

Proponents Pre-Hearing Statement

BEFORE THE WATER QUALITY CONTROL COMMISSION OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

PROPOSER'S PREHEARING STATEMENT OF THE CITY OF AURORA WATER DEPARTMENT

FOR CONSIDERATION OF THE ADOPTION OF PROPOSED MODIFICATIONS TO THE PROPOSED NEW USE OF OIL AND GAS OPERATIONS FOR RECLAIMED WATER, REGULATION #84 (5CCR1002-84)

The City of Aurora, acting by and through its Utility Enterprise or the Aurora Water Department (“Aurora Water”) hereby files its proponent’s pre-hearing statement (“Statement”) in support of proposed revisions to the Reclaimed Water Control Regulation #84, 5CCR 1002-84 (“Regulation #84”) before the Water Quality Control Commission (“Commission”). In support of its proposed Regulation #84 revisions, Aurora Water states the following:

I. EXECUTIVE SUMMARY

Aurora Water proposes to modify Regulation #84 to allow oil and gas operations to use categories 2 and 3 reclaimed water (“Proposal”). This Proposal includes additional Regulation #84 definitions and conditions intended to ensure compliance with the Commission’s mandate to protect public health.

In this Statement (including its Exhibits and attachments) Aurora Water seeks to clarify and further describe the legal and technical basis for its Proposal¹. Aurora Water’s detailed modifications to Regulation #84 and statement of basis and purpose is attached hereto as Exhibit 1.

As discussed below Aurora Water’s Proposal is supported by Colorado law while matching a need for water to a corresponding source of reclaimed water that is economical, sustainable, and environmentally protective.

A. New Proposed Use

Colorado law allows the Commission to approve new reclaimed water uses. C.R.S. § 25-8-205(1)(f) states “...the commission may promulgate control regulations... [t]o describe requirements, prohibitions, standards, and concentration limitations on the reuse of reclaimed domestic wastewater for purposes other than drinking that will protect public health and encourage the reuse of reclaimed domestic wastewater...”.

Aurora Water’s Proposal is within the authority statutorily granted to the Commission. Further, Aurora Water’s Proposal seeks to help close a growing water supply gap in Colorado, provide additional sustainable water options for water users, and encourage the beneficial use of reclaimed domestic wastewater in Colorado. With the appropriate conditions as proposed herein, this new use will further facilitate the safe and efficient use of Colorado’s limited water resources.

B. The Proposal is Protective of Public Health and the Environment.

Aurora Water’s Proposal includes conditions intended to protect public health. The Proposal also avoids impacts to the environment because it requires a site manager to actively manage the User Plan to Comply with the additional proposed conditions set forth in section 84.9 of Regulation #84. The User Plan to Comply assists the Water Quality Control Division (“Division”) in monitoring user compliance under Regulation #84.

¹ The Commission’s April 10, 2020 regulatory notice included Aurora Water’s original proposal (set forth in the Commission notice attached hereto as Exhibit 1). Hereinafter Aurora Water’s original April 10, 2020 proposal and this updated and clarified proposal shall together be referred to as the “Proposal” unless indicated otherwise.

II. BACKGROUND

Aurora Water's Proposal is driven by: (A) its management philosophy; and (B) the 2015 Colorado State Water Plan.

A. Reclaimed Water as a Sustainable Alternative Source for Oil and Gas Operations

Aurora Water's water management philosophy is that the most appropriate source water should be used for each water use (non-potable water sources for non-potable uses, and potable water for potable uses). By applying non-potable water to non-potable uses, Aurora Water is able to preserve potable treatment plant capacity, conserve its water supplies, and more efficiently use its non-potable sources.

Oil and gas operations currently use other non-potable water sources for which reclaimed water would be an appropriate substitute source. The decision to provide reclaimed water service to oil and gas operation sites needs to be made on a case-by-case basis based upon the following conditions: (1) the user's ability to meet the proposed conditions for reclaimed water service; (2) the volume of reclaimed water requested; (3) the time frame when the reclaimed water is needed; and (4) the ability of the user to comply with the proposed conditions for reclaimed water use. For members of the oil and gas community who can meet these conditions, reclaimed water provides a sustainable alternative water source. Oil and gas operations use of reclaimed water presents an opportunity to promote and provide flexibility in meeting the State's water supply gap as discussed further below.

B. The State Water Plan

The 2015 Colorado State Water Plan ("State Water Plan") identifies a need to modify Regulation #84 to include new uses.

The State Water Plan identifies a significant water supply gap ranging between 310,000 - 560,000 acre-feet per year by 2050 throughout the State of Colorado. (Colorado's Water Plan, p. 6-20.)² Although increased use of reclaimed water will not, by itself, close the supply gap, the State Water Plan points to increased use of reclaimed water as one of several means of minimizing the gap.

Various goals and actions identified in the State Water Plan encourage "...the development of reuse solutions to maximize fully consumable water ³supplies..." and the evaluation of "...regulations to foster reuse of water supplies while protecting public health and the environment." The State Water Plan states that:

"[a]s Colorado plans its reuse future, continued flexibility will be paramount to addressing water resource challenges. To many municipalities, reuse is critical in addressing [and] identifying supply gaps in Colorado. Nonetheless, while reusing wastewater can help close the water supply gap, appropriate public health and environmental protections must remain in place. Without the ability to expand reuse, the gains that are forecasted to foster permanent growth in the reuse of limited water supplies may not be realistic."

(Colorado's Water Plan p. 6-76).²

To help facilitate additional reuse, the State Water Plan anticipates that the Colorado Water Conservation Board and Colorado Department of Public Health and Environment will "...identify potential change [of water quality regulations and reuse water] that fosters permanent growth in the reuse of limited water supplies, and that protects public health and the environment." (Colorado's Water Plan, p. 6-81). To close the gap, a goal and action identified in Chapter 10 of the State Water Plan is to "[e]ncourage the development of reuse solutions to maximize fully consumable water supplies." (Colorado's Water Plan, p. 10-14.).⁴

² Colorado's Water Plan, Chapter 6.2, available at:

<http://cwcbweblink.state.co.us/weblink/0/doc/199515/Electronic.aspx?searchid=69705cbe-d4c1-446a-a4b9-00a411d2dad7>

³ Colorado's Water Plan, Chapter 6.3, available at:

<http://cwcbweblink.state.co.us/weblink/0/doc/199516/Electronic.aspx?searchid=69705cbe-d4c1-446a-a4b9-00a411d2dad7>

⁴ Colorado's Water Plan, Chapter 10, available at:

<http://cwcbweblink.state.co.us/weblink/0/doc/199499/Electronic.aspx?searchid=80d50cb3-95bf-405c-bfa5-587c633c7136>

III. STAUTORY AUTHORITY AND REGULATION #84 SUMMARY

Colorado law grants the Commission the authority to approve new reclaimed water uses, and the Commission may exercise its discretion to modify Regulation #84 if the Commission sees fit.

A. Statutory Authority

Colorado defines reclaimed domestic wastewater as “...wastewater that has received treatment that enables the wastewater to meet the requirements, prohibitions, standards, and concentration limitations adopted by the commission for subsequent reuses other than drinking.” C.R.S. § 25-8-103(17.5). Regulation #84 more specifically defines reclaimed water as: “...domestic wastewater that has received secondary treatment by a domestic wastewater treatment works and such additional treatment as to enable the wastewater to meet the standards for approved uses.”⁵ § 84.5(20); 5 CCR 1002-84.

The provisions of C.R.S. §§ 25-8-202, 25-8-205(1) and 25-8-308(1)(h) provide the specific statutory authority for adoption of amendments to Regulation #84. C.R.S. § 25-8-205(1)(f) provides that the Commission may:

“...promulgate control regulations . . . [t]o describe requirements, prohibitions, standards, and concentration limitations on the reuse of reclaimed domestic wastewater for purposes other than drinking that will protect public health and encourage the reuse of reclaimed domestic wastewater...”

C.R.S. § 25-8-205(1)(f).

The Division is also authorized to “[i]mplement a program, in accordance with rules and orders of the commission, for the reuse of reclaimed domestic wastewater for purposes other than drinking.” C.R.S. § 25-8-308(1)(h).

B. Regulation #84

Regulation #84 was adopted as a control regulation on October 10, 2000 pursuant to C.R.S. § 25-8-205(1)(f). In adopting Regulation #84, the Commission stated:

“It is the intent of the Commission that this regulation further promote reuse of reclaimed domestic wastewater by providing a comprehensive framework which, when followed, will assure responsible management of operations and a product of a quality compatible with the state's goals of protecting the public health and the environment.”

(Reg. #84; 2000 Statement of Basis and Purpose (“SOBP”) p. 12.)

Regulation #84 is a water quality standard regulation. It defines three categories of reclaimed water, with Category 1 representing the minimum water quality standards and Category 3 representing the most protective water quality standards. The higher the category of reclaimed water, the more uses for which reclaimed water may be applied.

Depending on the category, reclaimed water may be used for a variety of uses including industrial, landscape irrigation, commercial, fire protection and non-edible food crop irrigation (Reg. #84, 84.8 Table A p. 6.). Although originally limited to landscape irrigation (Reg. #84, 2000 SOBP p. 13.), additional non-irrigation uses have been added since 2000, including cooling towers, closed loop cooling systems, fire protection, zoo operations, and commercial laundries (Reg. #84, 84.8 Table A p. 6.). To protect public health, certain uses for reclaimed water are subject to additional conditions as set forth in Regulation #84 sections 84.8(A) and 84.9.

⁵ “Domestic Wastewater” is defined by Sec. 22.2(9) of 5 CCR 1002-22 as “chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution which are discharged from a dwelling, building or other structure.”

IV. AURORA'S STAKEHOLDER PROCESS

Aurora Water led a stakeholder engagement process from July 2019 through April 2020. The purpose of the process was to provide stakeholders and the public an overview of Aurora Water's Proposal and receive input regarding benefits, concerns, and additional considerations. Aurora Water received valuable feedback which is addressed in Exhibit 2.

Aurora Water organized and held nine stakeholder meetings concerning its Proposal. The meetings focused specifically on the proposed use of reclaimed water for oil and gas operations. Some stakeholder meetings included technical presentations from industry representatives. The meeting agendas, presentations, meeting minutes, and supporting documents are maintained on the Aurora Water Department's webpage, *Regulation 84 Stakeholder Process*⁶. The information maintained on the website was available for stakeholder and public access.

Each stakeholder meeting was well attended by stakeholders both in person and by phone. A few meetings also had the option to use a webhosted conference service that allows for remote sharing of presentations. Aurora Water used Skype for Business for those meetings. Additionally, Aurora Water adjusted to COVID-19 related stay at home requirements and held its April stakeholder meeting using web technologies that allowed public and stakeholder participation. Copies of documents were provided to participants in advance of the meetings and at each meeting to facilitate and encourage discussion. In addition to the stakeholder engagement process, a website was launched by Aurora Water and linked with the Colorado Water Quality Forum ("CWQF") to better communicate with stakeholders, to provide news updates, and supplemental materials. Stakeholder meeting materials can be viewed at Aurora Water's *Regulation 84 Stakeholder Process* website.

Table 1. below contains a chronological summary of Aurora Water's work leading up to its Proposal.

Table 1.	
Date	Discussion
May 2019	Aurora Water conducted a planning meeting to scope out the process of proposing a new approved use to Regulation #84 – Reclaimed Water. Aurora Water invited staff from oil and gas industries, WQCD, Aurora's Oil and Gas Advisory Committee, and the public (a list of associations and citizens obtained from CDPHE & COGCC) to participate in the planning meeting.
July 2019	Aurora Water held its initial stakeholder meeting to explain Aurora Water's issue and desire for a proposed new use for reclaimed water in Regulation #84. Stakeholders were recruited from the attendees and the anticipated schedule for developing the new use proposed regulation was agreed upon.
August 2019	A stakeholder meeting was held including a presentation by Aurora Water staff regarding planning and future Aurora Water supply. Aurora Water's <i>Regulation 84 Stakeholder Process</i> website was introduced.
September 2019	A stakeholder meeting was held and included presentations by the Colorado Oil and Gas Association, Conoco Phillips, and the Colorado Oil and Gas Conservation Commission (providing an updated on produced water regulations).

⁶ Regulation 84 Stakeholder Process page:

https://www.auroragov.org/residents/water/water_system/water_quality/regulation_84_stakeholder_process

November 2019	A stakeholder meeting was held including presentations from workgroups regarding potential areas of concern for human health and the environment by reclaimed water. This information was used to develop additional conditions for the proposed use.
December 2019	A stakeholder meeting provided discussion on the additional conditions for the proposed use.
January 2020	A stakeholder meeting included a presentation of the proposed additions to Regulation #84 and discussion of modifications to the proposed regulation.
February 2020	A stakeholder meeting included dialogue regarding the proposed definitions and use of lay flat hose by oil and gas operations.
March 2020	A stakeholder meeting discussed the comments provided by the WQCD, oil and gas association, and Aurora Water regarding the proposed additions to Regulation #84.
April 2020	A stakeholder meeting discussed the topics of labeling/identification of lay flat hoses and bacteriological monitoring of the reclaimed water at the oil and gas site.

V. Details of Aurora Water's Proposal

Aurora Water's Proposal includes several practical modifications to Regulation #84 to allow for the use of reclaimed water for oil and gas operations. This section addresses the Proposal's: (A) new and modified definitions; (B) authorized reclaimed water uses; (C) necessary additional conditions; (D) User Plans to Comply; and (E) site manager responsibilities. Less substantive changes are also set forth in Exhibit 2.

A. New and Modified Definitions

Aurora Water Proposal includes several new definitions for section 84.5. The addition of the following defined terms is required to clarify new and existing terms used in Regulation #84:

1. "Lay-flat hose";
2. "Oil and Gas Operations"; and
3. "Site".

(Exhibit 2, 84.5(28), (37), (46).)

First, the definition proposed for "Lay-flat hose" was crafted from descriptions used by hose manufacturers and oil and gas field service providers that describes the visual appearance, construction, and use of the hose for transferring large volumes of liquids for use by industrial facilities. Stakeholders representing the American Petroleum Institute ("API") presented on their standard *Recommended Practice 15 WT, Operations for Layflat Hose in Oilfield Water Applications*⁷, which promotes safety across the oil and natural gas industry. The information shared by these stakeholders was also used to develop Alternative Conditions in section 84.9.

Second, the definition proposed for "Oil and gas Operations" was taken from COGCC rules, Series 100 – Definitions⁸. The stakeholders agreed that using this definition promotes consistency between regulatory agencies and eliminates confusion for the oil and gas industry.

⁷ API Recommended Practice 15 WT, Operations for Layflat Hose in Oilfield Water Applications:

<https://www.api.org/products-and-services/standards/important-standards-announcements/recommendedpractice15wt>

⁸ COGCC Rules, Series 100 – Definitions: <https://cogcc.state.co.us/documents/reg/Rules/LATEST/100Series.pdf>

Third, the existing definition of “Site” was modified to incorporate language for conveyances or storage of reclaimed water under the operational control of the user. The definition expands the responsibility and accountability of the user by including equipment that is under operational control of the user outside of the physical boundaries of the site where the reclaimed water is used. Including conveyance and storage in the definition of “site” is protective of human health and the environment through notification signage, spill control and countermeasure, and proper maintenance of this equipment.

B. Authorized Reclaimed Water Uses

“Oil and Gas Operations” has been added to Section 84.9 Table A (“Table A”) as an approved use under industrial applications. In addition to identifying approved uses, Table A specifies the category of water quality that is allowed by oil and gas operations users. Stakeholders agreed that categories 2 and 3 should be allowed for oil and gas operations use. The dialogue originally focused on allowing all three categories; however, it was eventually agreed that category 1 reclaimed water might not be protective of human health and should therefore not be allowed. However, stakeholders agreed that additional consideration would be given to category 1 water use in the future based on knowledge and experience.

Aurora Water concurs with the stakeholders that only categories 2 and 3 reclaimed water use be allowed subject to the additional conditions specified in Table A. Stakeholders voiced concerns regarding potential exposure to the public due to lay flat hose visibility over long distances and the public’s right to know the contents in the lay flat hose conveyance system. The Proposal addresses those concerns by incorporating additional conditions.

C. Oil and Gas Operations – Additional Conditions

Aurora Water’s Proposal includes modifications to Exhibit 2’s Table A. The following Table 2. includes a discussion of each modified section:

Table 2.	
Modified Section	Discussion
84.9 (A) (13)	Modifications here provide that all oil and gas operation users staff receive advanced training before their initial shift and annually thereafter. Signatures of the staff receiving the training are required to be obtained and maintained on site for Treater or Division review.
84.9 (A) (16)	The signage requirement was modified by removing the phrase “to irrigate crop”. This expands the use of this alternative condition, #16, to be applied to any of the approved uses in Table A.
84.9 (A) (37)	Requirements for Lay-flat hose, couplings, and other appurtenances was added to the list. Lay-flat hose is a staple of the oil and gas industry for conveying large volumes of liquids. This temporary conveyance system is efficient and offers numerous environmental benefits over buried, permanent conveyance infrastructure. Stakeholders provided significant input on this condition as it has the potential to have public view or contact. The labeling, signage, and spill prevention practices identified in this condition are intended to protect human health through awareness and education.
84.9 (A) (38)	Vehicle and tank trailer used for hauling reclaimed water was established for situations when Lay-flat hose

	use is impractical, or a large volume of reclaimed water is not needed by a User.
84.9 (A) (39)	Delivery of reclaimed water through temporary conveyances must meet the definition of Lay-flat hose or be constructed of HDPE material.
84.9 (A) (40)	Disposal of reclaimed water from any storage, conveyance, or other source whereby reclaimed water was used must be properly managed accordingly to not create a point source discharge or a reportable spill. The temporary use of Lay-flat hose or storage tanks implies their mobility and short life span at some User sites. This condition requires Users to responsibly and properly manage reclaimed water disposal under a NPDES or CPDS permit or use the reclaimed water for an approved use.
84.9 (A) (41)	Notification to the Treater and Division of the installation or removal of a temporary conveyance system (Lay-flat hose or HDPE material). The notification allows the Treater and Division time to inspect the conveyance for compliance with Regulation #84 requirements, the Notice of Authorization (“NOA”) and the User Plan to Comply (“UPC”)

D. User Plan to Comply

The User Plan to Comply requirements for oil and gas operations, section 84.12 (J) identifies the information the Treater needs from the User to properly manage the reclaimed water for the approved use. The information is the same as is required by all industrial users with the addition of requiring information regarding how the site will meet the additional condition requirements, including temporary conveyance, storage, and on-site use.

E. Site Manager Responsibilities

Aurora Water added requirements for the Treater and Site Manager of the proposed new use in Regulation #84, section 84.10 (D). Though the title of Section 84.10 is narrowly described as “...for non-commercial growing operation, resident-controlled food crop irrigation and edible and non-edible hemp”, the stakeholders felt strongly that a site manager was needed at oil and gas operations. To facilitate this direction, Aurora Water added section 84.10 (D) treater and site manager responsibilities for oil and gas operation with reclaimed water. A summary description of the requirements is as follows:

84.10 (D) (1) (a) and (b)

These sections are intended to describe Treater responsibilities for the use of reclaimed water at oil and gas operation sites and identifies the general and inspection activities that Treaters perform while overseeing the use at approved user sites. They include a review of the User plan to comply for completeness and accuracy; verify signage and labeling requirements are intact; and as necessary, implement appropriate procedures to obtain compliance with the user notice of authorization and User plan to comply.

84.10 (D) (2) (a) and (b)

These sections are intended to described Site Manager responsibilities for the use of reclaimed water at oil and gas operation sites identifies the general and inspection activities required of the oil and gas operations user’s site manager. They include site inspection to assess compliance with the notice of authorization (NOA) and User plan to comply (UPC); implementation of appropriate procedures and actions intended to achieve compliance with the NOA and UPC; training and education of site personnel, including contractor staff; maintain a current and

accurate UPC on site, to include communicating any revisions to the Treater; and report potential violations or non-compliance to the Treater.

VI. Practical Basis for Proposal

This section contains a summary of the practical basis for oil and gas operations as a new use and details some of the evidence that Aurora Water will present at the August 10, 2020 rulemaking hearing.

F. Basis for Oil and Gas Operations Categories 2 and 3 Use of Reclaimed Water

The adoption of rules and regulations for oil and gas operations as a new use will not increase the potential risk to human health or the environment. With the appropriate conditions as proposed herein, this new use will further facilitate the safe and efficient use of Colorado's limited water resources.

Using categories 2 or 3 reclaimed water while adhering to the additional conditions proposed herein is protective of human health and the environment. Each of the Commission's statements of basis and purpose in section 84.21 reiterate that the reclaimed water category and standards are protective of human health. Treaters and Users that comply with the regulation, their notice of authorization, any additional conditions as assigned, and their User plan to comply are protective of human health as this is the intent and outcome of compliance with the regulation. Aurora Water's proposal is based on this perspective that Treaters and Users understand the significance of water in Colorado and intend to comply with the Regulation #84 and specifically section 84.21.

Aurora Water's Proposal is based upon the following five key points:

1. Hydraulic fracturing is a recognized and regulated industrial practice in Colorado. The Colorado legislature has authorized municipalities to regulate hydraulic fracturing operations that occur within their jurisdiction.⁹
2. Aurora Municipal Code Section 146-1207 regulates oil and gas facilities within its jurisdiction.¹⁰
3. Aurora Municipal Code Section 138-154 prohibits any person within the City's jurisdiction from using any independent water source.¹¹
4. Chapter 6.3 of the Colorado Water Plan identifies reuse as a critical component of the strategy to address future water needs.¹²
5. Triple bottom line (environmental, social, economic) benefits that are a component of Aurora Water's proposal include: better use of water that was previously used and can be used to extinction according to Colorado water law, saves the municipality by allowing more drinking water for its intended purpose, saves the industry money by not buying drinking water at the premium price and brings in additional revenue to Aurora Water for a system that it highly dependent on seasonal users.

G. Aurora Water's Evidence to be Presented at the Hearing

VII. Conclusion and Adjustment Requested

For the reasons addressed herein, Aurora Water's Proposal to allow categories 2 and 3 reclaimed water to be used by oil and gas operations in accordance with the proposed changes to Regulation 84 is protective of public health and the environment. Aurora Water's Proposal is supported by Colorado law while matching a need for water to a corresponding source of reclaimed water that protects public health, the environment, and is sustainable.

⁹ The Local Government Land Use Enabling Act, C.R.S. § 29-20-101 *et. seq.*, and the Land Planning Act, C.R.S. § 35-15-401 *et seq.*, delegate to local governments the authority to enact land use regulations that regulate, *inter alia*, the impacts of oil and gas development.

¹⁰ City of Aurora Building and Zoning Code (Ch. 146, art. 12, Div. 1. – General Uses),
https://library.municode.com/co/aurora/codes/building_and_zoning?nodeId=BUZOCO_CH146ZO_ART12SURESPU_SAC_DIV1GEUS_S146-1207OIGAFA

¹¹ Aurora, Colorado Municode – use of independent water system, cross connection; use of Dawson Aquifer:
https://library.municode.com/CO/Aurora/codes/code_of_ordinances?nodeId=CICOAUFCOVOII_CH138UT_ARTVW_ASE_DIV1GE_S138-154USINWASYCRCOUSDAAQ

¹² Colorado's Water Plan, <https://www.colorado.gov/pacific/cowaterplan/plan>

With regard to public health, Aurora Water's proposed safeguards, which are based on sound science, will prevent unintended exposure to reclaimed water, resulting in a level of risk that is commensurate with the intended use and associated potential exposure pathways.

With regard to the environment, Aurora Water's proposal has been structured to ensure reclaimed water is delivered to and stored at oil and gas sites in such a manner as to prevent any environmental impacts; however, the proposal also includes measures that must be taken in the event of an inadvertent or accidental spill to ensure immediate response to minimize impacts. Furthermore, water used by oil and gas operations will meet the existing water quality standards and conditions for categories 2 or 3 reclaimed water under Regulation #84 and will therefore, be as protective as reclaimed water used by other industrial and irrigation users of category 2 and 3 reclaimed water.

Finally, Aurora Water's proposal serves to promote the expansion of reclaimed water use. With the availability of a new use, users of reclaimed water will be able to utilize additional means to maximize their use of reclaimed water. The addition of this new use supports expansion of reclaimed water, but in addition, provides a cost-effective means of distributing reclaimed water through temporary systems where centralized reclaimed water distribution systems do not reach.

For these reasons, Aurora Water requests that the Commission approve its proposal to modify Regulation #84 as set forth in this Statement and its exhibits.

Exhibit 1

Aurora Water continued to host several stakeholder meetings after providing our original proposal to the Water Quality Control Commission. Based on discussions and feedback received during those stakeholder meetings, there have been four (4) modifications to our original proposal.

- 1) The definition of user plan to comply was modified to correct a typographical error referencing section 84.11. The definition was modified by inserting the correct reference to Section 84.12.
- 2) Section 84.9 Table A was modified by organizing Table A in alphabetical order and moving the row for Oil and Gas Operations below Non-Evaporative Industrial Processes. In addition, an Additional Condition requirement was added to the new proposed use of Oil and Gas Operations (section 84.9 - Table A). See comment 4 below for additional information
- 3) Additional Condition, section 84.9(A) (37) (b) was modified by removing the work ‘can’ and replacing it with ‘must’ to clearly annotate that this is a requirement of the regulation to be completed by the user. Also, clarified the acronym UPC meant user plan to comply so not to confuse it with the Uniform Plumbing Code.
- 4) Additional Condition 42 was developed and added to the list in section 84.9 (A) (42). This additional condition requires analysis of the reclaimed water for adenosine triphosphate (ATP) and oxidation-reduction potential (ORP) to determine the amount and type of biocide an operator will add to the reclaimed water. The testing frequency shall be every 10 calendar days, unless an alternate frequency is identified in the user plan to comply or the reclaimed water is not being delivered to the site. Oil and gas operations use these tests to determine the dosage of biocide to add to the source water to protect their interests in the downhole properties of the well and formation.

