

WWE
MEMORANDUM

To: Cherry Creek Basin Water Quality Authority

From: Wright Water Engineers, Inc.
Jane Clary

Date: November 16, 2021¹

Re: Review of Proposed Changes to Cherry Creek Basin Control Regulation Section 72.7

1.0 PURPOSE AND SCOPE OF REVIEW

The Cherry Creek Basin Water Quality Authority (CCBWQA) requested that Wright Water Engineers (WWE) provide an independent review of proposed changes to Section 72.7 of the Cherry Creek Basin Control Regulation to assess whether these changes were more protective of water quality, less protective or neutral. Additionally, WWE provided suggestions related to improved clarity of the proposed edits because a clearly written, understandable regulation is more likely to be implemented effectively and in alignment with the intent of the requirements. This memorandum summarizes general themes and observations from our review, provides specific comments in a few areas, and provides a supporting redline that integrates comments from multiple conference calls that occurred following an earlier draft of this memorandum dated November 11, 2021. The redline of the regulation will likely require some continued editing following additional legal review and input from the Municipal Separate Storm Sewer System Group of the Technical Advisory Committee (MS4 Group).

2.0 GENERAL THEMES AND OVERALL CONCLUSIONS

Overall, the proposed changes to the regulation provided by the MS4 Group are at least as protective as the current regulation (last updated in 2012) and likely more effective since substantial advances in stormwater quality management practice have occurred since the stormwater portion of the regulation was drafted. Following review of the MS4 Group's redline, some additional changes have been made based on conference calls with the MS4 Group, legal review by Davis, Graham and Stubbs (DGS), and a conference call with Colorado Parks and Wildlife staff. Key observations include:

1. The proposed changes are better aligned with current versions of stormwater MS4 permits. This decreases administrative burden for local governments and improves clarity for consultants and contractors working in the basin.

¹ The 11/11/21 Draft Provided to Technical Representatives of CCBWQA Has Been Updated to Synthesize Multiple Recent Conference Calls with MS4 Group and Legal Counsel.

2. Removal of prescriptive lists of BMP types (control measures) from the regulation is appropriate. The proposed edits are oriented to performance and process-based requirements, which is a protective approach for stormwater quality regulation that also allows flexibility for control measure selection and implementation based on site-specific conditions. For example, the Tier 3 post-construction stormwater requirements reference the current MS4 permit post-construction options that include “base design standards” or “design standards” with options related to water quality capture volume, runoff reduction, pollutant reduction standards, and treatment at regional facilities. Ultimately, real-world control measure performance is based on selecting the right control measure for the site conditions, properly designing and sizing the control measure, correctly constructing the control measure, and providing appropriate inspection and maintenance. The Mile High Flood District provides criteria and guidance on the multi-faceted aspects of successful control measures that are in turn used to inform local government criteria. MHFD’s post-construction criteria are currently undergoing a major update, and the proposed edits to Section 72.7 align well with that update.
3. The revised Section 72.7 still goes above and beyond basic stormwater MS4 permit requirements authorized under Regulation 61 in these areas:
 - a. During construction-phase stormwater management, all construction sites require some level of construction control measures. Some of the edits to allowed exemptions are more stringent than the current regulation due to addition of a 1-acre limit related to the exemptions.
 - b. For post-construction stormwater management, some level of control measure implementation is required for development and redevelopment down to 500 square feet of impervious area (Tier 2), as opposed to the MS4 permit threshold of 1 acre of disturbed area. The implementation requirements for Tier 2 are less stringent than requirements for the Tier 3 sites, but this is consistent with the previous Regulation 72. WWE provided additional comments and redlines to the MS4 Group’s redlines to further refine and improve Tier 2 post-construction requirements.
 - c. The revised regulation provides greater emphasis on runoff reduction and green infrastructure, which broaden the regulation’s previous emphasis on “concentration-based” pollutant reduction to recognize the benefit of volume reduction as important component of reducing pollutant loads. For stormwater, we agree that the focus should be on load reduction.
 - d. Stream preservation area requirements are important and have been retained in the proposed regulation revisions. This is an area where additional revision may be appropriate in a future more comprehensive revision of Regulation 72; however, some basic edits are needed to remove the prescriptive list of control measure types, which is outdated.
4. Regarding the simplification of the development/redevelopment tier structure for post-construction control measures so that Tier 3 simply aligns with and complies with MS4 permit requirements, there are two issues related to the proposed change: 1) the question of whether

