiased and ethical entity was making the assessment of eligibility for a no exposure certification. To make this process as easy as possible for registrants we try to expand the universe of endorsers whenever we can. Thus we contemplate that there are a number of licensed professionals that could qualify. With this standard, we've concluded that Professional Engineer or Landscape Architect are two groups that should be allowed to issue endorsements on the 'No Exposure Certification'. Both are groups of technically oriented professionals subject to strict licensing requirements and ethical conduct. We also determined that endorsement from the Department of Natural Resources officials – Clean Marina Program was appropriate since have the technical skill to evaluate the marinas and because there regulatory and environmental interests are aligned with the goals of this permit.