1 DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

2 Water Quality Control Commission

3 REGULATION NO. 84 - RECLAIMED WATER CONTROL REGULATION

4 5 CCR 1002-84

5 [Editor's Notes follow the text of the rules at the end of this CCR Document.]

7 84.1 AUTHORITY AND MATERIALS INCORPORATED BY REFERENCE

- 8 (A) This regulation is promulgated pursuant to the Colorado Water Quality Control Act (CWQCA) section 25-8-
9 101 through 25-8-703, C.R.S. In particular, it is promulgated under sections 25-8-202, 25-8-205, and 25-8-
0 205.8, C.R.S.

- 1 (B) Materials Incorporated by Reference

- 2 (1) Date of Incorporation

- (2) The requirements promulgated by the U.S. Food and Drug Administration incorporated by reference are available, at no cost, in the online edition of the Code of Federal Regulations (CFR) hosted by the United States Government Printing Office, online at www.govinfo.gov.

- (3) All other materials incorporated by reference may be examined at any state publications depository library or the Department at:

0 84.2 PURPOSE

The purpose of this regulation is to establish requirements, prohibitions, standards and concentration limits for the use of reclaimed water to protect public health and the environment while encouraging the use of reclaimed water.

3 84.3 SEVERABILITY

4 The provisions of this regulation are severable, and if any provisions or the application of the provisions to any
5 circumstances is held invalid, the application of such provision to other circumstances, and the remainder of this
6 regulation shall not be affected thereby.

84.4 APPLICABILITY

38 This regulation applies to the use of reclaimed water treated by centralized reclaimed water treatment systems and
39 localized reclaimed water treatment systems for landscape irrigation, agricultural irrigation (including crops not
40 grown for human consumption, Non-Commercial Food Crop Growing Operation, Commercial Food Crop Growing
41 Operation and Edible and Non-Edible Hemp), fire protection, industrial, commercial, and toilet and urinal flushing
42 uses identified in section 84.9 of this regulation. This regulation does not apply to wastewater that has been treated
43 and released to state waters prior to subsequent use or to wastewater that has been treated and used at a
44 domestic wastewater treatment plant site for landscape irrigation or process uses. This regulation applies to
45 individual treaters and users, as defined below,

46 **84.5 DEFINITIONS**

47 The following definitions shall apply:

- 48 (1) Agricultural Irrigation means use of reclaimed water for irrigation of crops and trees, including crops not
49 grown for human consumption, Non-Commercial Food Crop Growing Operation, Commercial Food Crop
50 Growing Operation and Edible and Non-Edible hemp for human consumption.
- 51 (2) Agricultural Irrigation User means the entity or person legally responsible for a site that uses reclaimed
52 water for the purpose of agricultural irrigation.
- 53 (3) Agronomic Rate means the rate of application of reclaimed water and associated nutrients to plants that is
54 necessary to satisfy the plants' nutritional and watering requirements while strictly minimizing the amount of
55 nutrients that run off to surface waters or which pass below the root zone of the plants.
- 56 (4) Approved Cross Connection Control Device or Method has the same meaning as control device as defined
57 in section 11.37(1)(c) of Regulation 5 CCR 1002-11 (Regulation #11).
- 58 (5) Automated Vehicle Washing means the cleaning of vehicles and associated equipment, such as trailers,
59 where automated equipment is used to apply spray water, cleaning products, and/or rinse water, where
60 there is no public exposure to reclaimed water under normal operations and only limited and controlled
61 contact with reclaimed water by trained workers.
- 62 (6) Bag Filters means pressure–driven separation devices that remove particulate matter larger than 1
63 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric
64 filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the
65 outside.
- 66 (7) Cartridge Filters means pressure-driven separation devices that remove particulate matter larger than 1
67 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-
68 rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the
69 cartridge to the inside.
- 70 (8) Centralized reclaimed water treatment system or Centralized System means a domestic wastewater
71 treatment works that receives domestic wastewater from a diverse service area for treatment to produce
72 reclaimed water for beneficial use where the service area has meaningful inputs from industrial or other
73 diluting sources.
- 74 (9) Certified Cross-Connection Control Technician has the same meaning as the term "certified cross-
75 connection control technician" as defined in section 11.39(2)(h) of 5 CCR 1002-11 (Regulation #11).
- 76 (10) Certified Operator has the same meaning as the term "certified operator" as defined in section 100.2(3) of
77 Regulation 5 CCR 1003-2 (Regulation #100).
- 78 (11) Commercial Growing Food Crop Operation means a "covered farm" under the Food Safety Modernization
79 Act, Produce Safety Rule. 21 CFR 112.4.
- 80 (12) Commercial Laundry means a facility that uses water to clean clothing and other textile products where
81 only laundry workers operate the washing machines and cleaning equipment, where there is no public

- 82 exposure to reclaimed water under normal operations and only limited and controlled contact with
83 reclaimed water by trained workers.
- 84 (13) Commercial User means a person who uses reclaimed water in the operation of a business listed in Table
85 A of section 84.8.
- 86 (14) Conventional Filtration means a series of processes including coagulation, flocculation, sedimentation (or
87 equivalent form of clarification), and granular media filtration.
- 88 (15) Cultivator means any individual or individuals that are regularly working with irrigated crops, irrigation
89 and/or soils that are irrigated with reclaimed water.
- 90 (16) Direct Filtration means a series of processes including coagulation and granular media filtration but
91 excluding sedimentation.
- 92 (17) Division means the Water Quality Control Division of the Colorado Department of Public Health and
93 Environment.
- 94 (18) Edible Hemp means industrial hemp seeds, oils, flowers and other hemp materials used to make edible
95 products, dermal products, and internal use products for human and animal consumption.
- 96 (19) Evaporative Industrial Processes means the use of water in an industrial process where the benefit of such
97 use requires the evaporation of water, requiring additional make-up water, where there is no public
98 exposure to reclaimed water under normal operations and only limited and controlled contact with
99 reclaimed water by trained workers.
- 100 (20) Fire Protection Nonresidential means firefighting activities where water is made available at fire hydrants
101 located in areas other than residential, from fire trucks, and in fire sprinkler and interior standpipe systems
102 in buildings in commercial/industrial areas.
- 103 (21) Fire Protection – Residential means firefighting activities where water is made available at fire hydrants in
104 residential areas, from fire trucks, and in fire sprinkler and interior standpipe systems at any structure
105 where the occupants do not have access to the plumbing for maintenance and repair.
- 106 (22) Flood and Sheet Irrigation means irrigation whereby water is delivered to a field by ditch, pipe or some
107 other means and flows over the ground through the crop.
- 108 (23) Industrial Hemp means a plant of the genus cannabis and any part of the plant, whether growing or not,
109 containing delta-9 tetrahydrocannabinol concentration of no more than three-tenths of one percent on a dry
110 weight basis (HB-35-61-101(7)17).
- 111 (24) Industrial User means a person who uses reclaimed water for industrial processes or in the construction
112 process. Approved industrial uses are listed in Table A of section 84.9.
- 113 (25) Irrigation System means the facilities, piping and other equipment used by a Landscape Irrigation User or
114 an Agricultural Irrigation User.
- 115 (26) Landscape Irrigation means irrigation of areas of grass, trees, and other vegetation that are accessible to
116 the public, including, but not limited to, parks, greenbelts, golf courses, and common areas at apartments,
117 townhouses, commercial/business parks, and other similar complexes.
- 118 (27) Landscape Irrigation User means a person who uses reclaimed water for the purpose of landscape
119 irrigation.
- 120 (28) Lay-flat hose means an industrial, light weight, heavy duty, flexible hose with supporting fabric built into the
121 walls, which lies flat when empty that is used to transfer large volumes of liquid under pressure. Numerous
122 lengths of hose may be connected using fittings that produce leak-free connections. Lay-flat hoses used to
123 convey reclaimed water must be selected, designed, installed, implemented and maintained in accordance
124 with best industry practices appropriate for the system and conditions present and the manufacturer's

125 specifications (including installation and implementation specifications) and to comply with the
126 requirements in Regulation 84.

127 (29) Localized Reclaimed Water Treatment System or Localized System means a domestic wastewater
128 treatment works that receives domestic wastewater from a single building, multiple buildings within a single
129 property or area bounded by dedicated streets or ways, or a district designated by a City or County for
130 treatment to produce reclaimed water for beneficial use where the source water does not have meaningful
131 inputs from industrial or other diluting sources.

132 (30) Management User means the legally responsible entity that manages a Resident-Controlled Food Crop
133 Irrigation site that is responsible for educating residents, and, to the maximum extent practicable, ensuring
134 that residents attain and maintain compliance with Regulation 84. The Management User has legal ability
135 (regulation, ordinance, contract, or other acceptable mechanism) to have reclaimed water service
136 terminated to a resident if the resident fails to comply with Regulation 84. A Management User can be a
137 Treater.

138 (31) Manual Non-Public Vehicle Washing means the cleaning of vehicles and associated equipment, such as
139 trailers, where any or all of the following are applied manually in the cleaning process: spray water,
140 cleaning products, and/or rinse water; where there is no public access to the vehicle washing facility and
141 only limited and controlled contact with reclaimed water by trained workers.

142 (32) Membrane Filtration means a pressure or vacuum driven separation process in which particulate matter
143 larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion
144 mechanism, and which has a measurable removal efficiency of a target organism that can be verified
145 through the application of a direct integrity test. This definition includes the common membrane
146 technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

147 (33) Non-Commercial Food Crop Growing Operation means any operations growing food crops that are not
148 considered a "covered farm" under the Food Safety Modernization Act, Produce Safety Rule, 21 CFR
149 112.4.

150 (34) Non-Discharging Construction and Road Maintenance means the use of reclaimed water for nonpotable
151 applications where water is required for cooling, wetting, dust suppression, or other construction and road
152 maintenance activities, where there is no public exposure to reclaimed water under normal operations and
153 only limited and controlled contact with reclaimed water by trained workers.

154 (35) Non-Evaporative Industrial Processes means the use of water in an industrial process where water is not
155 evaporated in the process and is used within a contained system, where there is no public exposure to
156 reclaimed water under normal operations and only limited and controlled contact with reclaimed water by
157 trained workers.

158 (36) Non-edible Hemp means hemp that is used for cover crop, fiber and other products that are not for human
159 consumption.

160 (37) Oil and Gas Operations means exploring for oil and gas, including conducting seismic operations and the
161 drilling of test bores; siting, drilling, deepening, recompleting, reworking, or abandoning a well; producing
162 operations related to any well, including installing flowlines; the generating, transporting, storing, treating, or
163 disposing exploration and production wastes; and any constructing, site preparing, or reclaiming activities
164 associated with such operations. (see COGCC Rules and Regulations - Series 100 - Definitions)

165 (38) Person means an individual, corporation, partnership, association, state or political subdivision thereof,
166 federal agency, state agency, municipality, commission, or interstate body.

167 (39) Point of Compliance means a point identified by the treater in the reclaimed water treatment or
168 transmission system after all treatment has been completed and prior to dilution and blending of water has
169 occurred. If reclaimed water is used for indoor nonpotable uses within a building where plumbing fixtures
170 are accessible by the general public, the "point of compliance" for disinfection residual is at the location
171 where water is delivered to the occupied premises.

- 172 (40) Potable Water has the same meaning as "Finished Water" as defined in section 11.3(32) of the Colorado
173 Primary Drinking Water Regulations, 5 CCR 1002-11.
- 174 (41) Reclaimed Water is domestic wastewater that has received secondary treatment by a domestic wastewater
175 treatment works (centralized system or a localized system) and such additional treatment as to enable the
176 wastewater to meet the standards for approved uses.
- 177 (42) Resident-Controlled Landscape Irrigation means irrigation of areas of grass, trees, and other vegetation
178 located on the property dedicated to a single residential property (e.g., the yard for a single residence such
179 as a house, row home or duplex).
- 180 (43) Resident-Controlled Food Crop Irrigation means irrigation of vegetables, fruits and other food crops located
181 on the property dedicated to a single residential property (e.g. the garden for a single residence such as a
182 house, row home or duplex).
- 183 (44) Restricted Access means controlled and limited access to the areas where reclaimed water meeting
184 Category 1 standards, as defined in section 84.7, is used.
- 185 (45) Secondary Treatment means the biological treatment of wastewater to meet BOD_5 , total suspended solids
186 ("TSS"); $CBOD_5$; and Oil and Grease numeric limitations in section 62.4 of Regulation #62.
- 187 (46) Site means any location using reclaimed water, including associated conveyances or storage under the
188 operational control of the user, per the approved Uses in Table A of section 84.9 and is subject to the
189 Additional Conditions Required 84.9(A).
- 190 (47) Site Manager means an individual or individuals who are the representative(s) of the User responsible for
191 educating visitors and cultivators, and, to the maximum extent practicable, ensuring that visitors and
192 cultivators attain and maintain compliance with Regulation 84. Site managers must be fully trained,
193 educated and well versed in Regulation 84 to ensure safe onsite practices amongst visitors and cultivators.
194 The Site Management has legal ability to enforce for non-compliance, and have the Treater terminate
195 service if violations continue for a period of time until corrective actions are taken.
- 196 (48) Toilet and Urinal Flushing or Fixture Flushing means the use of reclaimed water to flush toilets and urinals
197 only in multifamily residential structures or nonresidential structures where the toilet and urinal installations
198 are conducted in accordance with and conform to Article 58 of Title 12 [Plumbers] and Rules promulgated
199 to that Article.
- 200 (49) Trained Worker means a person employed at the site where reclaimed water is used, who has been
201 provided with the information specific to the additional conditions specified in section 84.9 that are
202 applicable to that site's approved use(s) of reclaimed water.
- 203 (50) Transmission System means the treater's facilities that transport treated reclaimed water between the
204 treater and users.
- 205 (51) Treater means a person who treats reclaimed water using a centralized reclaimed water treatment system
206 or localized reclaimed water treatment system and provides reclaimed water to a user for the purpose of
207 uses identified in section 84.9. A Treater contracted inspector also falls under this definition, and the
208 Treater may also be a user.
- 209 (52) Treatment Technique Requirement means a requirement that specifies a treatment technique(s) for a
210 pathogen reduction target which results in a sufficient reduction in the level of the pathogen to comply with
211 the requirements of Regulation #84.
- 212 (53) Unrestricted Access means uncontrolled access to the areas where reclaimed water meeting the Category
213 2 standards, as defined in section 84.7, is used.
- 214 (54) User means the entity or person legally responsible for a site that uses reclaimed water for the purpose of
215 uses identified in section 84.9. A User may also be a treater.

216 (55) User Plan to Comply (UPC) means the information and documentation a user is required to submit to the
217 treater under section 84.12 of this regulation. For Resident-Controlled Landscaping and Resident-
218 Controlled Food Crop Irrigation, the UPC applies to the aggregate of residences managed by a
219 Management User. For Non-Commercial Food Crop Irrigation, the UPC applies to the aggregate or
220 irrigated areas being managed by a Site Manager.

221 (56) Visitor means anyone visiting a site where reclaimed water is used and approved in Table A of Section
222 84.9.

223 (57) Washwater Applications means water used in washing of miscellaneous construction/ maintenance
224 equipment, as well as concrete washout, mineral processing, and other similar uses where reclaimed water
225 is used to remove material from equipment or a desired product, where there is no public exposure to
226 reclaimed water under normal operations and only limited and controlled contact with reclaimed water by
227 trained workers.

228 **84.6 ADMINISTRATION**

229 (A) Letter of Intent.

230 Treaters shall submit a letter of intent to the Division and to the local health authority, using a form established by
231 the Division that shall include:

232 (1) Treater information including name of entity; legally responsible person's name, address, telephone
233 number, and email address; and for each facility owned and/or operated by the treater where
234 domestic wastewater is treated for transmission, the facility contact person's name, address,
235 telephone number, and email address (if different than legally responsible person).

236 (2) Information demonstrating the treater's ability to comply with the applicable reclaimed water
237 standards described in section 84.7 of this regulation and section 84.11 of this regulation (for
238 localized reclaimed water treatment systems), including an 8.5" x 11" or 11" x 17" schematic of the
239 treatment process showing the location of the proposed point(s) of compliance. Include the point of
240 compliance for demonstration that secondary treatment has been attained which may be the same
241 or different than the point where attainment of reclaimed water standards will be demonstrated.
242 Include either: a copy of the site application approval letter and the approval letter for the reclaimed
243 water treatment facility plans and specifications; or evidence of submittal of a site application and
244 plans and specifications to the Division.

245 (3) An analysis that demonstrates that reclaimed water used for landscape irrigation or agricultural
246 irrigation will be applied at or below agronomic rates. Landscape irrigation and agricultural irrigation
247 uses may also be subject to waste load allocations or limits as contained in a Total Maximum Daily
248 Load (TMDL) or control regulation governing the watershed within which the irrigation occurs.

249 (4) A reuse system management plan which includes: a description of the proposed reclaimed water
250 treatment and transmission systems; a description of the treater's program to inform and educate
251 users on the requirements of this regulation; a description of the treater's plan to oversee the use of
252 reclaimed water by users to ensure, to the maximum extent practicable, that users attain and
253 maintain compliance with this regulation; and evidence of the treater's legal ability (regulation,
254 ordinance, contract, or other acceptable mechanism) to terminate service to a user if the user fails
255 to comply with this regulation.

256 (5) A certification statement as per section 84.16 of this regulation.

257 (6) For each user, a user plan to comply developed in cooperation with the treater and meeting the
258 requirements of section 84.12.

259 (7) Affirmation that the reuse of this water by the treater will not materially injure water rights. For
260 localized systems located within the service area of a water service provider, the letter of intent
261 shall include an affirmation that the proposed installation of a localized system is allowed by the
262 water service provider.

263 (8) When reclaimed water is used for fire protection, the Letter of Intent shall also include a map
264 indicating areas where reclaimed water is to be supplied for fire protection uses and identifying the
265 fire protection authority(s) having jurisdiction. The Letter of Intent shall also include a letter from the
266 fire protection authority(s) having jurisdiction indicating their approval of using reclaimed water for
267 fire protection activities.

268 (9) Where the land application of reclaimed water is subject to limitations on concentration and/or
269 loading of nitrogen or phosphorus pursuant to a control regulation adopted by the Water Quality
270 Control Commission, a statement as to whether the treater intends to have such limitations
271 included in the notice of authorization issued under this regulation or under a permit issued
272 pursuant to Regulation #61.

273 (B) Field Verification and Commissioning Report and Inspection. For localized reclaimed water treatment
274 systems, prior to supplying reclaimed water for use, the treater must verify that the system is operational
275 and meets reliability requirements of the log removal targets in section 84.11(A)(2)(a) below. Following
276 completion of field verification and commissioning, the treater shall provide the Division a field verification
277 and commissioning report and an operations and monitoring plan. The field verification and commissioning
278 report will confirm that the treatment system has been installed and is operating in accordance with the
279 approved design criteria in section 84.11(A)(2)(a) below. The operations and monitoring plan will define the
280 frequency and locations for monitoring, data storage, and reporting. The Division may conduct an
281 inspection of the localized reclaimed water treatment system to confirm that the unit treatment processes
282 have been installed in conformance with the approved design and are in operation in accordance with
283 operations and monitoring plan.

284 (C) Division Review. The Division will notify the treater in writing not more than thirty (30) calendar days after
285 receipt of a letter of intent (for centralized reclaimed water treatment systems) or the letter of intent, field
286 verification and commissioning report and operations and monitoring plan (for localized reclaimed water
287 treatment systems), and if and in what respects, the letter of intent (for centralized reclaimed water
288 treatment systems) or the letter of intent, field verification and commissioning report and operations and
289 monitoring plan (for localized reclaimed water treatment systems) are incomplete. The review period may
290 be extended by the Division. Where information provided by a user is incomplete, the treater may amend
291 the Letter of Intent to address the deficiency or to remove that user from the letter of intent.

292 (D) Issuance of Notices of Authorization. The Division shall either issue or deny the notice of authorization
293 (NOA) within thirty (30) calendar days of its determination that the letter of intent (for centralized reclaimed
294 water treatment systems) or the letter of intent, field verification and commissioning report, and operations
295 and monitoring plan (for localized reclaimed water treatment systems) are complete. Upon the written
296 agreement of the treater, the review period may be extended for a period mutually agreed to by the treater
297 and the Division. The treater shall be notified in writing upon denial of the NOA of such action and the
298 reason(s) for the denial. The Division shall issue a separate NOA to the treater and to each user. Treaters
299 and users planning to use reclaimed water shall have or obtain a NOA from the Division prior to any use of
300 reclaimed water.

301 (E) Appeal of Issuance or Denial of NOA. The treater or user, or any other person potentially adversely
302 affected or aggrieved by Division issuance or denial of a NOA, may submit a request, within thirty (30) days
303 of the date of issuance or denial, to the Administrator of the Water Quality Control Commission
304 ("Commission"), for a hearing.

305 (1) Such hearing shall be conducted pursuant to the requirements of the Procedural Regulations for all
306 Proceedings before the Commission and the Division, Regulation #21, 5 CCR 1002-21.
307 (2) The person requesting the hearing shall have the burden of proof in all hearings held pursuant to
308 this section.

309 (F) Terms and Conditions of NOAs. NOAs issued by the Division shall contain such terms, limitations, and
310 conditions as are deemed necessary by the Division to ensure compliance with this regulation, except for
311 those NOAs that contain a schedule of compliance as determined by the Division. At a minimum, all NOAs
312 shall contain the following:

- (1) Treater information including name of entity; legally responsible person's name, address, telephone number, and email address; and for each facility owned and/or operated by the treater where domestic wastewater is treated for distribution, the facility contact person's name, address, telephone number, and email address (if different than legally responsible person). For the treater NOA, a list of approved users and their associated uses shall be included;
 - (2) Issuance date;
 - (3) The approved uses as defined in Table A of section 84.9, including the category of reclaimed water, and additional conditions for each approved use in subsection 84.9, the associated numeric limit for each use, and requirements from sections 84.7; 84.8, and for localized systems, 84.11;
 - (4) For User NOAs, the location(s) of use, a description of the approved use(s), and best management practices that meet the requirements of subsection 84.12, as applicable;
 - (5) A requirement that the treater implement its reuse system management plan that meets the requirements of subsection 84.6(A)(4) to ensure user compliance with this regulation. For User NOAs, include a requirement that the user comply with the user plan to comply;
 - (6) Where the treater has so requested in the Letter of Intent per Section 84.6(A)(9), conditions defining limitations for concentration and loading of nitrogen and/or phosphorus pursuant to a control regulation adopted by the Water Quality Control Commission.
 - (7) A requirement to submit information to the Division requesting the amendment of a Letter of Intent prior to making any of the following significant changes:
 - (a) Adding an additional user or deleting a user;
 - (b) When a treater proposes any significant physical or operational changes;
 - (c) If reclaimed water is used for irrigation, when there is a significant change in the agronomic rate analysis; and
 - (d) When any user governed by an existing NOA significantly modifies or changes its physical or operational use of reclaimed water, including, but not limited to, the addition of landscape area to be irrigated that is not contiguous to an existing approved area, addition of areas where reclaimed water is to be used for fire protection, addition of a new user or use in a new commercial or industrial process, or use in a new location.
 - (8) Terms for modification, revocation, or termination;
 - (9) Required monitoring, as is reasonably necessary, to be performed by the user;
 - (10) Reporting and record keeping requirements;
 - (11) Public access restrictions, if applicable; and
 - (12) A statement of applicable civil and criminal penalties.

RECLAIMED WATER CATEGORIES AND STANDARDS

- Category 1 Standards:** Reclaimed water, for uses where Category 1 water is required, shall, at a minimum, receive secondary treatment with disinfection. The following reclaimed water standards shall apply at the point of compliance:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /100 ml	126/100 ml monthly geometric mean and 235/100 ml single sample maximum.
Total Suspended Solids	30 mg/L as a daily maximum.

353 (B) **Category 2 Standards:** Reclaimed water, for uses where Category 2 water is required, shall, at a minimum, receive secondary treatment with filtration and disinfection. The following reclaimed water standards shall apply at the point of compliance:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /100 ml	126/100 ml monthly geometric mean and 235/100 ml single sample maximum.
Turbidity, NTU	Not to exceed 3 NTU as a monthly average and not to exceed 5 NTU in more than 5 percent of the individual analytical results during any calendar month.

356 (C) **Category 3 Standards:** Reclaimed water for uses where Category 3 water is required shall, at a minimum, receive secondary treatment with filtration and disinfection. The following reclaimed water standards shall apply at the point of compliance:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /100 ml	None detected in at least 75% of samples in a calendar month and 126/100 ml single sample maximum.
Turbidity, NTU	Not to exceed 3 NTU as a monthly average and not to exceed 5 NTU in more than 5 percent of the individual analytical results during any calendar month.

84.8 ADDITIONAL FILTRATION AND DISINFECTION REQUIREMENTS FOR USE OF RECLAIMED WATER PRODUCED FROM CENTRALIZED SYSTEMS (CATEGORY 3 PLUS)

361 (A) The treater must properly operate and maintain all required treatment systems when producing reclaimed water in accordance with this regulation, the NOA, and the site location and design approvals.