Tier 3 sites complying with the MS4 permits is as protective as requirements in the 2012 Section 72.7 language, and 2) whether the restructuring of the Tier 2 and Tier 3 thresholds is adequately protective. Our opinion is that these changes are acceptable for the following reasons:

- a. The modern MS4 permit requirements use a “clear, specific and measurable” approach to post-construction stormwater requirements that is more stringent than previous versions of the MS4 permits. These changes focus on performance-based stormwater control measures, as opposed to a list of approved BMPs. Most of the permits applicable in the basin have gone through this “modernization,” with the exception of Aurora’s permit, which is in the queue for renewal.
- b. Regarding simplification of the Tier 2 and 3 tiers, the main issue is whether there would be a significant loss in water quality protection for developments and redevelopments by allowing developments/redevelopments that have 5,000 square feet or more of added impervious area but less than one acre of disturbed area to be categorized as Tier 2, rather than Tier 3. The reason for this proposed change is mainly administrative since Tier 3 sites would comply with MS4 requirements, which are triggered at a one acre of disturbance threshold. We reviewed the recent analysis conducted by R2R Engineers, which showed that for 2020 projects that satisfactorily completed reviews (projects), only one out of 72 projects fell in the portion of the existing Tier 3 category that had more than 5,000 square feet of impervious area but less than 1 acre of disturbed area. The land area associated with this case was 0.02% of land area in projects. Given that Tier 2 sites still need to implement post-construction measures (though less stringently than Tier 3), we believe that the administrative benefits of simplifying the tier system outweigh what has historically been a de minimis issue in practice.

In addition to these overall conclusions, WWE made some additional suggestions to the MS4 Group’s redline that we believe will improve clarity and/or better convey the intent of the proposed edits. Some portions of Section 72.7 can be stated more simply, which typically helps regulated entities retain the bottom-line requirement and hopefully better comply with the regulation. Where more background information would be beneficial, explanatory text can be provided in the Statement of Basis and Purpose instead of Section 72.7 itself. The attached redlines provide WWE’s additional recommended edits, with several of the more substantive recommendations provided below.

3.0 ADDITIONAL COMMENTS AND RECOMMENDATIONS

- 1) **72.2 Definitions:** Although Section 72.2 definitions are identified as outside of the scope of the hearing changes, the MS4 Group’s proposed edits include requested changes by both the Division and the MS4s that included cross-referencing to Regulation 61 for definitions. DGS has requested that the definitions be retained rather than cross-referencing to Regulation 61. Additionally, WWE suggests that the term “enhanced BMP” be deleted since it is not used in the regulation and adds confusion. To address the MS4 Group’s concern about differentiating between permit-required

CMs and Tier 2 CMs, we have suggested using the phrase “Tier 2 CMs” instead of using the term “water quality enhancements.”