363 (B) In addition to the factors to be considered and approved by the Division under Regulation #22, the following filtration and disinfection requirements apply to reclaimed water produced from centralized systems specifically for Category 3 uses of indoor toilet and urinal flushing, Non-Commercial Food Crop Growing Operation, and Resident-Controlled Food Crop Irrigation sites. In the event of a conflict between Regulation #22 and the following filtration and disinfection requirements, the following requirements shall control over any conflicting filtration and disinfection requirements in Regulation #22:

369 (1) In addition to the requirements listed in 84.7(C), the treater must properly operate filtration and disinfection of secondary treated wastewater while producing reclaimed water that reliably achieves all of the following:

371 (a) Disinfection that provides a minimum of 99.999 (5-log) inactivation of enteric viruses by at least one of the following treatment techniques.

373 (i) For free chlorine or monochloramines, log inactivation of viruses to be determined as referenced in 5-CCR-1002-11 and defined by the USEPA for disinfection of surface water (Hepatitis A).

377 (ii) Minimum UV of 40 mJ/cm² using a validated reactor per the Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (November 2006).

379 (b) Filtration by any one of the following treatment techniques:

84.9 AUTHORIZED RECLAIMED WATER USES

Table A: Approved Uses of Reclaimed Water

Approved Uses	Category 1	Category 2	Category 3	Additional Conditions Required 84.9(A)
INDUSTRIAL				
Evaporative Industrial Processes	Allowed	Allowed	Allowed	1,31
Washwater Applications	Not Allowed	Allowed	Allowed	2,3,7,31
Non-Discharging Construction and Road Maintenance	Allowed	Allowed	Allowed	3,7,31
Non-Evaporative Industrial Processes	Allowed	Allowed	Allowed	7,31
Oil and Gas Operations	Not Allowed	Allowed	Allowed	13, 16(a), 31, 34, 37, 38, 39, 40, 41, 42
LANDSCAPE IRRIGATION				
Restricted Access	Allowed	Allowed	Allowed	
Unrestricted Access	Not Allowed	Allowed	Allowed	3,4,31
Resident-Controlled	Not Allowed	Not Allowed	Allowed	3,4,5,31
COMMERCIAL				
Zoo Operations	Allowed	Allowed	Allowed	31
Commercial Laundries	Not Allowed	Allowed	Allowed	7,31
Automated Vehicle Washing	Not Allowed	Allowed	Allowed	3,8,31

Manual Non-Public Vehicle Washing	Not Allowed	Allowed	Allowed	3,8,31
FIRE PROTECTION				
Nonresidential Fire Protection	Not Allowed	Allowed	Allowed	6,31
Residential Fire Protection	Not Allowed	Not Allowed	Allowed	6,31
AGRICULTURAL IRRIGATION				
Non-Food Crop Irrigation and Silviculture	Allowed	Allowed	Allowed	3,31
Commercial Food Crop Growing Operation	Not Allowed	Allowed	Allowed	3,13,14,15,16,17,20,21,22,25,29,30,31
Resident-Controlled Food Crop Irrigation	Not Allowed	Not Allowed	Allowed (Category 3 Plus)	3, 5, 13,14,15, 20,22,23,24,25,26,27,28,31,33,35
Non-Commercial Food Crop Growing Operation	Not Allowed	Not Allowed	Allowed (Category 3 Plus)	3,13,14,15,16,17,18,19,,20,22,25,31,32,33,34,36
Non-Edible Hemp Irrigation	Allowed	Allowed	Allowed	3,13,15,16,17,20,21,25,30,31
Edible Hemp Irrigation	Not Allowed	Not Allowed	Allowed (Category 3 Plus)	3,13,15,16,17,20,21,22,25,30,31
TOILET AND URINAL FLUSHING	Not Allowed	Not Allowed	Allowed (Category 3 Plus)	5,9,10,11,31

397 (A) Additional Conditions Required. In addition to the conditions for use of reclaimed water listed in section
398 84.9, the Division will include the following best management practices in the NOA for the associated uses
399 listed in Table A:

(1) If there is a significant likelihood for aerosols to drift to public or worker areas, adequate signage is required. Supplemental disinfection and disinfectant residual and/or public access restrictions are required.

(2) Washing activities must be contained (e.g., flow to lined pit or approved concrete washout area, or within enclosed equipment), as to prevent any off-site runoff or discharge to ground water. Workers shall be trained on the proper use and washing procedures when using reclaimed water.

(3) Application rates or other measures shall be employed to minimize ponding or runoff from the area approved for application or use and prevent irrigation in excess of agronomic rate.

(4) No reclaimed water piping shall be extended to or supported from any residential structure and there shall be no accessible above grade outlets from the reclaimed water system at any residential structure. At least one exterior hose bib, supplied with potable water, shall be labeled and provided at each residential structure.

(5) The treater shall develop and implement a public education program to inform residents, workers, plumbing contractors and inspectors who deal with the resident-controlled landscape irrigation systems, or toilet and urinal flushing systems about the need to: a) strictly prohibit cross-

415 connections between the reclaimed water and potable water systems; b) clearly and distinctively
416 identify the potable service lines and plumbing from the reclaimed water service lines and
417 plumbing; and c) avoid contact with and strictly minimize ponding or runoff of the reclaimed water.
418 The treater shall implement a cross-connection inspection program and shall have the authority to
419 discontinue reclaimed water service to any resident or worker who flagrantly or repeatedly misuses
420 reclaimed water in a manner inconsistent with this regulation. The treater shall maintain a map
421 indicating all areas where reclaimed water is provided for resident-controlled landscape irrigation,
422 or toilet and urinal flushing.

- 423 (6) The user shall develop and implement a program, including notices in fire department newsletters
424 and fire department preplans, to educate the public and firefighters that reclaimed water is used for
425 fire protection. The user shall develop a program to educate plumbing and fire protection system
426 contractors and inspectors expected to access the fire protection system about the need to confirm
427 that cross-connections between the reclaimed water and potable water systems do not exist and
428 about the requirement to clearly identify the potable and reclaimed water systems throughout the
429 building. All personnel authorized to use the reclaimed water for fire protection shall be educated to
430 avoid contact with and strictly minimize ponding or runoff of the reclaimed water during non-
431 emergency testing or training. An annual cross-connection inspection shall be made at each
432 structure to which reclaimed water piping is extended for fire protection to ensure that no cross-
433 connection exists. The treater shall maintain a map indicating the location of all fire hydrants,
434 sprinkler systems and standpipe systems provided with reclaimed water.
- 435 (7) Where there is the reasonable potential for worker or public exposure to aerosols generated in the
436 use, users of Category 1 Reclaimed Water (if allowed for the use per Table A) or Category 2
437 Reclaimed Water shall employ measures to prevent the frequent exposure of workers and the
438 public to aerosols generated in the use of reclaimed water. Measures shall include at least one of
439 the following: minimum setback distance of 100 feet between the nearest source of aerosol
440 generation and areas where workers or the public are normally present; physical barriers between
441 aerosol sources and humans; personal protective equipment to prevent aerosol inhalation;
442 functionally equivalent measures approved by a qualified individual (e.g., a certified industrial
443 hygienist); or other means approved by the Division. Given the higher level of treatment provided
444 for Category 3 Reclaimed Water, additional measures to address exposure of workers or the public
445 to aerosols are not required.
- 446 (8) Where there is the potential for worker or public exposure to aerosols generated in the use, users
447 of Category 2 Reclaimed Water shall employ measures to prevent the inhalation of aerosols from
448 reclaimed water by workers and the public. Measures shall include at least one of the following:
449 personal protective equipment documented to prevent aerosol inhalation; or functionally equivalent
450 measures approved by a qualified individual (e.g., a certified industrial hygienist) and documented
451 to prevent aerosol inhalation.
- 452 (9) Reclaimed water may be used for indoor uses provided that the user adopts and follows best
453 management practices (BMPs) to minimize growth of and worker exposure to *Legionella* and other
454 premise plumbing opportunistic pathogens. BMPs shall be specified in a site-specific operation and
455 maintenance plan as described in section 84.12(C), and shall include at least one of the following:
- 456 (a) Maintenance of a minimum 0.2 mg/L of free chlorine disinfectant or 0.5 mg/L of
457 monochloramine residual if ammonia is present in premise plumbing. The disinfection
458 residual shall be measured at a location at a distance of no greater than 50 feet from the
459 location of use at the distal end or a location that represents the oldest water age within the
460 reclaimed water premise plumbing system. This may require chlorine “boosting” at the
461 point that reclaimed water enters a structure. The monitoring frequency will be no less
462 frequent than once (grab samples) per week. If the disinfectant residual is not in
463 compliance with this requirement, the system must perform operations and maintenance
464 and return all premise plumbing to a minimum 0.2 mg/L disinfection residual for free
465 chlorine or 0.5 mg/L disinfection residual for monochloramine within 24 hours. Exact
466 monitoring locations, and other compliance terms, will be identified in the site-specific
467 operation and maintenance plan submitted as part of the user plan to comply. The system

468 must maintain records of all sampling, locations, and corrective operations for review by
469 the treater or Division upon request.

- 470 (b) An alternative disinfection method as approved by the Division with equivalent protection
471 against premise plumbing pathogens as set forth in section 84.9(A)(9)(a) above. The
472 effectiveness of an alternative disinfection method may be verified by monitoring. The
473 monitoring plan and any requirements for implementation of any Division approved
474 alternative disinfection method must be included in the user plan to comply and the NOA.
- 475 (c) Where reclaimed water is used for indoor nonpotable uses within a building where
476 plumbing fixtures are accessible by the general public, a monitoring location for disinfection
477 residual at a distance no greater than 50 feet from the location of use at the distal end or a
478 location that represents the oldest water age within the reclaimed water premise plumbing
479 system may be used as an alternate point of compliance for disinfection residual.

480 (10) To minimize risk of unintended cross connections, plumbing modifications and repairs shall only be
481 conducted by licensed plumbers. Signage shall indicate that plumbing modifications can only be
482 done by authorized personnel. Signage shall be located where plumbing is accessible.

483 (11) Users receiving reclaimed water for use within an occupied premise, must include a backup
484 potable water connection capable of supplying potable water to fixtures for flushing via an air gap
485 should the localized reclaimed water treatment system fail or the reclaimed water is found to be
486 non-compliant or insufficient in volume.

487 (12) Users may use reclaimed water for toilet and urinal flushing in multifamily residential structures and
488 in nonresidential structures, only if the toilet and urinal installations are conducted in accordance
489 with article 58 of title 12 [concerning plumbers] and rules promulgated pursuant to that article. Any
490 toilet or urinal installation must conform to article 58 of title 12 and rules promulgated pursuant to
491 that article.

492 (13) All reclaimed water Users and Cultivators must undergo annual advanced training that at minimum
493 provides the following information:

- 494 • Definition of reclaimed water and why it is not suitable for drinking.
- 495 • The best management practices that are required for applicable uses in 84.9(A).
- 496 • Produce and hand washing with potable water is required after harvesting produce,
497 irrigating with reclaimed water and interacting with soils irrigated with reclaimed water.
498 Hand sanitizing is not an equivalent to hand washing.
- 499 • For Oil and Gas Operations, advanced training shall be provided to all staff managing
500 reclaimed water or implementing Additional Conditions or the User Plan to Comply prior
501 to their initial shift on the site and annually thereafter.

502 Advanced training shall be conducted by either the Treater, Site Manager or Management User.
503 The Division can require additional advanced training requirements through the User NOA.
504 Training provided must be adequate to result in individuals being knowledgeable of the
505 requirements, and capable of implementation of the BMPs required by the User Plan to Comply
506 and the User NOA. Signatures confirming that advanced training was received by staff responsible
507 for managing reclaimed water or implementing Additional Conditions or the User Plan to Comply
508 must be available for Division and/or Treater review during any site inspection.

509 (14) On a quarterly basis, treaters must monitor for TDS, submit the results (using mg/L) to the Division
510 through Discharge Monitoring Reports, and email or mail the results to all food crop irrigation users.
511 These results can be provided within a larger report (like a Consumer Confidence Report).

512 (15) If requested by a user, treaters must provide to its users reclaimed water monitoring data that is
513 less than 12 months old for nickel, arsenic, lead, cadmium and/or mercury concentrations.
514 Monitoring shall be conducted at the Point of Compliance or, if the discharge is of substantially the

515 same quality as the effluent discharged to state waters under a CDPS permit, the point of
516 compliance for that CDPS permit. Data will be provided within 60 days of a request. If the treater
517 does provide this data to users, it will also provide it to the Division through its Annual Report.

518 (16) Signage must be placed throughout the site indicating that non-potable water is being used. All
519 signs must include a graphic that indicates that the water is not for drinking and, at a minimum,
520 include the phrases “[Reclaimed or Recycled] Water” and “Do Not Drink.”

521 a) For sites under three acres, signs of at least 8.5 x 11” must be placed on portions of the
522 perimeter within public view. For sites over three acres but smaller than 25 acres, signs of
523 at least 8.5 x 11” must be placed at no greater than 500 feet apart on any portions of the
524 perimeter within public view. Distance and locations of signage must be described via map
525 or description in the User Plan to Comply and the NOA for the Site.

526 b) A sign of at least 2 x 1' must be placed at the main point of entry to the site that also states
527 that hands should be washed with potable water after coming into contact with irrigated
528 crops or soils and/or irrigation of crops, and produce must be washed with potable water
529 after harvest.

530 c) All irrigation equipment must be labeled as reclaimed water and clearly distinguished as
531 reclaimed water (e.g. purple in color and/or indicated in a language that is understandable
532 for the User, Treater, Site Manager and Management User).

533 (17) Potable water supply, or a supply of water with no detectable generic *E. Coli* and soap, or hand
534 sanitizer **containing at least 60% alcohol** must be readily available for employees, visitors and
535 cultivators to wash their hands. If a school, park or other facility is within a reasonable distance
536 from potable sinks that employees, visitors and cultivators have access to at all times, this is
537 sufficient. If not, a portable hand washing station or hand sanitizer is required. Wastewater from
538 portable hand washing stations must be disposed of in an area whereby it will not come into
539 contact with crops, soils or infiltrate into soils near crops. The disposal must not create an
540 unpermitted point source discharge to a water of the state. The Site Manager is responsible for
541 ensuring that the portable hand washing station contains potable water for hygiene. If a user is also
542 regulated by the Produce Safety Rule and is thus required to provide hand washing facilities under
543 that Rule, the user is required to provide a hand washing station, rather than hand sanitizer.

544 (18) Hose bibs that supply reclaimed water must be locked (with a non-duplicative key for access)
545 and/or only accessible by a key code that may not be shared with any individual who has not
546 received advanced training as described in 84.9(A)(13).

547 (19) Children in eighth grade or younger must be supervised by an adult at the garden. Minors who are
548 in ninth grade and older who have not received advanced training as described in 84.9(A)(13) must
549 also be supervised by an adult. Supervising adults must have received advanced training as
550 described in 84.9(A)(13).

551 a) For sites that use hoses for reclaimed water irrigation, one additional supervising adult
552 must be present with children in eighth grade and younger to oversee the appropriate use
553 for each active hose/hose spigot beyond the first. If a site is three acres or more, and the
554 garden is divided into different sections that are clearly demarcated, children in eighth
555 grade or younger can be on site if they are in a section where the water delivery
556 mechanism in that section is disabled and the child is supervised.

557 b) This condition will not apply to a site upon findings that monitoring for one irrigation season
558 demonstrates that reclaimed water on-site meets the Category 3 water quality standards
559 (no *E. coli* detected in at least 75% of samples in a calendar month and 126 cfu/100 ml
560 single sample maximum). Monitoring shall occur at least every other month during the
561 irrigation season. If the Division omits this condition from the NOA, the User must continue
562 to monitor *E. coli* levels at the site at least every other month during the irrigation season.
563 Results must be submitted to the division for approval before this condition is not
564 applicable to the Site NOA. If *E. coli* levels are above 126 cfu/100 ml at the site, *E. coli* is

detected in more than 25% of samples in a calendar month, the User fails to continue monitoring, or the Division or the Treater have found that the user is not consistently complying with this Regulation and all applicable requirements in the NOA and the User Plan to Comply, the Division may require compliance with this condition through an amended NOA.”

- (20) A manual or display must be onsite at all times that describe what reclaimed water is, the BMPs required by the User Plan to Comply and the User NOA, and irrigation practices that will prevent irrigation in excess of the agronomic rate and minimize ponding or runoff of reclaimed water. This must be accessible to all visitors, employees and site Users.
 - (21) Harvesting of crops in areas where irrigation is occurring and making the soil and/or plant wet is prohibited. Public access in areas where irrigation is occurring and making the soil and/or plant wet is prohibited.
 - (22) Irrigation of sprouts is prohibited where the sprout is the food crop, including but not limited to bean sprouts, alfalfa sprouts, and hemp clones.
 - (23) If the site is irrigated with an automatic irrigation system, the non-commercially processed crop site must be on a separate irrigation zone when using reclaimed water.
 - (24) A potable water supply spigot must be available on the exterior of the residence.
 - (25) Leaks in the irrigation system and/or hoses must be fixed immediately. If the leaks cannot be fixed immediately, the reclaimed water system must be disabled.
 - (26) A Management User is required. Responsibilities and authority for Management Users are listed in 84.10.
 - (27) All property owners and renters must be provided with an educational manual and verbally educated by the Management User as described below prior to occupancy of the residence. The education must include:
 - (a) That reclaimed water is non-potable;
 - (b) Methods to use reclaimed water safely, and the required best management practices per the User Plan to Comply and the NOA;
 - (c) Agronomic rate requirements and that ponding and runoff are a violation of this regulation.Following the provision of the manual and verbal education, the property owner or renter must sign a document acknowledging that the education was received. The Management User must keep these signed documents in an accessible location.
If the property is rented or sold at a later date, the new occupants must be also be provided with this verbal education and manual, and sign the acknowledgement document prior to occupying the property. The site manager must also retain these documents in the same location. The Division may request this information at any point in time.
 - (28) Each residence using reclaimed water must have at least one sign communicating that the water is not for drinking and that food crops should be washed with potable water.
 - (29) Commercial Growing Operation must comply with any applicable requirements of the Food Safety Modernization Act, Produce Safety Rule, 21 CFR Part 112 as implemented by the State of Colorado. Compliance information with the Produce Safety Rule must be described in the Regulation 84 Annual Report provided by the Treater.
 - (30) Flood and sheet irrigation are prohibited.

- 607 (31) The Treater and the User shall furnish to the Division, within sixty days, any information which the
608 Division may request to determine whether cause exists for modifying, revoking and reissuing the
609 NOA, or to determine compliance with this regulation or the applicable NOA.
- 610 (32) Users shall allow the Division or its authorized representative to conduct inspection of the site at a
611 reasonable time and in a reasonable manner, without prior notification, to assess compliance with
612 this regulation and the NOA. This includes allowing access to area(s) where irrigation is occurring
613 and allowing the Division or its authorized representative to interview any person(s) present at the
614 site. Pursuant to CRS 25-8-306, the Division will provide the User with the credentials for any
615 inspector that may conduct such inspections at a date prior to conducting any inspections and
616 inspectors will present proper credentials to any User present at the site who requests them at the
617 time of inspection.
- 618 (33) If *E. coli* or turbidity exceeds the required standards in Regulation 84, the Treater must notify the
619 Legally Responsible Entity and the Legal Responsible Entity must notify all Site Managers.
- 620 (34) A Site Manager is required. Responsibilities and authority for Site Managers are listed in 84.10.
- 621 (35) Only drip, subsurface drip, button drip or other low to the ground irrigation systems are allowed and
622 must cover a small distribution area.
- 623 (36) Irrigation equipment that is used with reclaimed water shall not be hooked up to potable spigots.
- 624 (37) Requirements for lay-flat hoses, couplings, and other appurtenances:
625 (a) Identify the conveyance as carrying non-potable water by labelling every section of pipe as
626 "non-potable water" using stenciling or some other labelling mechanism. Alternatively,
627 signage that states "non-potable water" can be placed at every coupling, joint or pump.
- 628 (b) During periods of reclaimed water use within the lay-flat conveyance, an additional method
629 of identification must be utilized to clearly indicate that reclaimed water is being transported
630 through the line. This must be accomplished by placing small flags, ribbon, tape, etc.
631 labeled with "Reclaimed Water – Do Not Drink" at the mid-point between couplings, joint or
632 pump (each section of hose) or approximately every 350 feet. This requirement can be
633 reduced in areas where access is limited (such as through private property) but must be
634 identified in the User Plan to Comply.
- 635 (c) Pass a hydrostatic pressure test conducted in accordance with the User Plan to Comply
636 (UPC) using methods, procedures and practices that reflect best industry practices
637 appropriate for the system and conditions present and that provides appropriate results to
638 confirm leaks are not present in the conveyance system and comply with the requirements
639 within Regulation 84;
- 640 (d) Inspect the hose daily for leaks. If a leak is detected or discovered, immediately
641 discontinue use until the leak has been properly repaired such that the leak is no longer
642 present. Records of daily leak inspections must be maintained for a minimum of one year
643 and kept onsite for Treater and Division review;
- 644 (e) Install and operate appropriate leak detection equipment;
- 645 (f) All spills requiring reporting in accordance with §25-8-601 (2), CRS must be reported to
646 CDPHE using the toll-free 24-hour environmental emergency and incident reporting line
647 within 24 hours of being discovered. Spills must also be reported to the Treater within 24
648 hours.
- 649 (g) To protect potable water sources, backflow prevention or cross connection control
650 equipment must be used when loading water from a potable water source.

651 (h) If lay-flat hose is extended through private property, property owners must be notified that
652 non-potable, reclaimed water is being delivered through the lay-flat hose and that the hose
653 should not be tampered with.

654 (i) When lay-flat hose intersects a roadway, a hose protector ramp must be used to prevent
655 vehicles and other equipment from directly driving over the hose.

656 (38) Vehicles and tank trailers used for hauling of reclaimed water must follow the following
657 requirements:

658 (a) The exterior of the tank shall be labelled with signage indicating the tank is transporting
659 non-potable water.

660 (b) The driver is required to notify the Treater and User of any spills of reclaimed water. All
661 spills requiring reporting in accordance with §25-8-601(2) CRS must be reported to
662 CDPHE using the toll-free 24-hour environmental emergency and incident reporting line.

663 (c) To protect potable water supplies, backflow prevention or cross connection control
664 equipment must be used when loading water from a potable water source into tank labeled
665 as non-potable.

666 (39) When reclaimed water is delivered through temporary conveyances, the conveyance must meet
667 the definition of lay-flat hose as defined in Section 84.5(28) or be constructed of HDPE material.

668 (40) Disposal of reclaimed water from any storage, conveyance or other source whereby reclaimed
669 water was used shall be done in such a manner that does not create a point source discharge
670 requiring a NPDES or CDPS permit or does not create a spill that would require reporting in
671 accordance with §25-8-601(2) CRS.

672 (41) The Division and Treaters must be notified at least one (1) week prior to the installation of any lay-
673 flat hose that is to be used for conveyance of reclaimed water. The Division and Treaters must
674 also be notified within 24 hours of the removal of any lay-flat hose that has been utilized for
675 conveyance of reclaimed water.

676 (42) Prior to the commencement of any oil and gas operations at a pad site, Operator must complete
677 analysis of the reclaimed water for ATP (Adenosine Triphosphate) and oxidation-reduction potential
678 (ORP) to determine the amount and type of biocide to add to the reclaimed water. The frequency
679 must be at least every 10 calendar days unless the User Plan to Comply documents that an
680 alternative frequency can achieve this requirement, or the reclaimed water is not being delivered to
681 the site. Each user will record those results and will make those results available to the Treater or
682 Division upon request. The user plan to comply shall include a detailed description of the practice.

683 **84.10 TREATER, MANAGEMENT USER AND SITE MANAGER RESPONSIBILITIES FOR NON-**
684 **COMMERCIAL GROWING OPERATION, RESIDENT-CONTROLLED FOOD CROP IRRIGATION AND**
685 **EDIBLE AND NON-EDIBLE HEMP.**

686 (A) TREATER AND SITE MANAGER RESPONSIBILITIES FOR NON-COMMERCIAL GROWING
687 OPERATION

688 (1) Treater Responsibilities

689 (a) General Responsibilities

690 (i) Ensure an accurate User Plan to Comply is onsite.

691 (ii) Maintain accurate records of all current Users.

692 (iii) Implement appropriate procedures and actions to minimize the occurrence of, and
693 obtain compliance with, the requirements of the user NOA and UPC. Implement
694 sanctions for recalcitrant violators that include, but are not limited to, terminating

695 service of reclaimed water to the site if necessary to stop violations until corrective
696 actions are completed.

697 (b) Inspections

698 (i) Pre-Irrigation Inspection: Conduct one inspection prior to the first use of reclaimed
699 water at a site each calendar year.

700 (ii) Irrigation Season Inspection: Conduct a second inspection during the period when
701 irrigation is occurring each year and at least 30 days from the initial inspection
702 (unless irrigation only occurs for 45 days).

703 (iii) The inspections must be completed with a Site Manager or User representative on
704 site and include an interview with the site manager.

705 (iv) Inspections must assess and document if all BMPs are being implemented, or are
706 in place and ready to implement for the pre-irrigation inspection, as required by the
707 User Plan to Comply and the User NOA, to prevent irrigation in excess of the
708 agronomic rate, and to minimize ponding or runoff of reclaimed water.

709 (v) Ensure the signage required by this regulation is intact at the appropriate locations
710 and distances, is legible and presented in an understandable format to inform
711 Users and Visitors that reclaimed water is being used and is not for drinking.

712 (vi) If a site is in non-compliance, unless the non-compliance issue(s) are corrected
713 during the inspection, re-inspect the site once the correction(s) are made and
714 document and keep record(s) of the corrective actions. Treaters are required to
715 inform and communicate with the User about compliance plans and corrective
716 actions. If hoses are being used, the Treater, Site Manager and/or the Division
717 reserve the right to lock the hose bibs until corrective actions are complete.

718 (2) Site Manager Responsibilities. The user shall ensure that a Site Manager is designated that meets
719 the following requirements:

720 (a) General Responsibilities

721 (i) Ensure an accurate User Plan to Comply is onsite.

722 (ii) Maintain accurate records of all current Cultivators.

723 (iii) Ensure Cultivators are educated about reclaimed water per education
724 requirements in Regulation 84.

725 (iv) Ensure best management practices and requirements are implemented, and ready
726 to implement for the pre-irrigation inspection, as required by the User Plan to
727 Comply and the User NOA for all best management practices including prevention
728 of excess irrigation of the agronomic rate, and to minimize ponding and runoff of
729 reclaimed water.

731 (v) Maintain accurate User Plan to Comply onsite, and submit modifications to the
732 Treater to subsequently send to the Division to modify NOAs.

733 (vi) Implement appropriate procedures and actions to minimize the occurrence of, and
734 obtain compliance with, the requirements of the user NOA and UPC. Implement
735 sanctions for recalcitrant violators that includes but is not limited to denial of water
736 use or banning from the site.

737

(b) Inspections

749 (B) TREATER AND MANAGEMENT USER RESPONSIBILITIES FOR RESIDENT-CONTROLLED FOOD
750 GROW IRRIGATION

(1) Treater Responsibilities. The Treater's Reuse System Management Plan shall address, and the Treater shall meet the following requirements that are in addition to those included in 84.6(A)(4):

(a) General Responsibilities

(i) Maintains accurate records of all current Users

(ii) Ensure Management User is highly knowledgeable about Regulation 84 trained on an annual basis.

(iii) The NOA will include requirements for information required in the Annual report.

(iv) The Treater or the Management User is responsible for monitoring water usage in gallons at minimum on a monthly basis to ensure agronomic rate is not exceeded. The User Plan to Comply shall indicate whether the monitoring responsibility belongs to the Treater or the Management User.

(v) The agronomic rate analysis required per the User Plan to Comply. The division will not issue an NOA if this analysis demonstrates that given the nitrogen concentrations in the reclaimed water, that there is a reasonable potential that with the quality of irrigation water needed, the agronomic rate will be exceeded.

(vi) Implement appropriate procedures and actions to minimize the occurrence of, and obtain compliance with, the requirements of the User NOA and UPC. Implement sanctions for recalcitrant violators that includes, but are not limited to, terminating service of reclaimed water to the site if necessary to stop violations.

(vii) During inspections by the Division, violations will be issued to the Management User and/or Legally Responsible Entity or Person listed in the NOA.

(b) Inspection Responsibilities

(i) Conduct, at minimum 10% representative site visits each year with a representative that uses the reclaimed water to irrigate to ensure requirements in this regulation are being met per the best management practices required by the User Plan to Comply and the User NOA; and that the user is minimizing ponding and runoff by irrigating at an agronomic rate; and that they are aware of the components in section 84.9 and that they are using reclaimed water for irrigation. Inspections may be completed by the Management User and/or the Treater.

- (ii) If a site is in non-compliance, unless the non-compliance issues are corrected during the inspection, re-inspect the site once corrections are made and document and keep record(s) of the corrective actions. Treaters and Management Users are required to inform and communicate with the user about compliance plans and corrective actions.

- (iii) Implement sanctions for recalcitrant violators that include, but are not limited to, terminating service of reclaimed water to the site if necessary to stop violations.

- (2) Management User Responsibilities. The user shall ensure that a Management User is in place that meets the following requirements:

- (a) General Responsibilities

- (i) Ensure each home buyer or renter is educated about Regulation 84 and ensure that the educational manual is provided prior to occupying the property, and a signature is required by the homeowner or renter that proves acknowledgement of understanding of the risks associated to using reclaimed water. The Management User must keep copies of signed documents onsite for Division and/or Treater review.

- (ii) Maintain up to date maps/records of locations, number and acreage of sites where reclaimed water is used to irrigate edible crops and landscapes, and update treaters on a biannual basis.

- (iii) The Treater or the Management User is responsible for monitoring water usage in gallons at minimum on a monthly basis to ensure agronomic rate is not exceeded. The User Plan to Comply shall indicate whether the monitoring responsibility belongs to the Treater or the Management User.

- (iv) Implement appropriate procedures and actions to minimize the occurrence of, and obtain compliance with, the requirements of the user NOA and UPC. Implement sanctions for recalcitrant violators. Management User must notify the treater of recalcitrant violations and the Treater has authority to terminate service.

- (v) Calculate the agronomic rate analysis for each site to ensure the agronomic rate will not be exceeded.

- (b) Inspection Responsibilities**

- (i) Conduct, at minimum 10% representative site visits with a representative that uses the reclaimed water to irrigate to ensure requirements in this regulation are being met per the best management practices required by the User Plan to Comply and the User NOA; and that the user is minimizing ponding and runoff by irrigating at an agronomic rate; and that they are aware of the components in section 84.9 and that they are using reclaimed water for irrigation. Inspection may be completed by the Management User and/or the Treater.

- (ii) Report violations to the treater and the Division and keep violations documented with the location information.

819 (C) TREATER AND SITE MANAGEMENT RESPONSIBILITIES FOR EDIBLE AND NON-EDIBLE HEMP
820 SITES IRRIGATED WITH RECLAIMED WATER.

- ## (1) Treater Responsibilities

- (a) General Responsibilities**

- (i) Ensure an accurate User Plan to Comply is onsite.

- (i) An inspection is required prior to the first use of reclaimed water at a site each calendar year to ensure irrigation equipment and practices are in place to irrigate at the agronomic rate and prevent ponding and runoff.
 - (ii) Routine inspections are required at least once per month during the irrigation season. Inspections must include and document that all Best Management Practices and conditions in the User Plan to Comply and NOA are being met. The Division and/or Treater may request records at any time.
 - (iii) Report violations to the Treater and the Division and keep violations documented with the location information.

(D) TREATER AND SITE MANAGER RESPONSIBILITIES FOR OIL AND GAS OPERATION WITH RECLAIMED WATER.

(1) Treater Responsibilities

(a) General Responsibilities

- (i) Review User Plan to Comply (UPC) for completeness and accuracy prior to submittal to Division for approval.
 - (ii) Maintain accurate records of all current Users.
 - (iii) Ensure the signage and labeling required in this regulation is intact at the appropriate locations and distances, is legible and presented in an understandable format to inform Users that reclaimed water is being used and is not for drinking.
 - (iv) Implement appropriate procedures and actions to minimize the occurrence of, and obtain compliance with, the requirements of the user NOA and UPC. Implement sanctions for recalcitrant violators including, but are not limited to, terminating service of reclaimed water to the site, if necessary to stop violations until corrective actions are completed.

(b) Inspection Responsibilities

- (i) Conduct initial site inspection for each new User just prior to drilling operation to ensure compliance with the requirements in the User NOA and UPC.
 - (ii) If a site is in non-compliance, unless the non-compliance issue(s) are corrected during the inspection, re-inspect the site once the correction(s) are made and document and keep record(s) of the corrective actions. Treaters are required to inform and communicate with the User about compliance plans and corrective actions.

(2) Site Manager Responsibilities

(a) General Responsibilities

- (i) Ensure all staff managing reclaimed water or implementing Additional Conditions or the User Plan to Comply and all contracted workers are educated about reclaimed water per education requirements in Regulation 84.
 - (ii) Ensure alternate conditions and requirements are implemented, as required by the User Plan to Comply and the User NOA.
 - (iii) Maintain accurate User Plan to Comply onsite, and submit modifications to the Treater to subsequently send to the Division to modify NOAs.
 - (iv) Implement appropriate procedures and actions to ensure compliance with the requirements of the user NOA and UPC. Notify the Treater of recalcitrant violators including but are not limited to, requesting termination of service of reclaimed water to the site if necessary.
 - (v) Ensure that there are no discharges to groundwater or state waters during “shut down” of a site when discontinuing use of reclaimed water.

- (b) Inspection Responsibilities

 - (i) Inspect site prior to each approved use to ensure all of the requirements in the NOA and UPC are in compliance.
 - (ii) Report violations to the Treater and the Division and keep violations documented with the location information until use of reclaimed water ceases.

84.11 RECLAIMED WATER TREATMENT REQUIREMENTS FOR LOCALIZED RECLAIMED WATER TREATMENT SYSTEMS

- 920 (A) Reclaimed water treated by localized reclaimed water treatment systems must comply with the standards
921 and requirements in this section 84.11.

922 (B) The treater must properly operate and maintain all required treatment systems when producing reclaimed
923 water in accordance with this regulation, the NOA, and the site location and design approvals. In addition to
924 the factors to be considered and approved by the Division under Regulation #22, localized reclaimed water
925 treatment systems are subject to the following additional design requirements for treatment.

926 (1) The treater must properly operate a multi-barrier treatment approach using filtration and
927 disinfection following secondary treatment while producing reclaimed water that reliably achieves
928 all of the logarithmic ("log") reduction targets for pathogens set forth in Table B below. If a treater
929 conducts its own microbial risk assessment, the treater may request approval from the Division to
930 use alternative log reduction targets based upon the treater's microbial risk assessment.

931 (a) Reclaimed water produced from localized systems for Category 1 uses must meet the
932 design requirements based on a microbial risk assessment using a risk target no less
933 stringent than 10^{-2} infections per person per year only for Enteric Viruses as set forth in
934 Table B below.

935 (b) Reclaimed water produced from localized systems for Category 2 uses must meet the
936 design requirements based on a microbial risk assessment using a risk target no less
937 stringent than 10^{-2} infections per person per year as set forth in Table B below.

938 (c) Reclaimed water produced from localized systems for Category 3 uses must meet the
939 design requirements based on a microbial risk assessment using a risk target no less
940 stringent than 10^{-4} infections per person per year as set forth in Table B below.

Table B: Localized System Log Removal Targets for Treatment Design

	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Log ₁₀ Reduction Target (10 ⁻²) Category 1	6.0	-	-
Log ₁₀ Reduction Target (10 ⁻²) Category 2	6.0	5.0	4.0
Log ₁₀ Reduction Target (10 ⁻⁴) Category 3	8.5	7.0	6.0

- (2) The Division will develop policy defining credits for the log reduction of pathogens through various treatment processes.
 - (3) The localized system design requirements will be based on the assumption that the wastewater does not receive meaningful inputs from industrial or other diluting sources.

947 (1) Reclaimed water produced from localized systems must meet the standards for the category of
948 reclaimed water in section 84.7 for the approved use. Compliance with the standards in section
949 84.7 shall be verified by the monitoring requirements in section 84.11(C)(2) and (3) below.

950 (2) Localized reclaimed water treatment systems must be continuously monitored for appropriate
951 process control parameters to demonstrate that systems designed to comply with pathogenic
952 microorganism control are functioning properly. The choice of the type of continuous monitoring
953 technologies to be utilized will be tailored for an individual system and will be included in an
954 operations and monitoring plan. Examples of acceptable forms of continuous monitoring for
955 localized system process control are identified in Table C below:

956 Table C: Acceptable Surrogate Parameters for Localized Systems

Surrogate Parameter	Surrogate Monitoring Point	Purpose
Chlorine residual	Post-chlorination at a representative location for treatment	Confirm control of opportunistic pathogens
Continuous turbidity or particle size distribution	Post-filtration at a representative location for treatment	Confirm operation of filtration system; can be an indicator of pathogen breakthrough
Pressure decay test	Membrane filtration unit	Measures membrane integrity
Electrical conductivity or tracer spike test; total organic carbon or UV absorbance (254 nanometers)	Reverse osmosis or nanofiltration unit	Can be related to pathogen breakthrough
Continuous color, ultraviolet light absorbance (UVA) or transmittance (UVT), and/or pH	Prior to disinfection or ozonation	Can indicate conditions that inhibit pathogen removal in disinfection or ozonation steps
Residual ozone, or oxidation-reduction potential	Ozonated water	Can be correlated to pathogen removal
Continuous ultraviolet (UV) intensity	UV-treated water	Confirm sufficient dose of UV for pathogen inactivation

957 (3) The Division shall adopt a policy identifying other acceptable monitoring technologies for localized
958 system treatment processes and means to approve additional monitoring techniques. The
959 operations and monitoring plan shall include a tailored quality assurance plan specific to the
960 continuous monitoring equipment in place. The quality assurance plan may include analysis of
961 periodic grab samples for additional quality assurance of data collected via continuous monitoring,
962 with parameters measured being consistent with those measured via continuous monitoring.

963 (D) The treater must return any recycled spent filter backwash water, thickener supernatant, or liquids from the
964 dewatering process to a location within the treatment process that is before the filtration technology or an
965 alternative Department-approved location.

966 (1) For conventional or direct filtration, the location of return must be prior to the coagulant feed
967 location.

968 (2) For all other filtration technologies, the location of return must be prior to the filtration process and
969 approved by the Division.

- 970 (E) Localized reclaimed water treatment systems shall include a flow meter on the localized reclaimed water
971 treatment system and a flow meter on the potable make-up water pipeline to the distribution system.
- 972 (F) Localized reclaimed water treatment systems must be equipped with features that result in a controlled and
973 non-hazardous automatic shutdown of the process in the event of a malfunction. Localized reclaimed water
974 treatment systems must maintain overflow connections to an approved and permitted domestic wastewater
975 treatment works to allow for disposal of off-specification treated reclaimed water or to allow disposal of
976 untreated wastewater during maintenance of the treatment system. Overflow connections will include an
977 approved cross connection control device or method.
- 978 (G) NOAs for use of reclaimed water from localized systems may include requirements for limitations on
979 contributions from non-domestic sources as necessary to prevent pass through, interference, or impacts on
980 public health or the environment from those sources.

981 **84.12 USER PLAN TO COMPLY REQUIREMENTS**

- 982 (A) Landscape irrigation users and agricultural irrigation users shall include the following in a user plan to
983 comply:
- 984 (1) User information including name of entity; legally responsible person's name; address; telephone
985 number; email address; and site address where reclaimed water will be used;
- 986 (2) An 8.5" x 11" or an 11" x 17" map or schematic drawing indicating the specific area(s) where
987 irrigation with reclaimed water will take place;
- 988 (3) A description of the best management practices the user intends to implement to ensure that direct
989 and windblown spray and other means of human exposure from irrigation systems will be confined
990 to the areas designated and approved in the notice of authorization;
- 991 (4) Best management practices the user intends to employ to ensure that application rates shall be
992 controlled to strictly minimize ponding and runoff and to minimize the amount of applied water and
993 associated pollutants that pass through the root zone of the plants to be irrigated (e.g., rain shutoff
994 devices, application at evapotranspiration rates adjusted for irrigation efficiency, daily inspections,
995 or other means); and
- 996 (5) If applicable, information demonstrating how the user will restrict access to landscaped areas
997 where Category 1 reclaimed water is to be applied either by:
- 998 (a) Irrigating only during periods approved in the notice of authorization so as to strictly
999 minimize public contact with reclaimed water, or
- 1000 (b) Installing barriers to prevent public access to the site, as approved in the NOA, restricting
1001 irrigation to times when the barriers are in place, and ceasing irrigation at least one hour
1002 prior to the barriers being totally or partially removed.
- 1003 (6) For resident-controlled landscape irrigation, unless a homeowners' association or other entity
1004 acceptable to the Division assumes responsibility, the treater shall be responsible for all information
1005 required in the user plan to comply and shall act as the users' legal representative for purposes of
1006 certification pursuant to section 84.12(J) below.
- 1007 (B) Commercial, industrial, and fire protection users shall include the following in a user plan to comply:
- 1008 (1) User information including name of entity; legally responsible person's name; address; telephone
1009 number; email address; and site address where reclaimed water will be used;
- 1010 (2) A description of how reclaimed water is to be used;
- 1011 (3) An 8.5" x 11" or 11" x 17" map or schematic showing where such use will occur;

- 1012 (4) The potential for public contact with reclaimed water used in the commercial or industrial
1013 operation(s) or process(es);
- 1014 (5) The fate of waste water streams from the commercial or industrial operation or process after use
1015 (e.g., discharge to sanitary sewer, lined evaporation/recovery pond, subsequent permitted
1016 discharge, or other location);
- 1017 (6) Best management practices the user intends to implement to prevent or minimize direct and
1018 windblown spray and other pathways of human exposure to reclaimed water;
- 1019 (7) If applicable, information demonstrating how the user will restrict access to commercial or industrial
1020 areas, operations or processes where Category 1 reclaimed water is to be used; and
- 1021 (8) Where reclaimed water is used to supply a fire sprinkler or standpipe system, information
1022 describing the user's cross-connection control, prevention and identification program that the user
1023 will implement to prevent any cross-connection between the reclaimed water and potable water
1024 systems.
- 1025 (C) Toilet and urinal flushing users shall include the following in a user plan to comply:
- 1026 (1) User information including name of entity; legally responsible person's name; address; telephone
1027 number; email address; and site address where reclaimed water will be used.
- 1028 (2) A description of how reclaimed water is to be used.
- 1029 (3) An 8.5" x 11" or 11" x 17' map or schematic showing water system and where use of reclaimed
1030 water will occur.
- 1031 (4) Provide description of water systems/flow diagrams, including the potable, non-potable water, and
1032 wastewater systems within the building.
- 1033 (5) The user plan to comply shall include an operation and maintenance plan. The operation and
1034 maintenance plan shall reflect current conditions, be kept on site, and be available for review by the
1035 Division upon request.
- 1036 (6) Signage shall be located where plumbing is accessible, and state that plumbing modifications may
1037 only be conducted by licensed plumbers. Signage shall be no smaller than 8.5" x 11" or 11" x 17'.
- 1038 (7) Reclaimed water shall not be used for indoor fixture flushing, if it is stored in an outdoor storage
1039 facility exposed to the open atmosphere after treatment.
- 1040 (8) If the Division has approved an alternative disinfection approach as described in section
1041 84.9(A)(9)(b), a user must include in the user plan to comply Division requirements under section
1042 84.9(A)(9)(b) for implementation of alternative approaches for disinfection.
- 1043 (D) Commercial Food Crop Growing Operations shall include the following information in their user plan to
1044 comply:
- 1045 (1) A description of training methods and verification that all employees and Site Managers will receive
1046 training prior to beginning work in areas using reclaimed water, and annual trainings are
1047 conducted.
- 1048 (2) A description of how visitors are educated prior to entering irrigated areas.
- 1049 (3) A map showing the location of signs throughout site.
- 1050 (4) A map showing the location(s) of potable and/or no detectable generic *E. coli* water supplies for
1051 hand washing and/or hand sanitation.

- 1052 (5) A description of how the list of best management practices are kept on site.
- 1053 (6) A description of irrigation schedules and how harvesting crops and public access in areas where
1054 irrigation is resulting in wet soils and/or plant is prohibited.
- 1055 (E) Non-commercial Growing Operations users shall include the following information in their user plan to
1056 comply:
- 1057 (1) A description of the training methods and verification that cultivators and site managers will receive
1058 training prior to beginning work in areas using reclaimed water, and annual trainings are
1059 conducted;
- 1060 (2) A map showing the locations of signs.
- 1061 (3) A map showing the locations of potable water supplies for hand washing and/or hand sanitation;
- 1062 (4) Verification that hose bibs are locked at all times when not in use.
- 1063 (5) A description of how the list of best management practices are kept on site.
- 1064 (8) Any additional information necessary to identify the implementation and maintenance of BMPs to
1065 comply with 84.9 and to prevent irrigation in excess of the agronomic rate and to minimize ponding
1066 or runoff of reclaimed water. BMPs include any method used to protect public health and the
1067 environment. BMPs include, but are not limited to, schedules of activities, prohibitions of practices,
1068 maintenance procedures, and other management practices.
- 1069 (F) Hemp users shall include the following information in their user plan to comply:
- 1070 (1) A description of the training methods and verification that all employees and site managers receive
1071 training prior to becoming a working employee, and annual trainings shall be conducted.
- 1072 (2) A description of how visitors are educated prior to entering the irrigated areas.
- 1073 (3) A map showing the locations of signs throughout the site.
- 1074 (4) A description of the use type for the hemp; non-edible or edible applications.
- 1075 (5) A description of how the list of best management practices are kept on site.
- 1076 (G) Resident-Controlled Food Crop Irrigation Users that are irrigated shall include the following in their use plan
1077 to comply:
- 1078 (1) A description of how and when new home buyers will be educated about reclaimed water prior to
1079 using reclaimed water to comply with the requirements in Regulation 84;
- 1080 (2) A description of a plan to conduct periodic, representative inspections to ensure requirements are
1081 being met and to educate homeowners;
- 1082 (3) A description of sanctions that will be implemented for recalcitrant violators;
- 1083 (4) Description of how homeowners will differentiate reclaimed water equipment from standard potable
1084 irrigation equipment;
- 1085 (5) Description of how monthly water usage will be monitored to ensure irrigation is not exceeding
1086 agronomic rate.
- 1087 (H) All users shall include information in their user plan to comply that demonstrates compliance with the
1088 following:

- 1089 (1) Use of reclaimed water shall be confined to the authorized use area, operation, or process.
- 1090 (2) Precautions shall be taken to ensure that reclaimed water will not be sprayed on any facility or area
1091 not designated for application such as occupied buildings, domestic drinking water facilities, or
1092 facilities where food is being prepared for human consumption.
- 1093 (3) Notification shall be provided to inform the public that reclaimed water is being used and is not safe
1094 for drinking. The notification shall include posting of signs of sufficient size to be clearly read in all
1095 use areas, around impoundments, and on tanks, tank trucks and other equipment used for storage
1096 or distribution of reclaimed water, with appropriate wording in the dominant language(s) expected
1097 to be spoken at the site.
- 1098 (4) All new, modified, or replaced piping, valves, controllers, outlets, and other appurtenances,
1099 including irrigation systems and any equipment used for fire protection or in a commercial or
1100 industrial operation or process, shall be marked to differentiate reclaimed water from potable water
1101 or other piping systems.
- 1102 (5) An approved cross connection control device or method shall be provided at all potable water
1103 service connections to reclaimed water use areas.
- 1104 (6) Operation of the reclaimed water distribution or irrigation system, including valves, outlets,
1105 couplers, and sprinkler heads, and residential, commercial or industrial facilities and equipment
1106 utilizing reclaimed water, shall be performed only by personnel authorized by the user and trained
1107 in accordance with subsection 84.12(H)(11).
- 1108 (7) Supplementing reclaimed water with potable water by a user shall not be allowed except through
1109 an approved cross connection control device or method. Where an approved cross connection
1110 control device or method is used it must be tested on an annual basis by a Certified Cross-
1111 Connection Control Technician, unless there is a physical separation (e.g., removal of the
1112 connecting pipe, etc.) between the potable and reuse distribution systems. When potable water is
1113 used to supplement reclaimed water, the potable water provider must be notified.
- 1114 (8) For indoor uses of reclaimed water, testing shall be completed to detect uncontrolled cross
1115 connections by a certified cross-connection control technician prior to initial operation of the system
1116 and at intervals thereafter as mandated in the NOA. The user must maintain a current diagram of
1117 the structure's potable, reclaimed water, and wastewater plumbing.
- 1118 (9) Supplementing reclaimed water with other non-potable supplies shall not be allowed except
1119 through an approved cross connection control device or method. An approved cross connection
1120 device or method shall be provided at all service connections between reclaimed water and other
1121 non-potable water sources including but not limited to water from irrigation wells, industrial wells, or
1122 graywater.
- 1123 (10) There shall be no impoundment or irrigation of reclaimed water within 100 feet of any well used for
1124 domestic supply unless:
- 1125 (a) In the case of an impoundment, the impoundment is lined with a synthetic material with a
1126 permeability of 10-6 cm/sec or less; or
- 1127 (b) In the case of irrigation, other precautions are implemented and included as a condition of
1128 the notice of authorization, to prevent contamination of the well.
- 1129 (11) Workers shall be informed of the potential health hazards involved with contact or ingestion of
1130 reclaimed water and shall be educated regarding proper hygienic procedures to protect
1131 themselves.
- 1132 (12) The additional conditions included in section 84.9, as applicable.

1133 (13) For chlorine disinfection or alternative disinfection approaches approved under 84.9(A)(9), the user
1134 plan to comply shall identify the person responsible (e.g. user or treater) for monitoring disinfection
1135 at the point of compliance and operation and maintenance of the chlorine boosting system or the
1136 alternative disinfection method.

1137 (I) Users supplied by localized reclaimed water treatment systems shall include the following in a user plan to
1138 comply:

1139 (1) Protocol to switch to potable water and redirect reclaimed water to the sanitary sewer system no
1140 later than 12 hours after receipt of the results of any water quality test sample that does not meet
1141 the water quality requirements of the NOA or indication of a process malfunction based on
1142 continuous monitoring. Systems required to redirect reclaimed water to the sanitary sewer may
1143 resume normal operation after the Division receives a letter explaining why the performance was
1144 compromised and what actions were taken to prevent it from reoccurring, and three (3) consecutive
1145 days of data showing compliance, and the Division issues an approval to resume operations.

1146 (2) An affidavit by the user attesting to the employment of a certified operator or a service contract with
1147 a certified operator, who meets the requirements of Regulation 100.

1148 (3) An enforceable legal agreement defining the roles and responsibilities of the user and treater.

1149 (4) If required, the user shall identify the percentage contributions from each wastewater input to the
1150 localized system and the location of the input, and any limitations on contributions from non-
1151 domestic sources as necessary to prevent pass through, interference, or impacts on public health
1152 or the environment from those sources.