2) **72.7 Definitions:**

- a) **Permittee and Owner:** We suggest using the term “MS4 Permittee” to reduce confusion between the MS4 permittee and the developer/owner permittee under the MS4 permits.
 - b) **Suggest retaining the Tier 1 through 3 definitions:** The redline provided by the MS4 Group originally removed the Tier 1 through 3 definitions from the Section 72.7 definitions section. We recommend retaining these as definitions in one concise location so that the regulation can simply refer to Tier 2 and Tier 3 development/redevelopment rather than repeating the description of the tiers throughout the remainder of the Section 72.7. We believe there is a loss of clarity by deleting these definitions. The MS4 Group has agreed with this recommendation and it is reflected in the current draft redline.
- 3) **Add a definition for “Receiving Pervious Area:”** In the ongoing update to the Mile High Flood District’s (MHFD) Storm Drainage Criteria Manual, Receiving Pervious Area is the term being used to describe practices such as grass buffers, grass swales, and landscaped areas that help to minimize directly connected impervious area. This term is also used in quantitative procedures and tools developed by MHFD to better quantify runoff reduction benefits of these practices. This is an important concept to include in this regulation. For more information, see <https://mhfd.org/resources/criteria-manual/usdcm-vol-3-updates/>.
- 4) **Add a definition for “Design Standards:”** The modern versions of various stormwater MS4 permits include definitions for “base design standards” or “design standards” that include multiple performance-based options for meeting post-construction stormwater quality requirements. The intent of adding this definition to Regulation 72 enables a reference to the full range of performance-based standards included in the permits. This would make it clear that options allowed in permits related to the WQCV, runoff reduction, pollutant reduction standard, regional facilities/CMs and others are allowed for Tier 3 development/redevelopment. This was a significant topic of discussion with legal counsel and the MS4 Group following WWE’s November 11, 2021 draft review. Concerns from legal counsel related to cross-referencing various MS4 permits that could change over time. Concerns from the MS4 Group related to the variation in the “design standards,” “base design standards” and lack thereof in Aurora’s current MS4 permit. After consideration of these viewpoints, WWE has added a definition that introduces the concept into the regulation in a general manner; however, reference to the “design standards” in the body of the regulation is more descriptive, as shown in the attached redline. The proposed edits explicitly list the WQCV standard and the runoff reduction standard and then provide a general reference to “other design standards included in MS4 permits that are at least as protective as the WQCV and runoff reduction standards.” As the redline for the Proponent’s Prehearing Statement is prepared in the coming weeks, slight modifications to this concept may be warranted to ensure that concerns raised by legal counsel and the MS4 Group are adequately addressed.

5) **Changes to Construction Control Measures:** Proposed changes generally improved clarity and consistency with the MS4 permit language with a neutral effect on pollutant loading. A few specific comments:

- a) For various exclusions, adding a “one acre or less limit” is generally more stringent.
- b) Inclusion of the “R-Factor Waiver” is appropriate, consistent with the MS4 permit and generally has a neutral effect on water quality, given that sites that comply with the criteria for this waiver are low risk in terms of water quality impacts.
- c) Other: WWE provided some suggestions related to the inspection requirements based on our practical field experience; however, these suggestions have not been included in the final redline based on the Water Quality Control Division’s preference to retain the inspection requirement language as-is.

6) **Changes to Post-construction Control Measures**

- a) Terminology: We suggest using the term “Control Measure” (CM) for all references to control measures, BMPs, water quality enhancements, etc. The Tier 2 “water quality enhancements” are still control measures, even if they are not regulated in MS4 permits. We understand that the MS4s in the basin want to differentiate between control measures with specific requirements under the MS4 permits versus control measures implemented for Tier 2. The attached redline now uses “Tier 2 Control Measure.”
- b) Tier 2 and 3 Control Measures: The draft redline provided by the MS4 Group needed some additional revision for clarity and edits to address legal concerns raised by DGS. These suggestions were discussed on multiple conference calls and have been integrated in the attached redline. The previous redline mixed old requirements and new ideas, which caused some redundancy. WWE suggests this simplification that we believe preserves the intent of the old and new, but in a more straightforward manner:

6) *Post-construction BMPs.*

(i) *For all development and redevelopment, the permittee must require the installation, operation, and maintenance of Post-construction CMs as follows:*

A. *For all Tier 3 development and redevelopment, the permittee must comply with the post-construction requirements for CMs in the applicable MS4 permit. Minimum performance-based design standards include one or more of the following:*

- 1) *Install post-construction CMs that provide a WQCV designed to capture and treat, at a minimum, the 80th percentile runoff event.*
- 2) *Implement runoff reduction practices using CMs designed to infiltrate, evaporate, or evapotranspire a quantity of water equal to 60% of what the calculated WQCV would be if all impervious*

area for the applicable development site discharged without infiltration.

- 3) *Implement other performance-based CMs allowed in the applicable MS4 permit that are at least as protective as Section 72.7(5)i.A.1 or 72.7(5)i.A.2.*
 - 4) *Conduct site-specific analysis to demonstrate that an alternative CM or site condition provides comparable or better nutrient load reduction relative to one or more of the criteria in Section 72.7(5)i.A.1 through 72.7(5)i.A.3.*
- B. *For all Tier 2 development and redevelopment, the permittee must require the installation, operation, and maintenance of Post-construction CMs that meet one or more of the following criteria:*
- 1) *Comply with Tier 3 CM requirements in Section 72.7(6)i.A.*
 - 2) *Incorporate receiving pervious areas that are designed to infiltrate at least 60% of the WQCV for the added or increased impervious area. Such practices minimize directly connected impervious areas by reducing unnecessary impervious areas and routing runoff from impervious surfaces over permeable areas to reduce runoff rates and volumes. Where feasible, natural areas should be protected from disturbance and used for this purpose.*
 - 3) *Conduct site-specific analysis to demonstrate that an alternative CM or site condition provides nutrient load reduction that is at least as protective as one or more of the criteria allowed in Section 72.7(5)i.B.(I) through (III).*
- C. *For all Tier 1 development and redevelopment, the permittee is not required to install post-construction BMPs.*

Additional explanation on some of these changes:

- Moving away from a menu of “approved BMPs” and focusing instead on function and performance is a positive change for the regulation. Performance-based options are better aligned with the MS4 permits and also removed some outdated terminology (e.g., porous landscape detention is now typically referred to as bioretention).
- If 60% or more infiltration of the WQCV from added impervious areas demonstrates compliance, then there is no need to also list the option of the “WQCV does not leave the site.”
- Site-specific analysis—the previous options were unnecessarily wordy. Our edits are intended to simplify the wording to focus on reducing nutrient loads to a level comparable to other options. This incorporates both runoff reduction and concentration reduction in a site-specific analysis.

- For Tier 2 development sites, the focus should be on infiltration and filtration-oriented treatment processes where site conditions allow. We initially recommended adding a prohibition to discourage use of extended detention basins (EDBs) on these smaller developments because MHFD does not recommend their use in drainage areas of five acres or less. For EDBs, the draft update to the EDB fact sheet in Volume 3 states, *“EDBs are not appropriate for drainage areas less than five acres because the size of the orifice needed to release the WQCV over 40 hours becomes very small and cannot practically be protected from clogging.”* Although WWE’s suggested edit was ultimately deleted following additional discussion with the MS4 Group, this principle could be included in guidance from the CCBWQA and/or integrated into future control measure evaluations.
 - General comment: stormwater management in the basin needs to focus on load reduction rather than concentration reduction. Some green infrastructure practices such as bioretention may not significantly reduce phosphorus concentrations; however, the benefits of volume reduction typically significantly outweigh concentration-related aspects of these facilities when media specifications are followed to minimize nutrient leaching. More in-depth evaluation of volume reduction benefits of various control measures is an area that CCBWQA may want to support additional research.
- 7) **Stream Preservation Areas:** This is an important component of the regulation and could use some additional thought and revision. Based on a meeting with Colorado Parks and Wildlife on November 15, 2021, we recommend delaying major revisions to this section until the full triennial review. Suggested revisions are limited to minor changes to remove the specific control measure types that are currently listed and including some additional text related to runoff reduction approaches that include filtration, infiltration, and receiving pervious area. WWE believes that there are likely significant positive opportunities to improve water quality that could be considered in a modernized version of this portion of the regulation. A few ideas for future consideration include:
- a) WWE supports preservation of wide riparian corridors—so setbacks could be a tool for consideration by local governments (even if not included in the regulation itself).
 - b) Stream reclamation can provide significant water quality benefits; however, some additional thought might be needed on how this should be integrated into this section because a piecemeal approach on a property-by-property basis is not a good approach for stream reclamation, which needs to be implemented in an integrated manner throughout a stream reach.
 - c) Provisions to preserve healthy native vegetation could be considered.
- 8) **Editorial:** WWE provided editorial suggestions in the attached redline. The final draft will need to go thorough editorial review related to typos introduced through redline-strikeout process (e.g., double periods, spacing between words).

- 9) **Other:** Section 72.3: In a future triennial review, this section needs review and likely significant editing to move away from concentration-based management for the stormwater component of the regulation. If the Basin Authority wants to encourage use of Green Infrastructure approaches, then a shift is needed to load-based reduction.

Attachment: Redlined Section 72.7 (subject to change)