1153 (5) All other requirements in section 84.12(A), (B), and (C) that apply to the use of reclaimed water
1154 from the localized system, as well as all requirements in 84.12(H).

1155 (J) Oil & Gas Operations users shall include the following in a user plan to comply:

1156 (1) User information including name of entity; legally responsible person's name; address; telephone
1157 number; email address; and site address where reclaimed water will be used.

1158 (2) Identification of a site manager (field superintendent) responsible for daily operations at the site
1159 where reclaimed water is utilized.

1160 (3) A description of how reclaimed water is to be used.

1161 (4) A list of all water sources used at the location where reclaimed water is in use.

1162 (5) Identification of the potential for public contact with reclaimed water used in the commercial or
1163 industrial operation(s) or process(es).

1164 (6) Detail on how other water sources used on site are protected from cross contamination from
1165 reclaimed water by means of appropriate cross connection control devices or methods or
1166 identification of physical separation.

1167 (7) A schematic or diagram of all use areas, including but not limited to lay-flat hose(s), storage tanks,
1168 mixing tanks/trucks, and other areas on site where reclaimed water will be used.

1169 (8) Detail the procedures of how the hydrostatic testing of any lay-flat hose will be performed, if
1170 temporary lay-flat hose is used for delivery of reclaimed water. Results of testing must be available
1171 for verification during any site inspection.

1172 (9) Detail on how the lay-flat hose will be labeled to ensure it meets the labelling requirements
1173 specified in section 84.9(a)(37)(a).

1174 (10) Detail the process of monitoring the reclaimed water delivered to the site for the addition of biocide.

1175 (K) Each user plan to comply shall include a statement signed by the user, or a legal representative of the
1176 user, that certifies:

1177 (1) The user has been provided a copy of this regulation and agrees to comply with the applicable
1178 requirements of this regulation, in particular the Conditions for Use of Reclaimed Water described
1179 in sections 84.8, 84.9, 84.11 and 84.12, the NOA and user plan to comply, and, if applicable, the
1180 access restrictions when Category 1 reclaimed water is used. The user shall submit a certification
1181 statement per section 84.16 of this regulation with the information provided in this item; and

1182 (2) The user agrees to allow the treater or the Division reasonable access to the site to determine
1183 whether the user is in compliance with this regulation, the NOA and user plan to comply, and/or to
1184 perform monitoring and analysis as may be required in section 84.11 for localized systems, and
1185 section 84.12.

1186 (3) For indoor uses of reclaimed water, the user has had a certified cross-connection control technician
1187 complete a test to detect uncontrolled cross connections.

1188 **84.13 MONITORING, RECORD KEEPING AND REPORTING**

1189 (A) Treaters and users operating pursuant to a notice of authorization shall be subject to such monitoring,
1190 record keeping, and reporting requirements as may be reasonably required by the Division to ensure
1191 compliance with the requirements of this regulation, and the NOA, including, but not limited to the following:

1192 (1) For treaters: the quality of reclaimed water produced and delivered at the point(s) of compliance,
1193 inspections of a representative number and type of user sites to determine user compliance, and
1194 self-certifications submitted to the treater by users.

1195 (2) For each user, the total volume of reclaimed water used per year. For Landscape Irrigation Users
1196 and Agricultural Irrigation Users, each location with the associated acreage where reclaimed water
1197 was applied.

1198 (3) For each user using Category 1 reclaimed water, confirmation that reclaimed water was used only
1199 during authorized use times (if applicable).

1200 (B) Treaters shall provide an annual report to the Division for the previous year, by March 31st, that includes
1201 the following:

1202 (1) Information demonstrating the treater's compliance with the reclaimed water standards, including
1203 applicable treatment requirements described in section 84.7, 84.8, 84.9 and for localized systems,
1204 84.11 of this regulation.

1205 (2) Confirmation that the treater conducted inspections pursuant to section 84.13(A)(1) above.

1206 (3) Violations of this regulation by users pursuant to section 84.13(C)(1), below.

1207 (4) A certification statement by the treater as per section 84.16 below regarding the information
1208 provided by the treater in subsections (1) and (2) above.

1209 (5) Information supplied by users to the treater demonstrating compliance with the conditions
1210 applicable to each specific user included in the notice of authorization.

1211 (6) Certification statements from each user as per section 84.16 below regarding the information
1212 provided in subsection (5) above.

1213 (C) The treater and users shall report any violations as follows:

- 1214 (1) Violations of this regulation and/or notices of authorization at their respective facilities in writing to
1215 the Division, within thirty days of becoming aware of the violation. Where the treater finds violations
1216 by a user, the thirty day period for reporting is waived for a period of up to thirty additional days, if
1217 the treater is working with the user to resolve the violation. If the violation is resolved, no separate
1218 notice to the Division is required except that the violation is to be reported in the treater's annual
1219 report. If the violation is continuing after a total of sixty days from the time the treater became
1220 aware of the violation, the treater shall report the violation to the Division within five working days.
1221 Nothing in this section precludes a user from reporting violations by a treater to the Division.
- 1222 (2) For more serious violations (including non-permitted discharges to surface waters, uncontrolled
1223 cross-connections, exceedances of the reclaimed water standards for *E. coli*, turbidity, secondary
1224 standards, continuous proper operations and maintenance of treatment systems while producing
1225 reclaimed water, the NOA, conditions of the site location and design approvals, or other violations
1226 posing an immediate threat to public health or the environment): orally to the Division within 24
1227 hours of becoming aware of the violation, followed up by a written report within five working days.
1228 The written report shall contain a description of the noncompliance, including exact dates and
1229 times; and steps taken or planned to reduce, eliminate, and prevent recurrence of the
1230 noncompliance.

1231 **84.14 VARIANCES**

1232 The Division may grant a variance from any provision of this regulation, except that with respect to the *E.coli*
1233 standards in section 84.7, a variance may only be granted from the "235/100 ml single sample maximum" standard.
1234 The Division may grant a variance in a particular case where the treater or the user demonstrates that the benefits
1235 to public health or the environment that will be created by compliance with the subject provision do not bear a
1236 reasonable relationship to the costs required to achieve compliance.

1237 **84.15 ENFORCEMENT**

1238 Violations of this regulation by treaters and users shall be subject to enforcement by the Division pursuant to Part 6
1239 of the CWQCA. A treater shall not be subject to enforcement for a violation by a user; a user shall be solely
1240 responsible for its compliance with the terms and conditions imposed upon users. However, if the treater was
1241 aware of a violation by a user and did not report it as required in subsection 84.13(C), the treater may be subject to
1242 an enforcement action for failure to report the violation. A user shall not be subject to enforcement for a violation by
1243 a treater; a treater shall be solely responsible for its compliance with the terms and conditions imposed upon
1244 treaters. However, if a user was aware of the violation and did not report it as required in subsection 84.13(C), the
1245 user may be subject to an enforcement action for failure to report the violation.

1246 **84.16 CERTIFICATION**

1247 Persons who are required to make submittals pursuant to subsections 84.6(A)(5), 84.12(F), and 84.13(B)(6) of this
1248 regulation, shall include the following certification statement:

1249 "I certify, under penalty of law, that the information I am providing in this submittal is true, accurate, and correct.
1250 This determination has been made under my direction and supervision in accordance with a system designed to
1251 ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant
1252 penalties for false certification including the possibility of fine and imprisonment."

1253 **84.17 - 84.21 Reserved**

1254 **84.21 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE**

1255 The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S., provide the specific statutory authority for the
1256 Reclaimed Domestic Wastewater Reuse Control Regulation adopted by the Commission. The Commission has
1257 also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis, specific statutory
1258 authority, and purpose.

1259 **BASIS AND PURPOSE**

1260 A. Background

1261 In March of 1998 the Commission requested that a subcommittee of the Water Quality Forum be convened to
1262 consider potential statutory changes to the Colorado Water Quality Control Act ("Act") to address reuse of
1263 reclaimed domestic wastewater for landscape irrigation. The joint reuse committee of the American Waterworks
1264 Association and the Water Environment Association ("AWWA/WEA") suggested this approach to the Commission
1265 in a February 1998 presentation.

1266 In the fall of 1999 the Forum subcommittee made a recommendation that the Colorado Water Quality Control Act
1267 be amended to provide the Commission with the authority to promulgate control regulations for the oversight of
1268 reuse and to provide the Division with the authority to implement a reuse program. In March of 2000 the general
1269 assembly adopted changes to the Act consistent with the subcommittee's recommendations and those changes
1270 became effective on July 1, 2000. The subcommittee had been concurrently working on a proposed control
1271 regulation that is patterned after the Commission's Biosolids Regulation.

1272 B. Regulatory System Overview

1273 It is the intent of the Commission that this regulation further promote reuse of reclaimed domestic wastewater by
1274 providing a comprehensive framework which, when followed, will assure responsible management of operations
1275 and a product of a quality compatible with the state's goals of protecting the public health and the environment. The
1276 Commission concludes that the provisions of this regulation are economically reasonable considering the
1277 economic, environmental and public health costs and impacts of the program.

1278 The Commission, in adopting these regulatory provisions, has limited the scope of the regulation to reuse of
1279 reclaimed domestic wastewater for landscape irrigation. The statutory changes do not, on their face, appear to limit
1280 the adoption of control regulations to this type of reuse. However, the Commission finds that it is appropriate to limit
1281 the scope of the regulation to this aspect of reuse based on the AWWA/WEA recommendation that landscape
1282 irrigation should be addressed first as the vast majority of reclaimed domestic wastewater in Colorado is used for
1283 this purpose. The Commission will consider regulatory proposals for other types of reuse, such as industrial and
1284 agricultural, in future rulemaking hearings where recommendations from a broad spectrum of interests are brought
1285 forward. This regulation is not intended for single family residential areas, unless the landscape irrigation areas are
1286 commonly owned or otherwise subject to reasonable controls by a neighborhood association to assure application
1287 is consistent with the "Conditions for Application" requirements.

1288 The Commission has adopted provisions for the application of reclaimed domestic wastewater at "agronomic rates"
1289 with the intent that, once conforming changes are made to the Colorado Discharge Permit System ("CDPS")
1290 Regulations, reuse of reclaimed domestic wastewater in accordance with the provisions of this regulation will not be
1291 required to obtain a CDPS ground water discharge permit. The Commission does not intend that these regulations
1292 be used to limit flexibility to apply additional nutrients to landscaping being irrigated with reclaimed domestic
1293 wastewater. The Commission does expect that treaters will, as part of their overall program, inform applicators of
1294 the nutrient content of the reclaimed domestic wastewater.

1295 The Commission has found that the use of an approach similar to that defined in the Biosolids Regulation will
1296 provide the appropriate level of oversight of reuse operations yet will not unduly burden the entities that are treating
1297 and applying reclaimed domestic wastewater to landscape.

1298 The Commission expects that the amount of available information both on the health effects of reclaimed domestic
1299 wastewater and on the monitoring of pathogens will increase over the next several years. As a result, the
1300 Commission anticipates that the standards may be adjusted as new information becomes available. In the triennial
1301 review of this regulation, the Commission will consider any new information that is brought to it concerning
1302 pathogenic microorganisms and indicators of the presence or absence of such microorganisms in reclaimed
1303 domestic wastewater.

1304 C. Letters of Intent

1305 In order to facilitate the use of reclaimed domestic wastewater the "treater" is required to submit a Letter of Intent
1306 for each "applicator" to which it will be supplying reclaimed domestic wastewater. This will add a marginal burden to
1307 the treater, the entity that is most knowledgeable of the operational and regulatory requirements of the regulation,
1308 and will facilitate the responsible use of reclaimed domestic wastewater by entities that are interested in obtaining a

1309 viable product. At the same time, the Commission recognizes that the applicator must take responsibility for the
1310 proper use of reclaimed domestic wastewater by requiring the applicator to acknowledge receipt of the regulation
1311 and their intent to comply therewith. The treater must submit a description of an educational program that, in
1312 combination with a proposed plan to oversee the applicator's operation, will provide reasonable assurance of
1313 compliance.

1314 The Commission has allowed existing treatment and land application facilities until December 31, 2001, to submit
1315 Letters of Intent as they will continue to be regulated under an existing discharge permit. This will give these
1316 systems ample time to obtain the required information from their applicators and to develop any additional
1317 information on their own facilities. New operations are required to submit Letters of Intent at least 30 days prior to
1318 the use of reclaimed domestic wastewater for landscape irrigation. This difference in timing is appropriate as
1319 existing facilities have been operating under a different set of regulatory requirements while new operators will be
1320 made aware of the requirements of these regulations through the site application approval process for domestic
1321 wastewater treatment works.

1322 The Commission has established a 30-day period during which the Division must notify the applicant if the Letter of
1323 Intent is incomplete. This period is long enough to allow the Division to complete its review of the application and
1324 will not unreasonably delay approval of new systems or the addition of new applicators to existing systems.

1325 D. Notices of Authorization

1326 The Division has an additional 30 days from the time that the Letter of Intent is determined to be complete to issue
1327 the Notice of Authorization. This Commission finds this to be reasonable amount of time as the treater will have
1328 already received approval of the site application for the treatment facilities such that a substantial amount of
1329 information regarding the system will have already been provided to the Division. The Commission has required a
1330 Notice of Authorization to be issued to the treater and each applicator as a means of ensuring that the burden of
1331 compliance with the regulations is fairly distributed between the entity providing the reclaimed domestic wastewater
1332 and the entity that is putting that water to use.

1333 The Commission has provided the opportunity for the treater, an applicator, or any other aggrieved party to appeal
1334 the Division's decision to issue or deny a Notice of Authorization in accordance with the Commission's procedural
1335 regulations.

1336 The Commission has not limited the effective period of the Notice of Authorization since changes other than the
1337 addition or removal of applicators are expected to be relatively infrequent. This will reduce the burden that renewing
1338 Notices of Authorization would have on both the treater/applicator and the Division.

1339 Notices of Authorization will include appropriate monitoring and reporting requirements, reclaimed domestic
1340 wastewater standards, and other necessary conditions to ensure the protection of the environment and public
1341 health.

1342 E. Reclaimed Domestic Wastewater Standards

1343 Treatment Requirements and Technology-Based Limits

1344 The public health risk of contracting disease from pathogenic microorganisms via exposure to reclaimed domestic
1345 water is mitigated by treating wastewater so as to minimize the number of viable pathogenic microorganisms:
1346 bacteria, viruses and protozoans. Acceptable public health risk is determined based on an absence of acute
1347 gastrointestinal disorders [the most likely type of disease manifestation] in those persons casually exposed to
1348 reclaimed domestic wastewater as it is used for surface irrigation of landscaping. Bacterial protection is ensured
1349 through the imposition of limits on E.coli , a surrogate organism for determining the potential presence of bacterial
1350 pathogens. Viral and protozoan (meaning specifically enteroviruses, and giardia/cryptosporidium parasites) protection
1351 is ensured by the imposition of limits for turbidity or total suspended solids, as appropriate.

1352 The Commission has determined that, for unrestricted use of reclaimed domestic wastewater, which has a higher
1353 level of public contact, an additional barrier is appropriate to ensure the physical removal of pathogenic organisms
1354 that may potentially be present in the wastewater. Therefore, filtration, with associated turbidity limits to ensure the
1355 proper operation of the filtration facilities, is required for treaters practicing unrestricted use. Dilution after the
1356 filtration process will not provide a positive barrier to pathogenic organisms and is not allowed to be used as a

means of complying with limits unless a variance has been obtained. Restricted use, with its much lower potential for public contact, will not require filtration; however, total suspended solids limits consistent with a well-operated secondary treatment system will be required.

Selection of turbidity as a surrogate measure of microbial purity for reclaimed domestic water is valid as an inexpensive means of determining microbial purity with regard to viruses and parasites. There is an absence of data to absolutely define a turbidity at or below which viruses will be absent. Actual turbidity vis-a-vis virus density data illustrate that, when combined with adequate disinfection, an absence of virus plaque forming units can be achieved up to turbidity levels of six NTU (nephelometric turbidity units). (D'Angelo, et al. Pilot Testing to Evaluate Virus Removal and Deactivation, Proceedings of the 1984 Specialty Conference on Environmental Engineering, ASCE/Los Angeles, California, June 25-27, 1984). Similarly, from 1984 to 1991, comprehensive virus testing by Dr. Gerba at the University of Arizona recovered only one plaque forming unit (virus) from the Tucson Water Department's recycled water facility which was operating with a five NTU limit with an actual turbidity averaging between 3.5 and 4.0 NTU. In addition, there are four turbidity levels used among several states that permit the use of reclaimed domestic wastewater for irrigation. A two NTU limit is used in California, Missouri, and Oregon, a three NTU limit is used in Nevada and Texas (30-day average in TX, only), and a five NTU limit is used in Tucson, Arizona. In some cases concomitant virus and parasite (specifically Ascaris lumbricoides) monitoring is required; in other cases virus or parasite monitoring is required with no attention paid to turbidity; and in one case total suspended solids limits are used instead of turbidity limits. There is no consensus among the several states as to the appropriate turbidity limit. Accordingly, the Commission has selected a middle ground for unrestricted use application of reclaimed domestic wastewater. For these systems, calendar-month-average and maximum limits will be set at three NTU and five NTU (not to be exceeded in more than 5% of samples), respectively. No turbidity limits are required for restricted use sites, however, a total suspended solids limit of 30 mg/l is required as a daily maximum. This is deemed a somewhat conservative health risk-based standard given the low potential for contact with reclaimed domestic wastewater in this circumstance. This standard is technologically achievable and the Commission finds it to be appropriate to maintain public confidence in reclaimed domestic wastewater.

Indicator Organism and Limits

The Commission finds that E.coli is the appropriate surrogate indicator organism for determining the potential presence of bacterial pathogens in reclaimed domestic wastewater. The use of E. coli is appropriate primarily based on contemporary research presented in EPA documents summarizing the scientific studies. The most recent scientific data is contained in EPA 440/5-84-002 (Ambient Water Quality Criteria for Bacteria – 1986), and Dufour's USEPA study (Dufour, A.P., 1984, Health effects criteria for fresh recreational waters: EPA 600/1-84-004). The evidence demonstrates that E.coli is the best possible indicator organism because the ratio between pathogens of fecal origin to indicator organisms is most valid for E.coli. Furthermore, E.coli does not regrow once it is released into the ambient environment, where it only survives for about 110 hours.

This is similar to pathogen survival. These criteria do not hold for the traditional indicator organisms such as total and fecal coliforms. (Cabelli, V.J., 1982, Microbial Indicator Systems for Assessing Water Quality, Antonie van Leeuwenhoek, 48:613). In August 1998 US EPA's Office of Science and Technology, on the advice of 14 experts, strongly agreed that E.coli was the only appropriate indicator of fecal contamination.

E. coli also more closely meets and fulfills the traditional and long standing requirements of a surrogate indicator organism for pathogens. These criteria are that an indicator must be a biotype that is prevalent in sewage and excreted by humans and warm blooded animals. It should be present in greater abundance than pathogenic bacteria and the indicator should not be readily capable of proliferation. Ideally the indicator will be more resistant to disinfectants than pathogenic bacteria but will otherwise have a similar ambient survival time with them; and, the indicator should be quantifiable by simple, inexpensive, and rapid laboratory procedures. (Kott, Y., Current Concepts of Indicator Bacteria, BACTERIAL INDICATORS/HEALTH HAZARDS ASSOCIATED WITH WATER, ASTM STP 635, A. W. Hoadley and B. J. Dutka, Eds. American Society for Testing and Materials, 1977, pp 3-13.) E. coli satisfies more of these than any other indicator microorganism recommended by health professionals for fresh water.

There are few epidemiological studies that evaluate the risk of contact with reclaimed domestic wastewater. The Commission has set the limits for E. coli at a level equivalent to that recommended by EPA for swimming beaches in Ambient Water Quality Criteria for Bacteria – 1996 which recently was reaffirmed by EPA in Draft Implementation Guidance for Ambient Water Quality Criteria for Bacteria 1996 (January 2000). While these uses do not directly correlate, the Commission has found this to be an acceptable level of risk particularly when considering that, in

1410 establishing the limit for swim beaches, it was assumed that 100 ml of water was ingested. It is reasonable to
1411 expect that criteria established to protect swimmers will be more protective of individuals casually exposed to
1412 irrigation spray of reclaimed domestic wastewater.

1413 F. Additional Conditions

1414 The Commission is establishing a number of conditions for the application of reclaimed domestic wastewater that
1415 are intended to provide additional assurance that the health of the public will be protected by minimizing exposure
1416 to pathogenic organisms and that runoff from reuse sites will not leave the application site or enter state waters in
1417 appreciable amounts. In response to concerns raised regarding how the restricted use conditions of the regulation
1418 may be applied to use of reclaimed domestic wastewater for irrigation of golf courses, the Commission anticipates
1419 that golf course irrigation that occurs before and after normal operating hours on golf courses that restrict public
1420 access during such times will typically satisfy the requirements of subsection 84.8(A) of the regulation.

1421 G. Monitoring and Reporting

1422 The Commission finds that compliance oversight of the applicators should be shared by both the Division and the
1423 treater. The treater, based on its relationship with the applicator, is in a better position to oversee the operations of
1424 the applicator and can generally resolve violations without Division intervention as part of their routine program
1425 activities. If these efforts fail to return the applicator to compliance, then the Division will assume the lead role in the
1426 compliance oversight efforts.

1427 Due to the limited part of the year during which irrigation takes place, the Commission finds that it is appropriate to
1428 limit the submittal of reported information to an annual report. The annual report must include the confirmation that
1429 the treater conducted inspections at a representative number of applicator sites as part of the treater's overall
1430 compliance assurance program.

1431 H. Variances

1432 The Commission is establishing a provision for variances from any aspect of the regulation but notes that the
1433 burden is on the treater to demonstrate that compliance with the regulations is unreasonable in light of the costs to
1434 comply.

1435 The Commission recognizes that several reclaimed domestic wastewater systems were constructed and operated
1436 prior to the adoption of this regulation. This regulation is not intended to force existing systems to make capital
1437 improvements solely for assuring standardization if they accomplish the objectives of this regulation.

1438 PARTIES TO THE RULEMAKING HEARING

- 1439 1. Spring Valley Sanitation District
- 1440 2. The City of Thornton
- 1441 3. The City and County of Denver, Board of Water Commissioners
- 1442 4. The City of Westminster
- 1443 5. Roxborough Park Metropolitan District
- 1444 6. Plum Creek Wastewater Authority
- 1445 7. The City of Broomfield
- 1446 8. The Farmers Reservoir and Irrigation Company
- 1447 9. Colorado Water Conservation District
- 1448 10. Colorado Springs Utilities
- 1449 11. The Town of Hotchkiss
- 1450 12. Spring Valley Development, Inc.
- 1451 13. The City of Aurora
- 1452 14. Chatfield Watershed Authority
- 1453 15. The City of Blackhawk
- 1454 16. Public Service Company of Colorado

1455 **84.22 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (April 2004 Hearing)**

1456 The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for
1457 adoption of amendments to the Reclaimed Domestic Wastewater Reuse Control Regulation. The Commission also
1458 adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

1459 **Basis and Purpose**

1460 When the Commission adopted Regulation 84 in October 2000, it limited its scope to use of reclaimed domestic
1461 wastewater for landscape irrigation. On October 8, 2003, the Water Quality Control Division and the Joint Water
1462 Reuse Committee of the Rocky Mountain Section American Water Works Association and Rocky Mountain Water
1463 Environment Association ("RMSAWWA/RMWEA") requested that the Commission review Regulation 84 for the
1464 purpose of considering industrial and commercial uses of reclaimed domestic wastewater. On April 12, 2004, the
1465 Commission held a rulemaking hearing during which several modifications and additions to the regulation were
1466 adopted. The Commission modified section 84.4 of the regulation to clarify that reuse of reclaimed wastewater for
1467 the uses identified in section 84.8 of the regulation is prohibited except where authorized pursuant to a Notice of
1468 Authorization. This change was made to clarify the Commission's intent that regulation 84 does not preclude the
1469 Division from authorizing uses of reclaimed wastewater that fall outside of the current scope of Regulation 84,
1470 where the Division is legally authorized to do so.

1471 As a result of this rulemaking, the Commission amended Regulation 84 to further promote the use of reclaimed
1472 domestic wastewater, by allowing such water to be used in industrial and commercial applications as well as
1473 landscape irrigation. The Commission finds that the industrial and commercial uses contemplated by these
1474 amendments will create no greater risk to public health or the environment than the landscape irrigation uses
1475 authorized before the amendments.

1476 The regulation, as amended, provides a framework that assures these additional uses are consistent with the
1477 Commission's goals of protecting the public health and the environment, by requiring reclaimed domestic
1478 wastewater to meet minimum standards, and requiring treaters and users of such water to employ appropriate best
1479 management practices and oversee its use.

1480 The Commission adopted provisions requiring treaters to provide the Division with a "User Plan to Comply" for each
1481 user, prior to receiving authorization to provide reclaimed domestic wastewater. The plan shall describe the
1482 intended use and the best management practices the user will employ, and demonstrate how these practices
1483 ensure the proposed landscape irrigation, industrial or commercial use will be protective of public health and the
1484 environment.

1485 The Commission also revised the regulation for clarity by renumbering sections, revising language, and
1486 reorganizing the regulation.

1487 The Commission concludes that the amendments to this regulation are economically reasonable considering the
1488 economic, environmental, and public health costs and impacts of the reuse program.

1489 Section 84.2 was modified to clarify the Commission's intent that the regulations protect the environment as well as
1490 public health. Section 84.4 was revised to expand Regulation 84's applicability for reclaimed domestic wastewater
1491 and to remove obsolete references. Section 84.4 was also revised to replace the term "direct reuse" with "reuse,"
1492 as the exceptions provisions in section 84.4 already exempt waters discharged to state waters from coverage under
1493 Regulation 84. Language was also added to section 84.4 to clarify that treaters and landscape irrigation users who
1494 are operating under already existing Notices of Authorization do not need to resubmit Letters of Intent upon
1495 promulgation of these regulatory amendments. The Division will issue amended Notices of Authorization to the
1496 existing treaters and landscape irrigation users as routine amendments are made to their user information and
1497 Letters of Intent, or by June 30, 2006, whichever comes first. However, treaters and users who had implemented
1498 programs for use of reclaimed water prior to the effective date of the regulation for any use other than landscape
1499 irrigation must submit new Letters of Intent for such use(s) to the Division no later than August 31, 2004.

1500 The Commission adopted amendments adding, deleting, and modifying definitions used in Regulation 84. The
1501 following definitions were modified or deleted to increase clarity or to achieve consistency with other revisions:
1502 "Point of Compliance," "Reclaimed Domestic Wastewater," "Restricted Use," and "Treater." The definition of "Direct
1503 Reuse" was deleted consistent with the change to section 84.4 noted above. The definition for "Applicator" was
1504 deleted and replaced with a more generic definition of "User" to include all types of users of reclaimed domestic
1505 wastewater. The following definitions were added: "CommercialUser" describes a new type of user; "Industrial

1506 User” describes a new type of user; “Irrigation System” reduces confusion by differentiating between a user’s
1507 irrigation system and a treater’s treatment and transmission facilities; “Landscape Irrigation User” aids in
1508 differentiating between types of users; “Restricted Access” is used in place of “restricted use” for clarity;
1509 “TransmissionSystem” reduces confusion by differentiating between a treater’s facilities and a user’s irrigation
1510 system; “Unrestricted Access” is used in place of “Unrestricted Use” for clarity; “User” describes the characteristics
1511 of users; and “User Plan to Comply” refers to the plan a user is required to submit to show compliance with
1512 Regulation 84.

1513 The Commission reorganized and edited section 84.6(a) [formerly 84.5(A)] regarding letters of intent, for clarity,
1514 completeness, and consistency with other revisions. Treaters must still submit a Letter of Intent to the Division, but
1515 the Letter of Intent requirements differ, depending on the intended uses for the reclaimed domestic wastewater. In
1516 addition, the Commission recognizes that to facilitate new or expanded uses for reclaimed domestic wastewater
1517 and timely approval of projects, the Division must have some flexibility in administering the Letter of Intent process.
1518 For instance, the revisions would allow a treater to submit a Letter of Intent concurrently with a pending site
1519 application and/or facility plans and specifications.

1520 The Commission amended subsection 84.6(A)(3) [formerly 84.5(A)(3)], to clarify that treaters are required to
1521 provide information demonstrating that reclaimed domestic wastewater applied to landscapes by landscape
1522 irrigation users will be applied at or below agronomic rates or, where application at agronomic rates is not or will not
1523 be achieved, that land application is being done pursuant to a CDPS permit. The Commission is aware that some
1524 entities may have been land applying in excess of agronomic rates, and that they have incorporated the return
1525 rates to ground water into their discharge permits and into augmentation plans. The Commission adopted this
1526 change to provide flexibility to entities practicing landscape irrigation so that they can maintain their current
1527 application practice, and associated credits under their augmentation plan, while applying reclaimed water in
1528 excess of agronomic rates pursuant to a CDPS permit. The Commission added language indicating that land
1529 application may also be subject to waste load allocations or limits as contained in a TMDL or control regulation
1530 governing the watershed within which the land application occurs, to clarify that Regulation 84 acts in tandem with
1531 these regulatory requirements. The agronomic application rate requirement does not apply to commercial and
1532 industrial users.

1533 The Commission reorganized subsection 84.6(A)(6) [formerly 84.5(A)(6)] by moving existing requirements for users
1534 into modified sections 84.9 and 84.10, which contain the required content of a “User Plan to Comply” for each
1535 different type of use. The purpose of the User Plan to Comply is to provide the Division with information from each
1536 user that demonstrates that the proposed landscape irrigation, industrial or commercial use will be protective of
1537 public health and the environment.

1538 The Commission amended subsection 84.6(A)(7) [formerly 84.5(A)(7)] to simplify the Letter of Intent process while,
1539 at the same time, fulfilling the Commission’s responsibility under C.R.S. 25-8-104 to determine if any decision it
1540 makes has the potential to cause material injury to water rights.

1541 The Commission moved the requirement that a treater must update and modify its Letter of Intent under certain
1542 circumstances to subsection 84.6(E)(7) [formerly 84.5(A)(8)] under Terms and Conditions of Notices of
1543 Authorization. The Commission inserted a requirement for the treater to include a letter from the fire protection
1544 authority indicating its approval for use of reclaimed domestic wastewater for fire protection activities. This
1545 requirement assures that the fire protection authority has been solicited. This section 84.6(E) [formerly 84.5(E)]
1546 regarding Notices of Authorizations was revised for clarity, completeness, and consistency with other revisions.

1547 In this rulemaking, the Commission established category-based standards for reclaimed domestic wastewater
1548 quality in section 84.7 [formerly 84.6]. Category 1 standards apply to water previously designated for “restricted
1549 use,” and Category 2 standards apply to water previously designated for “unrestricted use.” The category
1550 framework allows the Commission to identify with more precision the appropriate uses for various qualities of
1551 reclaimed domestic wastewaters, while the terms “restricted use” and “unrestricted use” were found to be
1552 incompatible with the diverse industrial and commercial settings where reclaimed domestic wastewater is now
1553 authorized to be used. The category-based framework also will facilitate the Commission’s future review of
1554 proposed uses for reclaimed domestic wastewater that may require different water quality.

1555 The Commission found no reason to reassess the treatment standards adopted for reclaimed domestic wastewater.
1556 The Commission, in the 2000 rulemaking, found those standards to be appropriate for the use of reclaimed
1557 domestic wastewater for landscape irrigation and the Commission finds them to be sufficiently protective of public

1558 health and the environment for the additional approved industrial and commercial uses when best management
1559 practices are employed.

1560 The Commission modified the treatment requirements for reclaimed domestic wastewater by replacing the term
1561 "oxidized" with "secondary treatment." Secondary treatment is generally accepted in the wastewater industry to
1562 mean that wastewater has been biologically treated to remove at least 85% of BOD and total suspended solids.

1563 The Commission established a new section 84.8 to identify different approved uses for reclaimed domestic
1564 wastewater. A table is provided detailing the landscape irrigation, industrial and commercial uses approved by the
1565 Commission if such use is conducted in accordance with a Notice of Authorization under Regulation 84. Each new
1566 use is addressed below:

1567 Cooling Tower: The Commission approved the use of reclaimed domestic wastewater in cooling towers, based on
1568 findings that indicate the quality of the source (make-up) water used in cooling towers is not of great concern. When
1569 best management practices typically applied at cooling towers are employed, the quality of the source water does
1570 not increase any risk to public health or the environment. Cooling towers are not accessible to the public and are
1571 maintained in a fashion that the water quality inside the cooling tower is controlled to standards that protect human
1572 health, regardless of the make-up water quality.

1573 Concrete Mixing and Washout: The Commission approved the use of Category 1 reclaimed domestic wastewater in
1574 concrete batching processes where the water is mechanically dispensed into the truck mixer drum through a metal
1575 chute. This use of reclaimed domestic wastewater is protective of public health and the environment due to the fact
1576 that the water is dispensed by computer operated equipment, preventing worker contact, and the high pH of
1577 batched concrete would not allow the growth of microorganisms. Additionally, the water is entrained in the concrete
1578 and, therefore, is not discharged to surface or groundwater. Due to the potential for public and worker exposure,
1579 Category 1 reclaimed domestic wastewater may not be used for purposes other than mixing of the concrete. The
1580 Commission approved using Category 2 reclaimed domestic wastewater for batching concrete, for truck wash-
1581 down purposes at the plant, as an on-truck water supply to use for maintaining and adjusting concrete slump, and
1582 for wash-out purposes at the site. The Commission realizes that when proper BMPs are implemented, this use is
1583 protective of public health and the environment.

1584 Dust Control/Soil Compaction/Mechanized Street Sweeping: The Commission approved the use of reclaimed
1585 domestic wastewater to wet down or pre-water work surfaces, for construction and demolition activities,
1586 sandblasting, soil compaction, and mechanized street washing. Approval is conditional on the user demonstrating
1587 that the application rate for these uses will not result in ponding or runoff into waters of the state, and that off-
1588 property transport of airborne particulate matter will be minimized. These uses are deemed protective of public
1589 health and the environment because the potential for public exposure for these activities when best management
1590 practices are implemented is minimal.

1591 Closed Loop Cooling System: The Commission approved the use of reclaimed domestic wastewater in closed loop
1592 cooling systems where water circulates only within a contained system. This use results in no public exposure to
1593 reclaimed domestic wastewater, and only very limited and controlled contact by workers. Environmental risk from
1594 this use is also minimal when proper treatment and best management practices associated with the cooling
1595 processes are employed. Allowing the use pursuant to the best management practices, including discharging
1596 wastewater from the cooling process to the sanitary sewer system or other approved disposal mechanism, required
1597 by the regulation creates no greater risk to public health and the environment than using potable water in the
1598 cooling system.

1599 Zoo Operations: The Commission approved the use of reclaimed domestic wastewater in zoo operations, including
1600 the care of captive animals. The Animal and Plant Health Inspection Service of the U.S. Department of Agriculture
1601 enforces the Animal Welfare Act, which governs the humane care and treatment of warm blooded and marine
1602 animals held in zoos. These entities must be licensed to operate, and must comply with the care and treatment
1603 standards provided by federal law. Category 2 reclaimed domestic wastewater meets or exceeds the water quality
1604 standards for zoo animals provided by federal law. Environmental and public health risk from this use is also
1605 minimal when proper best management practices associated with zoo management practices are employed. Such
1606 practices include discharging animal wastewater to the sanitary sewer system or other approved disposal
1607 mechanism, limited public access to water used for animal holding areas and habitat wash-down.

1608 **Fire Protection:** The Commission determined that providing fire protection (interior sprinkler and exterior hydrants)
1609 with reclaimed water meeting Category 2 standards for commercial/industrial buildings is protective of public health
1610 when appropriate best management practices are implemented. The exposure to reclaimed water by building
1611 occupants during a fire is expected to be of short or no duration. This, coupled with the quality of Category 2 water,
1612 will not present a significantly greater risk than exposure to reclaimed water in a park or other landscape irrigation
1613 setting. Risks to fire fighters will be further mitigated due to their use of personal protective equipment and the
1614 requirement that they be educated in proper use of reclaimed water. Due to an increased risk of cross connection
1615 and potentially greater risk to public health, the Commission is not at this time specifically permitting the use of
1616 reclaimed water for hydrants in residential neighborhoods or for fire sprinkler systems at any residential structure.
1617 However, the Commission understands that the ability to use reclaimed water for such residential firefighting uses
1618 may have ramifications for both the costs associated with the construction of, and the need for, "potable" water
1619 facilities. The Commission believes, however, that such concerns can be addressed through the use of the
1620 variance provisions at section 84.12, whereby the Division can allow such uses on a case-by-case basis, subject to
1621 the proponent providing a quality of reclaimed water better than Category 2, and implementing additional BMPs that
1622 ensure the impact to public health and the environment are appropriately limited.

1623 Where reclaimed water is used at interior sprinklers, with numerous fire protection outlets, there are increased risks
1624 of public exposure to reclaimed water during non-emergencies and for cross connections between the reclaimed
1625 water and potable water systems. The Commission is requiring that the additional conditions listed in section
1626 84.8(A)(7) be implemented to strictly minimize these risks.

1627 Water used for firefighting typically becomes polluted during its use. The Commission finds that there is little
1628 increased environmental risk associated with the reclaimed water source versus a potable water source for the
1629 firefighting water. Due to the emergency nature and low frequency of occurrence, discharges from firefighting
1630 activities are exempt from NPDES permitting requirements for non-storm water discharges (40CFR Part 122,
1631 §122.26) and shall likewise be exempt from the no discharge to waters of the State' provision in section 84.4 of this
1632 Regulation.

1633 The Commission reorganized and edited section 84.9 [formerly 84.7] to address conditions for each different type
1634 of use of reclaimed domestic wastewater. Users must address each condition in a "User Plan to Comply" which
1635 varies for each type of use. (Under section 84.6, a treater must submit a User Plan to Comply for each of its users,
1636 certify that it will implement its Reuse Management Plan, and monitor the user's compliance with the User Plan to
1637 Comply and the requirements of Regulation 84.) Industrial and commercial users must submit a User Plan to
1638 Comply that describes the industrial or commercial operation or process using reclaimed domestic wastewater, an
1639 analysis of the specific use's potential risks to public health and the environment, and best management practices
1640 the user will employ to minimize such potential risks. The User Plan to Comply also includes a certification by the
1641 user that its use of reclaimed domestic wastewater is consistent with Regulation 84's purpose of protecting public
1642 health and the environment.

1643 Modifications to this section include the following:

- 1644 • 84.9(A) sets forth the conditions for the application of reclaimed domestic wastewater for landscape
1645 irrigation.
- 1646 • 84.9(B) is a new section setting forth the conditions for industrial and commercial users.
- 1647 • 84.9(C) sets forth conditions for use applicable to all users, regardless of type. Each of these conditions
1648 previously applied only to landscape irrigation users. [formerly 84.7(A)(1), 84.7(A)(2), 84.7(A)(3),
1649 84.7(A)(4), 84.7(C), 84.7(E), 84.7(F), 84.7(G), 84.7(H), 84.7(I), 84.7(J), 84.7(L) and 84.7(M).]
- 1650 • Former Section 84.7(D) required users to comply with the piping design guidelines contained in AWWA
1651 Manual M-24, Dual Water Systems, (AWWA, Denver, CO 1994). This reference was eliminated because
1652 the referenced guidelines are not applicable to users' irrigation, industrial and commercial piping systems.
1653 Section 84.6(A)(2) of the amended regulation requires the treater to submit proof it has obtained site
1654 application approval and design approvals pursuant to the requirements of Regulation No. 22. Treaters'
1655 location and design plans and specifications are reviewed by the Division pursuant to Regulation No. 22. It
1656 is the intent of the Water Quality Control Division to use AWWA Manual M-24 as guidance during this
1657 review.

1658 Section 84.10 [formerly 84.8], which establishes additional conditions for the use of Category 1 reclaimed domestic
1659 wastewater, was revised for clarity, completeness, and consistency with other revisions.

1660 The Commission revised section 84.11 [formerly 84.9] to account for industrial and commercial uses, and to
1661 eliminate previous monitoring requirements that were impractical and burdensome for treaters and users. Users of
1662 Category 1 reclaimed domestic wastewater for landscape irrigation must confirm that application occurred during
1663 authorized times instead of requiring the keeping of records showing the actual dates and times that restricted use
1664 water was used. This requirement saves time for the treaters, users and the Division while maintaining the original
1665 intent.

1666 Section 84.12 [formerly 84.10] was revised for clarity, completeness, and consistency with other revisions. Section
1667 84.13 [formerly 84.11] regarding enforcement was revised for clarity, completeness, and consistency with other
1668 revisions.

1669 PARTIES TO THE RULEMAKING HEARING

- 1670 1. Rangeview Metropolitan District
1671 2. Colorado Wastewater Utility Council
1672 3. The City and County of Denver, Board of Water Commissioners
1673 4. The City of Westminster
1674 5. Airpark Metropolitan District
1675 6. Parker Water and Sanitation District
1676 7. RG Consulting Engineers
1677 8. Xcel Energy
1678 9. Colorado Rock Products Association

1679 **84.23 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (AUGUST, 2005 1680 HEARING, ADOPTED OCTOBER 11, 2005 AND EFFECTIVE NOVEMBER 30, 2005)**

1681 The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for
1682 adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4),
1683 C.R.S., the following statement of basis and purpose.

1684 **Basis and Purpose**

1685 On February 14, 2005, the Water Quality Control Division and the Joint Water Reuse Committee of the Rocky
1686 Mountain Section American Water Works Association and Rocky Mountain Water Environment Association ("Joint
1687 Committee") requested that the Commission review Regulation No. 84 for the purpose of considering additional
1688 uses of reclaimed water and other changes to the regulation. On August 8, 2005, the Commission held a
1689 rulemaking hearing during which several modifications and additions to the regulation were adopted.

1690 As a result of this rulemaking, the Commission amended Regulation No. 84 to continue to promote the use of
1691 reclaimed water. The regulation, as amended, extends its framework to include additional uses of reclaimed water
1692 and accompanying requirements to ensure protection of public health and the environment. Specifically, the
1693 Commission is requiring reclaimed water to meet minimum standards commensurate with the risks associated with
1694 the new uses. Also, treaters and users are required to employ appropriate best management practices and to
1695 oversee the use of reclaimed water for such uses.

1696 The Commission concludes that these amendments to Regulation No. 84 are reasonable considering the
1697 economic, environmental, and public health costs, benefits and impacts of the water reuse program.

1698 The term "reclaimed domestic wastewater" was changed to "reclaimed water" throughout the Regulation.
1699 "Reclaimed water" is the term used in the water reuse regulations of most other states and is also used in EPA's
1700 2004 Guidelines for Water Reuse. It is desirable to use a common term for this highly treated water as this will
1701 assist with public education efforts.

1702 The Commission modified section 84.4 to delete provisions that are no longer applicable and relocated the
1703 exemption for irrigation at wastewater treatment facilities to the definition of Landscape Irrigation. The Commission
1704 also added, deleted, and modified definitions to increase clarity and to achieve consistency with earlier revisions to

1705 this regulation and with other regulations. The definition of "Agricultural Use" was deleted since the regulation does
1706 not address this use at this time. The definition of "Agronomic Rate" was expanded to include watering
1707 requirements of plants in order to reinforce the Commission's intent that passage of nutrients below the root zone
1708 be strictly minimized. This change operates in conjunction with revisions to sections 84.6(A)(3) and 84.9(A)(4).
1709 Specific uses such as Closed Loop Cooling System, Dust Control, and Fire Protection – Non Residential were
1710 deleted from section 84.8(A) and are now defined in section 84.5. The definition of "Closed Loop Cooling System"
1711 added to Section 84.5 parallels the language currently found in section 84.8(A)(5) of the rule. It is the Commission's
1712 intent that all types of closed loop cooling systems falling within this definition are authorized to use reclaimed
1713 water. This includes re-circulating evaporative cooling systems and associated cooling water storage facilities that
1714 may be employed in the electric generation industry where public access is not allowed such as the use that has
1715 been in place at Platte River Power Authority since 1981. Definitions for "Resident-Controlled Landscape Irrigation"
1716 and "Fire Protection – Residential" were also added. For purposes of this regulation, residential areas are land use
1717 planning areas zoned for residential use, or otherwise designated for residential use by the applicable local land
1718 use planning authority.

1719 The Commission revised section 84.6(A)(3) to require a specific analysis, prior to issuance of a Notice of
1720 Authorization, to demonstrate that reclaimed water will be applied at agronomic rates. This was done to ensure that
1721 land application done under Regulation No. 84 is protective of ground water quality in light of the Commission's
1722 adoption of revisions to Regulation No. 61 that provide an exemption from the requirement to obtain a discharge
1723 permit, in such situations. Similarly, the Commission revised the best management practice at section 84.9(A)(4) to
1724 add additional protections for ground water.

1725 In situations where there are applicable limitations on concentration or loading of phosphorus or nitrogen under a
1726 control regulation or TMDL, the Commission modified sections 84.6(A)(9) and 84.6(E)(6) to provide an option, at
1727 the request of the treater, to have such limitations addressed in the Notice of Authorization. Otherwise, such
1728 limitations must be included in a discharge permit issued pursuant to Regulation No. 61.

1729 The Commission refined section 84.6(E)(7) regarding the requirement for a treater to request an amendment to the
1730 Notice of Authorization.

1731 The Commission adopted standards and other requirements for Category 3 reclaimed water to apply to two newly
1732 authorized uses of reclaimed water. Specific Category 3 uses authorized include the use of reclaimed water for fire
1733 protection in residential areas and for landscape irrigation where a single-family resident has control of the
1734 plumbing and/or the time of irrigation. When compared with those uses where Category 1 or Category 2 reclaimed
1735 water is allowed, uses requiring Category 3 water may present an increased risk of consumption of reclaimed water
1736 due to the fact that the number of entities (e.g., single family residents) who control connections after initial
1737 construction will significantly increase and these individuals will also control the time and manner in which irrigation
1738 takes place. This increases both the possibility of a cross-connection between the reclaimed water and potable
1739 water systems and the risk of public contact with reclaimed water. Given this increased risk, the Commission
1740 adopted a standard for Category 3 reclaimed water that requires that *E. coli* not be detected in 75% of samples
1741 collected in any 30-day period, with a single-sample maximum for *E. coli* of 126 colony forming units (cfu) per 100
1742 milliliters (ml) or a most probable number (MPN) of 126 per 100 ml, depending upon the analytical enumeration
1743 method used. This standard recognizes that it is not practical to meet a no detect standard for an indicator
1744 organism at all times and is consistent with regulatory requirements used in other states (e.g. Florida) and with the
1745 recommendations of the EPA. The rationale for selecting 126 cfu (or MPN) per 100 ml as the single sample
1746 maximum standard is consistent with the rationale supporting the *E. coli* standard for Category 1 and 2 reclaimed
1747 water. The Commission found that the *E. coli* standard is protective of the public health and environment where
1748 Category 3 reclaimed water is used in a manner compliant with the other requirements contained in the regulation.

1749 The Commission exercised its discretion, pursuant to Citizens for Free Enterprise v. Department of Revenue, 649
1750 P.2d 1054 (Col. 1982) to adopt these requirements based upon policy considerations about the possible increased
1751 risks to public health associated with the Category 3 uses as opposed to specific scientific evidence to that effect.

1752 In addition to compliance with the *E. coli* standard, treaters and users of Category 3 reclaimed water are required to
1753 develop and implement appropriate additional best management practices, including public education, to strictly
1754 reduce the risk of cross-connections between the reclaimed water and potable water systems. Additional conditions
1755 required for Category 3 uses are listed in sections 84.8(A) and 84.9(A).

1756 As revised, section 84.8(A) requires that at a minimum, the numbered conditions indicated in the last column of
1757 Table A are required for the corresponding uses. In addition, in accordance with the authority provided in section
1758 84.6(E), the Division may require additional conditions listed in section 84.8(A) for individual reuse activities as it
1759 determines appropriate.

1760 The Commission decided not to include specific requirements for continuous disinfection of Category 3 reclaimed
1761 water but notes that the requirements for monitoring to determine the quality of all categories of reclaimed water
1762 should include frequent determinations to assure that disinfection is being provided prior to use.

1763 The Commission deleted section 84.10 and added provisions to section 84.9(A)(5) regarding the mechanisms that
1764 users of Category 1 reclaimed water must employ to restrict access to areas when irrigation is taking place.

1765 In order to avoid the need to commit an excessive amount of Division resources for regulatory oversight when
1766 Category 3 reclaimed water is used, section 84.9(A)(6) requires the treater to assume responsibility for the
1767 numerous residential users inherent when reclaimed water is used for resident-controlled landscape irrigation and
1768 there is not an acceptable entity (e.g., homeowners' association) to assume said responsibility.

1769 The Commission moved the provisions of section 84.11(C) to subsection (B) of new section 84.10 and also added
1770 a specific requirement to report violations pursuant to new section 84.10(C)(1).

1771 At the time the Commission initially adopted the Variance provision in Section 84.12, it excluded authorization to
1772 the Division to provide a variance for the *E. coli* standards. The Commission now concludes that it is appropriate to
1773 provide a variance from the "235/100 ml single sample maximum" standard on a case-by-case basis. For example,
1774 testimony was received from the City of Fort Collins and the Platte River Power Authority concerning a use that has
1775 been in effect since 1981 without incident. Some of the effluent from the city's Drake facility is pumped 27 miles in
1776 an underground pipeline for ultimate addition to Platte River's 16,000 acre foot, 500 surface acre long term
1777 carryover storage reservoir for recirculating cooling water use at the Rawhide energy station. There is no public
1778 access to any part of the process and as a result, there is no public exposure to reclaimed water and potential
1779 worker exposure is adequately limited and controlled with safety procedures and best management practices. To
1780 avoid the necessity for capital and operational costs for investments associated with meeting the single sample
1781 maximum standard in the regulation, Fort Collins and Platte River requested a limited change in the Division's
1782 authority to grant a variance from this aspect of the *E.coli* standard. When Regulation 84 was adopted in 2000, the
1783 Commission noted in its Statement of Basis that reclaimed domestic wastewater systems had been constructed
1784 and been in operation prior to the adoption of the regulation. It was emphasized that this regulation is not intended
1785 to force existing systems to make capital improvements solely for assuring standardization if they accomplish the
1786 objectives of this regulation. The Commission has determined it is appropriate to provide authority to the Division to
1787 grant a variance from the single sample maximum standard when it concludes that the cost of compliance does not
1788 bear a reasonable relationship to the environmental or public health benefits.

1789 As noted in the Statement of Basis when the Commission added *E.coli* to the Basic Standards for Surface Waters
1790 in 2000, there is great variability in individual bacteriological samples because bacteria are not uniformly distributed
1791 in water samples. A single sample may give a false impression of potential risk of violation of a standard based on
1792 a geometric mean. In cases where there is limited or no public exposure and potential worker exposure is
1793 controlled by best management work place standards, the resulting lower risk warrants the option for the Division to
1794 consider a variance from the single sample maximum standard.

1795 The Commission also corrected references to "E coli" in Regulation No. 84 to the italicized *E coli*.

1796 PARTIES TO THE RULEMAKING HEARING

- 1797 1. RMWEA/RMSAWWA Water Reuse Joint Committee
- 1798 2. Platte River Power Authority
- 1799 3. Plum Creek Wastewater Authority
- 1800 4. Dominion Water & Sanitation District
- 1801 5. Eastern Adams County Metropolitan District
- 1802 6. The City of Aurora
- 1803 7. Xcel Energy

1804 **84.24 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (August, 2007**
1805 **Hearing)**

1806 The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for
1807 adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4),
1808 C.R.S., the following statement of basis and purpose.

1809 **Basis and Purpose:**

1810 Regulation 84.4 was amended to state that wastewater that has been treated and is used at a domestic wastewater
1811 treatment plant (DWWTP) site for landscape or process uses is not subject to Regulation 84. Landscape irrigation
1812 with treated effluent at a DWWTP was previously excluded in the definition of landscape irrigation. Section
1813 84.5(10). This exclusion was deleted from the definitions section and moved to the applicability section 84.4,
1814 together with a new exclusion dealing with process waters used at a DWWTP site. The Commission believes it is
1815 more logical to include these exclusions in the section dealing with applicability.

1816 The Commission found that it is appropriate to exclude process water used at a DWWTP site because process
1817 water uses are restricted to the DWWTP site and access to these sites is restricted and not open to the public. The
1818 use of process water is limited and controlled by DWWTP staff who are trained in the handling and use of process
1819 water. It is the Commission's intention that after the process use is completed, the process water will be captured
1820 and returned to the wastewater treatment process and not discharged separately to waters of the state.

1821 The Commission deleted the provision in section 84.6(A)(3) that allowed landscape irrigation to be done above
1822 agronomic rates where the treater or user, as appropriate, had obtained a CDPS ground water discharge permit.
1823 The Commission understands that there are no entities currently making use of this provision and found it to be
1824 inconsistent with the original intent of Regulation 84 which was to address the use of reclaimed water under a
1825 single regulation. In addition the Commission finds, based on the typical nutrient content of treated wastewater and
1826 the watering needs of landscape plants, that application of reclaimed water at agronomic rates is achievable under
1827 normal circumstances.

1828 **84.25 STATEMENT OF BASIS SPECIFIC STATUTORY AUTHORITY AND PURPOSE: MAY 13, 2013**
1829 **RULEMAKING; EFFECTIVE JULY 30, 2013**

1830 The provisions of sections 25-8-202, 25-8-205(1) and 25-8-308(1)(h), C.R.S. provide the specific statutory authority
1831 for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-
1832 203(4), C.R.S., the following statement of basis and purpose.

1833 **BASIS AND PURPOSE**

1834 The use of reclaimed water has significantly increased in Colorado over the past decade and Treaters and potential
1835 Users of reclaimed water have identified an interest in new uses for reclaimed water that are not currently
1836 authorized under Regulation No. 84. Proponents from the Joint Water Reuse Committee of the Rocky Mountain
1837 Section American Water Works Association and Rocky Mountain Water Environment Association
1838 ("RMSAWWA/RMWEA") and the Colorado Section of the WateReuse Association, participating in a Water Quality
1839 Forum Work Group, requested that the Commission review Regulation No. 84 for the purpose of considering
1840 additional uses of reclaimed water.

1841 As the Commission indicated in its initial adoption of Regulation No. 84, the use of reclaimed water is subject to
1842 Colorado water rights law. Several large municipalities have the right to use a portion of their water supply "to
1843 extinction" under Colorado law and have significant amounts of such water that are currently being discharged from
1844 the wastewater treatment facility rather than being further treated and reused.

1845 In the 2010 triennial review for Regulation No. 84, the Commission discussed ideas that the Division and interested
1846 parties had brought forth for adopting new uses including modifying the regulation to establish broader categories
1847 of uses within which the Division could approve new uses. The Commission understands that the Division would
1848 need additional resources to implement such a scheme. However, in the interest of addressing the growing use of
1849 reclaimed water in Colorado in a timely manner, the Commission approved the renaming and addition of several
1850 specific new uses through these modifications to Regulation No. 84.

1851 The Commission found that the following modifications to the authorized uses in Section 84.8 Table A are
1852 consistent with the intent of the original authorization of these uses, and present no increase in the potential risk to
1853 human health or the environment. By modifying the nomenclature and definitions for these categories of approved
1854 uses, the regulation and Notices of Authorization issued by the Division afford the same protections for comparable
1855 industrial and commercial uses with similar human exposure, environmental release, and cross-connection
1856 potential.

- 1857 • "Cooling Tower" was renamed "Evaporative Industrial Processes"
- 1858 • "Closed Loop Cooling System" was renamed "Non-Evaporative Industrial Processes"
- 1859 • "Dust Control", "Soil Compaction", and "Mechanized Street Cleaning" were combined and renamed "Non-
1860 Discharging Construction and Road Maintenance"
- 1861 • "Concrete Mixing and Washout" was divided into two uses, "Non-Evaporative Industrial Processes" and
1862 "Washwater Applications," respectively

1863 The Commission found that adding several new uses, with appropriate conditions placed on their use, will further
1864 facilitate the safe and efficient use of Colorado's limited water resources. The Commission approved the addition of
1865 the following Commercial Uses: Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public
1866 Vehicle Washing, and a new Agricultural Irrigation use.

1867 Evaporative Industrial Processes

1868 The Evaporative Industrial Processes use includes, but is not limited to, the following representative applications
1869 where water is used in an industrial process where the benefit of such use requires the evaporation of water,
1870 requiring additional make-up water: cooling tower use and gas and odor adsorption. In modifying the nomenclature
1871 for this category so that it now covers multiple evaporative industrial process uses, the Commission recognized that
1872 many evaporative industrial processes have the potential to use reclaimed water instead of potable or other water
1873 supplies, with similar low potential for human exposure, releases to the environment, and cross connections. It is
1874 the Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized
1875 via an approved permit under the Colorado Discharge Permit System (CDPS).

1876 Non-Evaporative Industrial Processes

1877 The Non-Evaporative Industrial Processes use includes, but is not limited to, the following representative
1878 applications where water is used in an industrial process, is not evaporated in the process, is used within a
1879 contained system, and is either discharged to a sewer system as a blow down (e.g., closed loop cooling systems)
1880 or is incorporated into a product that is not intended for personal contact or ingestion (e.g., those in which the water
1881 is retained in the product and conditions prevent excessive microorganism growth, such as the high pH of batched
1882 concrete): closed loop cooling systems (a previously-approved use, Sections 84.8 and 84.22), concrete makeup
1883 water (a previously-approved use as concrete mixing and washout, Sections 84.8 and 84.22), boiler feed water,
1884 water for lime slaking, and industrial process makeup water. In modifying the nomenclature for this category so that
1885 it now covers multiple non-evaporative industrial process uses, the Commission recognized that many industrial
1886 processes have the potential to use reclaimed water instead of potable or other water supplies, with similar low
1887 potential for human exposure, releases to the environment, and cross connections. It is the Commission's intent
1888 that no discharges to waters of the state shall be allowed with this use unless authorized via an approved permit
1889 under the CDPS.

1890 Non-Discharging Construction and Road Maintenance

1891 This approved use incorporates the following previously-approved representative uses for Mechanized Street
1892 Sweeping, Soil Compaction, and Dust Control. Other similar uses of water, including but not limited to cooling water
1893 for pavement cutting operations, are also authorized under this approved use. It is the Commission's intent that no
1894 discharges to waters of the state shall be allowed with this use unless authorized via an approved permit under the
1895 CDPS.

1896 Washwater Applications

1897 The Commission approved the new Washwater Applications use, which includes concrete washout as previously
1898 approved under Concrete Mixing and Washout. Washwater Applications would also include water used in washing
1899 of miscellaneous equipment, washing of product in mineral processing, and other similar uses where reclaimed
1900 water is used to remove material from equipment or a product. This use has been evaluated for risks to human
1901 health via ingestion, inhalation, and dermal contact. Best management practices (BMPs, specified as Additional
1902 Conditions in Section 84.8 and 84.9) and allowable water qualities are specified to mitigate these risks. It is the
1903 Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized via
1904 an approved permit under the CDPS.

1905 Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle Washing

1906 The Commission approved three new uses not previously authorized under Regulation 84 (Commercial Laundries,
1907 Automated Vehicle Washing, and Manual Non-Public Vehicle Washing) based upon an evaluation of the potential
1908 human health risks via ingestion, inhalation, dermal contact and cross-connection as well as the potential for
1909 discharging reclaimed water to a water of the state (groundwater or surface water). BMPs for each use and
1910 allowable water qualities were specified to minimize these risks. In assessing the proposed modifications to
1911 Regulation 84, typical uses of water in commercial laundries and automated and manual vehicle washing facilities
1912 were reviewed to characterize the likelihood and impacts of human contact with reclaimed water and releases of
1913 reclaimed water to waters of the state.

1914 The Commission found that the potential for ingestion is negligible for all three proposed uses, in light of the limited
1915 access to the public and the commercial and industrial nature of the water use. The risk of ingestion in these new
1916 uses is further mitigated by the BMPs specified for these uses in Regulation 84. In light of the potential worker or
1917 public contact with aerosols in vehicle washing applications, the Commission considered additional information to
1918 assess the potential for human health effects of such contact. This information included the 2012 USEPA
1919 Guidelines for Water Reuse, regulations in other states that authorize commercial laundry and vehicle washing
1920 uses, a risk assessment based on available research and literature regarding health impacts of inhalation of
1921 recycled water aerosols, and a comparison of water quality in internally-recycled vehicle washing water systems fed
1922 by potable water to the water quality of recycled water produced by an existing Treater. This indicated to the
1923 Commission that a high level of disinfection (Category 3 water) is appropriate for situations where there is a high
1924 likelihood of frequent worker contact with reclaimed water aerosols for these uses. Alternatively, BMPs should be
1925 employed to prevent worker inhalation exposure if less stringent disinfection (Category 2 water) is employed.

1926 The Commission found that:

- 1927 • Secondary treatment and disinfection (Category 2 Reclaimed Water) is an appropriate treatment
1928 requirement for the use of reclaimed water in commercial laundry where there is no frequent worker or
1929 public exposure to aerosols generated from reclaimed water use.
- 1930 • In vehicle washing facilities with a likelihood of worker or public exposure to aerosols generated from
1931 reclaimed water use, filtration and high-level disinfection (Category 3 Reclaimed Water) provides human
1932 health protection against aerosol inhalation risks. Alternatively, BMPs must be used to prevent the
1933 inhalation of aerosols with use of Reclaimed Water Category 2.
- 1934 • Effective BMPs for physically preventing human contact with aerosols include personal protective
1935 equipment documented to prevent inhalation of aerosols, or other means as documented by a certified
1936 industrial hygienist.

1937 Accordingly, the Commission approved the addition of two new Additional Conditions at Section 84.8(A)(7) and
1938 84.8(A)(8) for applicability to Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle
1939 Washing as identified in 84.8 Table A. The Commission also determined that the Additional Condition in 84.8(A)(7)
1940 is applicable to the following renamed and new uses, in consideration of the type of use and potential for frequent
1941 worker or public exposure to aerosols: Washwater Applications, Non-Discharging Construction and Road
1942 Maintenance, and Non-Evaporative Industrial Processes.

1943 The Commission found the overall risk to Commercial Laundry and Vehicle Washing workers and the public
1944 associated with ingestion and dermal contact is less than swimming at a swim beach and comparable to or less
1945 than other previously approved commercial and industrial uses of Category 1, 2, and 3 Reclaimed Water. For each
1946 of these proposed uses, the Commission found the potential for cross-connecting potable and recycled water piping

1947 is similar to previously approved Commercial and Industrial uses of Category 1, 2, and 3 Reclaimed Water. The
1948 existing BMPs for cross-connection control in Regulation 84 (at 84.9(C)(5), 84.9(C)(7), and 84.9(C)(8)) will apply to
1949 these new uses as well.

1950 The Commission approved the modification of Section 84.8(A)(3) to read "Application rates or other measures shall
1951 be employed to minimize ponding on or runoff from the area approved for application or use," and specified that this
1952 Additional Condition be required for Automated Vehicle Washing and Manual Non-Public Vehicle Washing uses. It
1953 is the Commission's intent that no discharges to waters of the state shall be allowed with these uses unless
1954 authorized via an approved permit under the CDPS.

1955 Non-Food Crop Irrigation and Silviculture

1956 The Commission found that the use of reclaimed water for irrigation of certain agricultural crops and trees, when
1957 implemented in accordance with the reclaimed water quality standards and BMPs established in Regulation 84, is
1958 protective of public health and the environment. Adding agricultural irrigation as an approved use of reclaimed
1959 water will encourage the expanded use of reclaimed water in Colorado and is anticipated to reduce the regulatory
1960 compliance burden on Treaters and Users by allowing them to be permitted under a single control regulation where
1961 multiple approved uses of reclaimed water are implemented.

1962 Health risks to the public or workers associated with potential contact with reclaimed water used for agricultural
1963 irrigation were determined to be of a comparable or lower magnitude than those associated with landscape
1964 irrigation. Environmental risks associated with runoff or excessive percolation of reclaimed water to waters of the
1965 state are determined to be of a comparable or lower magnitude than those risks associated with landscape
1966 irrigation. The Commission found that there is little increased risk of cross connection associated with the use of
1967 reclaimed water versus traditional sources of water used for agricultural irrigation.

1968 The Commission found that Category 1 water is acceptable for irrigation of those non-food crops permitted to be
1969 irrigated with reclaimed water pursuant to this Control Regulation and that the criteria for Category 1 water are
1970 generally consistent with the treatment level requirements and water quality standards adopted by several other
1971 states (e.g., Arizona, California, Florida, and Texas) and countries for the irrigation of non-food crops. The
1972 Commission found that the BMPs established for restricted access landscape irrigation are appropriate and
1973 adequate for agricultural irrigation.

1974 Annual Report Requirements

1975 As part of this rulemaking, the Commission also revised the annual reporting provision to revise the due date of
1976 annual reports from January 31 of each year to March 31, to allow Treaters sufficient opportunity to compile
1977 reclaimed water use data and related records from the preceding calendar year.

1978 **PARTIES TO THE RULEMAKING**

- 1979 1. Colorado Section of the WateReuse Association, the Joint Water Reuse Committee of Rocky Mountain
1980 Water Environment Association, and Rocky Mountain Section of the American Water Works Association
1981 (the Proponents)
- 1982 2. City and County of Denver
- 1983 3. City of Aurora
- 1984 4. City of Colorado Springs and Colorado Springs Utilities
- 1985 5. Rangeview Metropolitan District

1986 **84.26 STATEMENT OF BASIS SPECIFIC STATUTORY AUTHORITY AND PURPOSE: AUGUST 6, 2018
1987 RULEMAKING; EFFECTIVE NOVEMBER 6, 2018**

1988 The provisions of sections 25-8-202, 25-8-205(1), and 25-8-205.8, C.R.S., provide the specific statutory authority
1989 for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-
1990 203(4), C.R.S., the following statement of basis and purpose.

1991 **BASIS AND PURPOSE**

1992 On April 30, 2018, House Bill 18-1069 was enacted, essentially codifying Regulation 84 provisions such as
1993 category standards 1 through 3 and the pre-existing allowed uses of reclaimed water for categories 1 through 3.
1994 The primary purpose of House Bill (HB) 18-1069 was to add toilet and urinal flushing in multifamily residential and
1995 nonresidential structures as category 3 uses for reclaimed domestic wastewater. The Bill becomes effective on
1996 August 8, 2018.

1997 Prior to the enactment of HB 18-1069, the Commission noticed a regulatory proposal by Denver Water to modify
1998 Regulation #84 to add toilet and urinal flushing ("fixture"), indoor cannabis irrigation, and adopt new standards for
1999 reclaimed water treatment for certain types of treatment systems. Denver Water subsequently withdrew its proposal
2000 to add indoor cannabis irrigation to Regulation #84 from consideration. Denver Water and the Division also
2001 submitted a motion for consideration of a joint proposal to modify Regulation #84.

2002 On August 6, 2018, the Commission held a rulemaking hearing to consider the joint proposal presented by Denver
2003 Water and the Division, for modification of Regulation#84. Following the rulemaking hearing, the Commission
2004 updated Regulation #84 to add fixture flushing consistent with the specific definitions and requirements contained in
2005 HB 18-1069. The Commission also adopted new definitions and treatment requirements for two types of reclaimed
2006 water treatment systems: "centralized reclaimed water treatment systems" (centralized systems) and "localized
2007 reclaimed water treatment systems" (localized systems) to further encourage the reuse of reclaimed domestic
2008 wastewater and ensure protection of public health. In addition, the Commission adopted a statutory definition of
2009 "point of compliance"; described treatment, filtration, and disinfection requirements for centralized systems
2010 producing category 3 reclaimed water for toilet flushing; adopted a log reduction treatment approach for localized
2011 treatment systems with monitoring requirements for localized systems to ensure that these systems are operating
2012 correctly; and additional cross-connection control requirements for uses of reclaimed water used for indoor non-
2013 potable uses.

2014 A. Definition of Point of Compliance

2015 The Commission modified the definition of point of compliance to conform with the new statutory definition of point
2016 of compliance adopted in HB 18-1069. The definition provides that the point of compliance "means, except as
2017 provided in subsection (1)(f)(II) of this section, a point, as identified by the person that treats the water in the
2018 reclaimed domestic wastewater treatment process or the reclaimed domestic wastewater transportation process,
2019 that occurs after all treatment has been completed but before dilution and blending of the water has occurred."
2020 Subsection (1)(f)(II) provides that "If reclaimed domestic wastewater is used for indoor nonpotable uses within a
2021 building where plumbing fixtures are accessible by the general public, 'point of compliance' is at the location where
2022 water is delivered to the occupied premises."

2023 Subsection (1)(f)(I) and (II) in HB 18-1069 refer to the categories of reclaimed water (categories 1 through 3) and
2024 the standards that must be met regarding total suspended solids, turbidity and *E. coli*. The Commission construed
2025 subsection (1)(f)(II) as applying to the disinfection residual. Disinfection residual is a best management practice
2026 used to prevent regrowth of waterborne pathogens within indoor plumbing systems. It is not practical from an
2027 operational, economic or implementation standpoint to continuously test for *E. coli* at buildings using reclaimed
2028 water indoors, but meeting the disinfection residual requirements at the building is practical and will protect public
2029 health. The treatment facility supplying the reclaimed water will meet the statutory and regulatory standards after
2030 treatment and before dilution and blending.

2031 To protect against potential regrowth of opportunistic pathogens and increases in turbidity in the underground
2032 distribution system prior to entering a building, Regulation 84.9(A)(9)(a-c) requires that users follow a best
2033 management practice of monitoring for disinfectant residual and/or another approved disinfection methods for
2034 indoor uses of reclaimed water, which monitoring may occur at the distal end of the plumbing system. These
2035 treatment approaches are intended to prevent growth of opportunistic pathogens, such as *legionella* from
2036 proliferating within building plumbing pipes and fixtures. Meeting the residual requirements at the distal end of the
2037 plumbing system will protect public health from opportunistic pathogens within buildings as an additional protective
2038 measure.

2039 With regard to the point of compliance for localized systems, the point of compliance will be a point, as identified by
2040 the treater, in the reclaimed domestic wastewater treatment process or the reclaimed domestic wastewater
2041 transportation process, that occurs after all treatment has been completed but before dilution and blending of the
2042 water has occurred. The Commission finds that in most cases localized systems will be located at or near the tap of
2043 the building, parcel, or district where domestic wastewater is being treated and used. This means that it is less

2044 likely that the disinfection residual in reclaimed water produced from localized systems will dissipate due to the
2045 shorter travel time for reclaimed water from localized systems to the point of use. In addition, for localized systems
2046 there is continuous monitoring of the process system to confirm log removal targets are being met. For these
2047 reasons, the point of compliance for disinfection residual for localized systems located near the site of use may also
2048 be at the point identified by the treater that occurs after all treatment has been completed but before dilution and
2049 blending of the water has occurred.

2050 B. Definitions of Centralized Systems and Localized Systems

2051 The Commission adopted definitions for centralized and localized reclaimed water treatment systems; defined
2052 treatment, filtration, and disinfection requirements for centralized systems producing Category 3 reclaimed water for
2053 fixture flushing; and adopted a new log reduction treatment approach and control monitoring framework for
2054 localized systems to track whether the treatment control system is operating to meet *E. coli* and turbidity
2055 requirements.

2056 Centralized Systems

2057 Regulation 84 previously did not define “reclaimed water treatment systems” or “centralized reclaimed water
2058 treatment systems”. Rather, reclaimed water treatment systems were encompassed by the definition of “treater”
2059 and the definition of “reclaimed water”. The adoption of the definition of “centralized reclaimed water treatment
2060 systems” is intended to encompass the reclaimed water treatment systems that would have been defined as a
2061 “treater” or “reclaimed water” in the original, 2000 version of Regulation #84.

2062 To distinguish centralized systems from localized systems, the Commission adopted a definition of “centralized
2063 reclaimed water treatment systems” that define such systems as receiving domestic wastewater from a diverse
2064 service area for treatment to produce reclaimed water for beneficial use where the service area has meaningful
2065 inputs from industrial or other diluting sources. The phrase “meaningful inputs or other diluting sources” relates to
2066 the consistent watering down of waterborne pathogens in the untreated source water consistent with large
2067 municipal-like collection systems.

2068 The Commission adopted filtration standards for reclaimed water produced from centralized systems for toilet
2069 flushing based upon a multi-barrier approach. California Title 22 establishes a framework for multiple barrier
2070 framework supported by a microbial risk assessment (“MRA”). The Commission found the California treatment
2071 recommendations to be too limiting for the expansion of reuse in Colorado and has allowed a wider range of
2072 filtration techniques that provide equivalent microbial protections appropriate for indoor reuse application. The
2073 Commission concluded that there should be a defined list of technologies allowed for Category 3 reclaimed water
2074 used for toilet flushing because of the higher risk of public exposure to reclaimed water from unintended cross-
2075 connections. All types of filtration are not adequate for pathogen reduction for indoor uses of reclaimed water.
2076 However, the Commission has listed accepted filtration technologies which include any filter approved per 5 CCR
2077 1002-11 and the ability to challenge test and demonstrate reclaimed water specific filtration techniques.

2078 The Commission agreed with the California Title 22 minimum requirement of 5 log virus treatment for indoor uses of
2079 reclaimed water. The Commission found that the virus inactivation tables published by the EPA are appropriate
2080 when chemical disinfection is used. If UV disinfection is employed, virus disinfection should be measured against
2081 Hepatitis A for chemical disinfection or 40 mJ/cm² for ultraviolet light disinfection.

2082 The Commission adopted a new section 84.8, which describes the filtration and disinfection requirements for
2083 centralized reclaimed water being used for fixture flushing. The Commission also adopted definitions of filter
2084 technologies, including bag filter and cartridge filter, conventional filtration, direct filtration, and membrane filtration.
2085 To add clarity regarding the meaning of treatment standards, the Commission adopted definitions for secondary
2086 treatment and treatment technique requirements.

2087 The Commission directed the Division to hold a stakeholder process with reclaimed water users, treaters and other
2088 interested parties to consider whether similar or alternative treatment techniques should be applied to other
2089 categories of reclaimed water and authorized uses.

2090 Definition of Localized Systems

- 2091 Localized reclaimed water treatment systems are defined by several characteristics that distinguish them from
2092 centralized systems. Specifically, localized systems:
- 2093 - receive and treat domestic wastewater that does not have meaningful inputs from industrial and other
2094 diluting sources.
- 2095 - are located relatively close to the location where wastewater is generated meaning that there is little travel
2096 time for wastewater, and less time for pathogen die off to occur.
- 2097 These factors contribute to more concentrated raw wastewater, and therefore higher pathogen loads in the
2098 domestic wastewater treated by localized systems.
- 2099 To address the distinct characteristics of localized systems, the Commission defined "localized reclaimed water
2100 treatment systems" as systems that receive and treat domestic wastewater from a single building, multiple buildings
2101 within a single property or area bounded by dedicated streets or ways, or a district designated by a City or County
2102 for treatment to produce reclaimed water for beneficial use where the source water does not have meaningful
2103 inputs from industrial or other diluting sources. This definition is intended to reflect that localized systems collect
2104 wastewater from a more concentrated and defined area as compared to centralized systems.
- 2105 The Commission adopted a new rule providing that NOAs for use of reclaimed water from localized systems may
2106 include requirements for limitations on contributions from non-domestic sources as necessary to prevent pass
2107 through, interference or impacts on public health or the environment from those sources. The Commission also
2108 adopted a requirement that the user plan to comply for localized systems identify the percentage contributions from
2109 each wastewater input to the localized system and the location of the input as well as any limitations on
2110 contributions from non-domestic sources.
- 2111 Treatment Based Framework for Localized Systems
- 2112 The Commission also adopted a treatment-based framework for localized systems. The framework for localized
2113 systems is structured around treatment performance criteria. A treatment-based approach for localized systems
2114 helps ensure that systems are designed properly, that public health will be protected despite less frequent sampling
2115 and higher degrees of automation, and helps streamline permitting for a variety of small treatment systems
2116 throughout the state.
- 2117 The treatment-based approach utilizes treatment performance-based logarithmic ("log") reduction targets for the
2118 treatment of pathogens in localized systems to meet various risk thresholds. The Commission directs the division to
2119 develop a policy (localized system design criteria) that will define treatment credits for various unit processes or
2120 alternate demonstration/testing option while discharging to the sewer. Treatment-based approach allows for an
2121 automated approach through continuous monitoring, and avoids the need to perform frequent grab samples for *E.*
2122 *coli*, a cost burden that provides little benefit for assessing how localized systems perform in real time.
- 2123 The Commission considered two different risk levels for localized system log removal targets, and concluded that
2124 due to the high risk of unintended cross-connections between potable and reclaimed water plumbing, 10^{-4} risk level
2125 (1 infection per 10,000 individuals annually) is appropriate for localized systems treating reclaimed water for
2126 Category 3 uses. The Commission concluded that 10^{-2} risk level (1 infection per 100 individuals annually) is
2127 appropriate for localized systems treating reclaimed water only for Category 2 uses due to the low risk of exposure
2128 from unintended cross connections. The Commission also approved 10^{-2} risk level for enteric viruses only for
2129 localized systems treating reclaimed water only for Category 1 uses, again due to the low risk of exposure from
2130 unintended cross connections and restricted access limits for on-site uses.
- 2131 Because localized systems generally lack access to on-site laboratories and more limited staffing, the Commission
2132 adopted requirements for continuous treatment monitoring of unit processes with high frequency (on the order of
2133 minutes between sample analysis and recording) to ensure those processes are operating to specification. The
2134 Commission found that localized systems should be continuously monitored to ensure that treatment is performing
2135 as expected.
- 2136 The Commission decided that localized reclaimed water system treaters should not be required to continuously
2137 monitor for *E. coli* because localized systems that treat to the log removal targets adopted by the Commission will
2138 meet the *E. coli* limits in section 84.7, so long as the localized system process controls are operated and

2139 maintained in accordance with their design as verified by the monitoring of the unit processes. The Commission
2140 found that the continuous treatment monitoring process, as well as the initial field verification, will verify that the log
2141 removal targets are being met, and that the localized system is meeting the required log removal targets and
2142 therefore in compliance with the *E.coli* standard for Categories 1, 2 and 3 reclaimed water. For these reasons, the
2143 Commission determined it is not necessary for localized systems to consistently monitor for *E.coli*. Acceptable
2144 surrogate parameters for localized systems listed in Table C of Section 84.10, if operating properly and
2145 continuously monitored and verified, will result in the log reduction targets in Table B in 84.10 and meet or exceed
2146 the standards provided in Categories 1, 2 and 3 of reclaimed water. The Commission approved several surrogates
2147 in Table C for monitoring the operation of system process control, and directed the Division to develop a policy
2148 approving other acceptable surrogates for continuous monitoring of localized systems.

2149 The type of continuous monitoring should be selected on a system-by-system basis. During the field verification
2150 and commissioning study, the treater must confirm that the treatment technologies have been installed in
2151 accordance with the approved design and are operating per their specifications. The monitoring approach will be
2152 included in the operations and monitoring plan.

2153 The Commission currently intends for localized systems, like centralized systems, to be approved under the site
2154 location and design approval process in Regulation 5 CCR 1002-22, and encourages the Division to hold a
2155 stakeholder process to consider modifications to Regulation 22 to consider any changes that should be made to
2156 address localized systems.

2157 The Commission also adopted a requirement providing that a user include as part of its user plan to comply an
2158 affidavit attesting that the user employs a certified operator or an agreement showing that a certified operator has
2159 been retained. The Commission determined that this is necessary to ensure that the user is capable of operating
2160 the localized system and able to comply with Regulation #84. The report must be certified by the user.

2161 To protect water provider water rights, the Commission adopted language requiring that letters of intent include an
2162 affirmation that the proposed installation of a localized system is allowed by the water service provider where the
2163 localized system is located in the service area of a water provider.

2164 C. Basis of Requirements for Fixture Flushing

2165 Risk of Exposure to Reclaimed Water from Fixture Flushing

2166 The Commission approved reclaimed water for fixture flushing in multi-family and non-residential structures. The
2167 primary risk of exposure to reclaimed water when used for toilet flushing is from unintended cross-connections with
2168 potable water plumbing. To minimize risk of exposure to reclaimed water from unintended cross-connections with
2169 potable water plumbing, the Commission adopted additional disinfection requirements and cross-connection control
2170 requirements.

2171 Disinfection Requirement for Toilet and Urinal Flushing Using Centralized and Localized System Reclaimed Water

2172 A BMP of a minimum of 0.2 mg/L for free or 0.5 mg/L for monchloramines of chemical disinfectant is required within
2173 the reclaimed water of premise plumbing of buildings approved for indoor toilet and urinal flushing. This BMP
2174 mitigates the potential for *Legionella* exposure associated with indoor uses. The Division may approve alternative
2175 disinfection approaches that have equivalent protection against premise plumbing pathogens. The Commission
2176 directs the Division to hold a stakeholder process to determine whether similar or different disinfection requirements
2177 should be applied to other categories of indoor uses for reclaimed water. The commission also discussed the
2178 importance of ensuring a maximum amount of chlorine residual is not exceeded for indoor uses, especially in light
2179 of the potential for chlorine boosting to be occurring. The commission felt that the maximum levels required by the
2180 International Plumbing Code address the issue, however the commission expects that during the development of
2181 future changes to this regulation, the division and stakeholders will consider whether the addition of a maximum
2182 chlorine residual level is necessary in this regulation.

2183 Cross Connection Control Requirements for Toilet Flushing

2184 The Commission included a requirement providing that only licensed plumbers may perform maintenance or make
2185 modifications to plumbing within structures that use reclaimed water for toilet flushing. Structures using reclaimed

2186 water for toilet flushing must maintain signage providing notice that modifications may be performed only by
2187 licensed plumbers.

2188 The Commission determined that structures that use reclaimed water indoors must have an approved cross
2189 connection control device or method to prevent contamination of potable water distribution systems also serving the
2190 structures. In addition, the owner of the structure using reclaimed water for toilet or urinal flushing must conduct
2191 testing to detect uncontrolled cross connections by a certified cross-connection control technician prior to initial
2192 operation of the system and at intervals thereafter as mandated in the notice of authorization. Additionally, where
2193 reclaimed water is used indoors and could be cross connected with other non-potable water supplies, devices must
2194 be installed at service connections to protect the higher quality water from accidental contamination from the lower
2195 quality water source.

2196 The user must maintain a current diagram of the structure's potable and reclaimed water plumbing. The public
2197 should not have access to the plumbing within structures that use reclaimed water indoors. Structures using
2198 reclaimed water for fixture flushing must be in compliance with the State Plumbing Code promulgated by the
2199 Colorado State Plumbing Board.

2200 The Commission adopted a rule clarifying that use of reclaimed water for indoor fixture flushing is prohibited if after
2201 treatment reclaimed water is stored in an outdoor open-air storage structure.

2202 Additional Requirements for Fixture Flushing

2203 To protect public health and ensure a continuity of water supply, the Commission determined that users of
2204 reclaimed water for toilet flushing must maintain a backup potable water supply connection in the event of upsets or
2205 a failure of a localized reclaimed water treatment system or centralized reclaimed water treatment system.

2206 The Commission also adopted a requirement that users have a protocol to switch to potable water and redirect
2207 reclaimed water to the sanitary sewer in the event that the reclaimed water is not in compliance with Regulation
2208 #84.

2209 D. House Bill 18-1069

2210 The Commission finds that its modifications to Regulation #84 are consistent with the intent of HB 18-1069, and
2211 presents no increase in the potential risk to human health or the environment. The Commission also found that its
2212 modifications further facilitate the safe and efficient use of Colorado's limited water resources.

2213 The addition of the use of reclaimed water for toilet and urinal flushing as a Category 3 Standard is authorized by
2214 HB 18-1069. This bill authorizes reclaimed domestic wastewater to be used for indoor toilet and urinal flushing if the
2215 reclaimed water meets the Category 3 Standard. HB18-1069, Section 3(2)(c)(IV); § 25-8-205.7(2)(c)(IV), C.R.S.

2216 The Commission further found that the bifurcated designation of reclaimed water treatment systems is also within
2217 the authority granted by HB18-1069. The bill amends the previous statutory definition of "reclaimed domestic
2218 wastewater". HB18-1069, Section 1; § 25-8-103(17.5), C.R.S. However, the bill does not define the reclaimed water
2219 treatment systems that would produce reclaimed domestic wastewater. Control regulations may be promulgated to
2220 describe requirements and standards that will encourage the reuse of reclaimed domestic wastewater. See HB-
2221 1069, Section 2(1)(f); § 25-8-205(1)(f), C.R.S. Centralized systems are the default reclaimed water systems that
2222 were encompassed by the prior Regulation 84 definition of "treater". The Commission found that the addition of
2223 "localized systems" as another type of treatment system that would also produce reclaimed domestic wastewater
2224 would encourage the use of reclaimed domestic wastewater, consistent with the declaration in HB 18-1069.

2225 The other substantive changes to the regulation describe treatment, filtration, disinfection, monitoring, and other
2226 technical requirements. The Commission determined that the addition of these requirements are consistent with the
2227 authority granted by HB18-1069. The bill requires wastewater to "at a minimum" receive secondary treatment with
2228 filtration and disinfection in order to meet a Category 3 Standard. HB18-1069, Section 3, subsection (1)(c)(I); § 25-
2229 8-205.7(1)(c)(I), C.R.S. However, the bill does not define "secondary treatment," "filtration," or "disinfection". It also
2230 does not define or describe the monitoring or technical requirements necessary to ensure reclaimed water meets
2231 the requirements for each Category Standard. Control regulations may be promulgated to describe requirements
2232 and standards that will protect public health and encourage public use. See HB-1069, Section 2(1)(f); §25-8-
2233 205(1)(f), C.R.S. The Commission finds that the requirements adopted herein concerning treatment, filtration,

disinfection, monitoring, and other technical requirements strike a proper balance between the objectives of protecting public health and encouraging the reuse of domestic wastewater.

PARTIES TO THE RULEMAKING

1. Denver Water
 2. City and County of Denver
 3. Aurora Water Department
 4. City of Boulder
 5. Marijuana Industry Group
 6. LivWell Enlightened Health
 7. Cannabis Business Alliance
 8. Meridian Metropolitan District
 9. Metro Wastewater Reclamation District
 10. Sand Creek Metro District
 11. WaterReuse Colorado

**84.27 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: OCTOBER 7, 2019
RULEMAKING: EFFECTIVE JANUARY 14, 2020**

The provisions of sections 25-8-202, 25-8-205(1), and 25-8-208.8, C.R.S., provide the specific statutory authority for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

Basis and Purpose

During the 2018 Colorado legislative session, bills passed and became law regarding the use of reclaimed water for edible crop irrigation (House Bill-1093) and industrial hemp (Senate Bill 18-038).

House Bill 18-1093 establishes water quality standards for irrigation of food crops. House Bill-1093 also requires that *E. coli* standards are not to exceed the *E. coli* standards in the Food Safety Modernization Act (“FSMA”). It became effective on August 8, 2018. It states that “On or before December 31, 2019, the Commission may promulgate rules in accordance with the bills.” Senate Bill 18-038 establishes water quality standards for Categories 1, 2 and 3 for irrigation of industrial hemp. It became effective on August 8, 2018. It states that “On or before December 31, 2019, the Commission may promulgate rules in accordance with the bills.” The Commission now adds four new categories of approved uses: Irrigation of Commercial Food Crop Growing Operation; Non-Commercial Food Crop Growing Operation; Resident Controlled Food Crop Irrigation; Non-Edible Hemp Irrigation; and Edible Hemp Irrigation, along with BMPs for each use, new inspection and compliance protocols for these uses, new NOA regulations, and new and revised definitions.

I. Definitions

The Commission modified definitions and adopted new definitions in Regulation 84. The following definitions were modified to increase clarity or to achieve consistency with other revisions: "Agricultural Irrigation", "Resident-Controlled Landscape Irrigation", "Treater" and "User." The definition for "Agricultural Irrigation" was amended to include food crops and hemp. The definition of "Resident-Controlled Landscape Irrigation" was changed to be more specific about what a residence is, and to match the new definition of Resident-Controlled Food Crop Irrigation". The definition of "Treater" was amended to include inspectors that work for Treaters to clarify that inspection requirements by the Treater could be completed by an employee of the Legally Responsible Person on the NOA.

The following definitions were added: “Commercial Food Crop Growing Operation”, “Covered Produce”, “Cultivator”, “Edible Hemp”, “Flood and Sheet Irrigation”, “Industrial Hemp”, “Management User”, “Non-Commercial Food Crop Growing Operation”, “Non-Edible Hemp”, “Resident-Controlled Food Crop Irrigation”, “Site”, “Site Manager” and “Visitor”. The new definitions were added to reflect references for the new requirements and approved agricultural uses in Regulation 84.

II. Food Crops

2280 The Commission adopted separate definitions, treatment and best management practice requirements for
2281 Commercial Food Crop Growing Operations (e.g. large farms) and Non-Commercial Food Crop Growing
2282 Operations (e.g. community gardens, community supported agriculture, etc.). The Commission has relied upon the
2283 Food Safety Modernization Act, Produce Safety Rule (“PSR”) to differentiate between Commercial Food Crop
2284 Growing Operation and Non-Commercial Food Crop Growing Operations. Generally under the PSR, when a farm’s
2285 average annual monetary value of produce sold during the previous 3-year period is more than a certain inflation-
2286 adjusted number (currently \$26,999), the farm is covered by the PSR; if it is below that number, the farm is not
2287 regulated by the PSR.

2288 The Commission adopted the same distinction to reduce uncertainty and overlapping requirements for farmers: if
2289 the PSR applies to a farm, it is a Commercial Food Crop Growing Operation under Regulation 84; if the PSR does
2290 not, it is a Non-Commercial Food Crop Growing Operation. Note, however, the PSR’s rules only apply to certain
2291 crops that the federal government has determined are most likely to be consumed raw. So a farm that grows wheat
2292 may be above the profit threshold, covered by the PSR, and be a Commercial Food Crop Growing Operation under
2293 Regulation 84, but none of the PSR’s rules would apply to that farm because it only grows wheat.

2294 **III. Commercial Food Crop Growing Operations**

2295 Colorado House Bill 18-1093, the food crop reclaimed water law, directs the Commission to allow Categories 2 and
2296 3 reclaimed water for the irrigation of Commercial Food Crop Growing Operations.

2297 Under the authority of the Food Safety Modernization Act, the U.S. Food and Drug Administration has established
2298 regulations known as the Produce Safety Rule (“PSR”), which establish food and worker safety rules, including for
2299 water quality and crops most likely to be eaten raw. Colorado House Bill 19-1114, which became law in 2019
2300 authorizes the Colorado Commission of Agriculture to seek, accept and expend federal funds in order to implement
2301 the PSR in Colorado.

2302 The Commission is requiring that Commercial Food Crop Growing Operations comply with the applicable portions
2303 of PSR, 21.C.F.R. Part 112 [84.9(A)(29)], along with a number of additional conditions in 84.9(A) relating to
2304 signage, education, and public access. Under the PSR, reclaimed water would be treated like other non-potable
2305 water sources for covered produce under the PSR. The PSR has specific requirements for personnel qualifications
2306 and training, health and hygiene, water quality requirements and testing, growing, harvesting, packing and holding
2307 activities, compliance and enforcement provisions and equipment, tools, buildings and sanitation requirements.
2308 Additionally, the PSR does not allow irrigation of sprouts with water at the quality of Categories 2 or 3.

2309 The Commission has determined that implementation of the PSR for Commercial Food Crop Growing Operation,
2310 rather than adoption of a fully separate regime for reclaimed water at these farms, will create no greater risk to
2311 public health or the environment than previously authorized uses if implemented properly and fully along with
2312 implementation of the requirements in Regulation 84. The Commission acknowledges that some crops are not
2313 considered to be eaten raw and are not covered under the PSR. These crops will still be required to implement the
2314 additional conditions in 84.9(A) described below for Non-Commercial Food Crop Growing Operations.

2315 The Colorado Department of Agriculture is planning on conducting a rulemaking in the coming years to incorporate
2316 the federal PSR into its state regulations. The Commission included the term “applicable” in 84.9(A)(29) to convey
2317 that not all provisions of the PSR, as implemented by the State of Colorado, may be relevant to Regulation 84.
2318 Once the Colorado Department of Agriculture adopts such regulations, the Division may request a written-only
2319 rulemaking to incorporate references to those new regulations into Regulation 84 to better align the state PSR with
2320 Regulation 84.

2321 In addition to the PSR requirements, the Commission is requiring education and training for employees, cultivators
2322 and visitors for sites irrigating Commercial Food Crop Growing Operations with reclaimed water [(84.9(A)(13)].
2323 Education and training include, at minimum, that non-potable reclaimed water is being used, it is not suitable for
2324 drinking, information about the best management practices and that produce should be washed with potable water
2325 and/or water with no detectable generic *E. coli* after harvesting produce and prior to consuming produce.
2326 Additionally, a hand washing station and/or hand sanitizer containing at least 60% alcohol must be readily available
2327 at the Site, and education per 84.9(A)(13) must state that hands and produce should be washed with potable water
2328 as soon as it is accessible, and that hand sanitizer is not equivalent to washing hands and produce with potable
2329 water. [84.9(A)(17)].

2330 The Commission required that harvesting and public access shall be prohibited in areas where irrigation is
2331 occurring resulting in wet soils and/or crops [84.9(A)(21)]. These requirements will reduce the potential for
2332 ingestion, inhalation and dermal exposure to pathogens and will protect Users, Cultivators, employees and Visitors
2333 against potential illness.

2334 **IV. Non-Commercial Food Crop Growing Operations**

2335 The Commission adopted additional requirements for Non-Commercial Food Crop Growing Operations because
2336 there will be not be oversight under the PSR at these sites, and the general public is more likely to be interacting
2337 with irrigation water, soils and food crops at these sites. The Commission has determined that the level of
2338 reclaimed water treatment approved on November 6, 2018 for the use of toilet and urinal flushing (84.8, referred to
2339 here as "Category 3 Plus") will also be required for Non-Commercial Food Crop Growing Operations and Resident-
2340 Controlled Food Crop Irrigation. Category 3 Plus reclaimed water treatment removes more pathogens and
2341 particulates than Categories 1, 2, and 3. In the 2018 toilet and urinal flushing rulemaking, the Commission adopted
2342 the more stringent Category 3 Plus treatment requirements to address the risk of a person accidentally ingesting up
2343 to 2 liters of the reclaimed water per year from cross connections within buildings. The Category 3 Plus treatment
2344 requirements are based off of, yet not identical to, California Title 22 Disinfected Tertiary reclaimed water whereby
2345 the treatment requirements were established through a microbial risk assessment ("MRA"). California's Disinfected
2346 Tertiary reclaimed water is considered appropriate to irrigate food crops that are commercially processed and non-
2347 commercially processed.

2348 Despite the additional treatment, the Commission recognizes that there is a risk of using Category 3 Plus reclaimed
2349 water for the use of food crop irrigation. Wastewater streams contain varying pathogen loads, and an MRA has not
2350 been conducted in Colorado. In addition, the Commission is not requiring any kind of disinfection residual or
2351 disinfection flushing in the reclaimed water distribution system, meaning that the pathogen load in the water at a
2352 Non-Commercial Food Crop Growing Operation site has the potential to be higher than it was at the treatment
2353 plant's point of compliance. Nor is the Commission generally requiring *E. coli* monitoring at those Non-Commercial
2354 Food Crop Growing Operation sites (with the exception of some BMPs, see below), meaning that the pathogen
2355 loading at those sites is likely to remain unknown. In sum, at this time, local data does not exist to accurately
2356 assess the risk of using Category 3 Plus reclaimed water to irrigate Non-Commercial Food Crop Growing
2357 Operation. Therefore, the Commission has worked to mitigate against some of these unknown risks through the
2358 imposition of BMPs.

2359 The Commission adopted a BMP that for sites that use hoses for reclaimed water irrigation, one supervising adult
2360 must be present with children in eighth grade and younger to oversee the appropriate use of reclaimed water use
2361 for each active hose/hose spigot. The Commission also required that children in eighth grade and younger must be
2362 supervised by an adult that has undergone training per 84.9(A)(13). Youths that are in ninth grade and older may
2363 be on a site without supervision only if they have received training per 84.9(A)(13). These requirements were
2364 established to ensure that children working in a garden will have adequate supervision. Supervision is needed to
2365 ensure that these children do not eat food directly out of the garden without washing it, follow handwashing or hand
2366 sanitizer protocols, and that children properly use hoses. The Commission determined that these requirements will
2367 help to minimize risk of potential illness for children. This restriction contains allowances for large sites and would
2368 not apply at all if the reclaimed water at the site is shown to meet the Category 3 standard for a year (no *E. coli*
2369 detected in at least 75% of the samples within a month, no sample exceeds 126 cfu *E. coli* per 100 mL.
2370 [84.9(A)(19)]).

2371 The Commission also adopted the PSR's restrictions on the irrigation of sprouts at Non- Commercial Food Crop
2372 Growing Operations [84.9(A)(22)]. The Commission adopted this restriction because the warm and humid
2373 conditions used for sprouting are uniquely ideal for the growth of bacteria, including *Salmonella*, *Listeria*, and *E. coli*.
2374

2375 The Commission required that potable water supplies and soap or hand sanitizer (if allowed by the PSR) be on or
2376 near a site using reclaimed water for Cultivators and Visitors to be able to wash their hands after harvesting crops
2377 and/or being present on the Site. This requirement is necessary to prevent hand to mouth ingestion of pathogens
2378 and is protective of public health. This requirement does not apply to Resident-Controlled Food Crop Irrigation
2379 because a residence must have a potable water spigot on the exterior of the residence [84.9(A)(17)].

2380 The Commission decided that if *E. coli* and/or turbidity standards exceed the required standards in Regulation 84 at
2381 Point of Compliance, Treaters shall notify the Legally Responsible Entity or person, and the Legal Responsible

2382 Entity or person must notify all Site Managers and Management Users [84.9(A)(33)]. Users should be informed that
2383 water quality standards are not being met to take proper precautions while continuing to use reclaimed water to
2384 irrigate.

2385 The Commission adopted the provision that hose bibs must be inaccessible when they are not in use to prevent
2386 any person(s) that are not a trained user to potentially collect water for drinking purposes [84.9(A)(18)].

2387 The Commission adopted more frequent inspection requirements for Non-Commercial Food Crop Growing
2388 Operations, as well as a new role (Site Manager) to ensure proper implementation and enforcement of Regulation
2389 84 [(84.9(A)(34)]. The initial inspection by the Treater prior to beginning irrigation is to ensure that all of the proper
2390 best management practices are set up and in place for irrigation (e.g. appropriate signage, marked appurtenances,
2391 lock box for hose bibs, etc.) The second inspection that must occur after irrigation has started within 30 days of the
2392 first inspection is required to ensure that the practices and requirements that were verified in the initial inspection
2393 are being implemented. Site Manager inspections are required every two weeks to continue to ensure that best
2394 management practices and requirements are being met throughout the entire irrigation season. Both inspections by
2395 the Treater, and frequent inspections by the Site Manager help to ensure that implementation of the requirements
2396 in Regulation 84 are being met to protect public health and the environment.

2397 Due to the fact that some Division inspections of Non-Commercial Food Crop Growing Operation Sites (like for
2398 community gardens) may take place when there is not a representative of the user or treater present at the site, the
2399 Commission added a provision to identify the process for an authorized representative from the Division to also
2400 submit inspector credentials before any inspection upon issuance of the NOA, as required by CRS 25-8-306,
2401 [84.9(A)(32)]. If persons are present at the site at the time of the inspection, the Division representative would also
2402 be required to present their inspector credentials at the time of the inspection.

2403 **V Resident-Controlled Food Crop Irrigation**

2404 The Commission also adopted a number of unique requirements for Resident-Controlled Food Crop Irrigation,
2405 because of the specific management and compliance challenges of this structure.

2406 The Commission required that a Management User must be designated to carry out responsibilities and conduct
2407 inspections. The Management User must be knowledgeable about the requirements in Regulation 84 in order to
2408 enforce the regulation and take action on violations of the regulation. The Management User could be a
2409 Homeowners Association representative, Condominium Association representative, landlord, etc. [84.9(A)(26)]. The
2410 Commission decided to require this to ensure the tiered oversight approach was applied to Resident-Controlled
2411 Food Crop Irrigation sites for protection of public health and the environment.

2412 The Commission required that Management Users provide all property owners and renters with an educational
2413 manual and verbal education prior to a new resident occupying the residence. The education requirements are the
2414 same as those required in [84.9(A)(13)]. The property owner and/or renter must sign a document acknowledging
2415 that they received education, and the Management User must keep copies of the signed documents on site. If a
2416 property is sold or rented to another User, the new residents must receive the same education and sign the
2417 acknowledgement document [84.9(A)(27)]. The Commission felt that this was the most adequate way to ensure
2418 new tenants are aware that non-potable water is being used to irrigate, and to make them aware of the safety
2419 protocols to implement to minimize risk at residential sites.

2420 The Commission required that a potable water supply spigot be available on the exterior of the residence so that
2421 potable water can be used should the Treater's reclaimed water not meet the water quality standards in Regulation
2422 84 at any point in time [84.9(A)(24)].

2423 The Commission adopted a provision that Management Users must maintain up to date maps and/or records of the
2424 locations, number and acreage of sites where reclaimed water is being used to irrigate food crops and landscapes,
2425 and update the Treater of this information annually [84.10(B)(2)(a)(ii)]. The Commission understands that the
2426 Division will work with Management Users regarding how to calculate acreage and agronomic rates in a
2427 streamlined manner. Working with the Management User may include considerations of variances regarding these
2428 calculations.

2429 **VI. Hemp**

2430 The Division met with hemp workgroup stakeholders to discuss irrigation of edible and nonedible hemp and the
2431 hemp industry recommended the following: Category 1 reclaimed water only be used for rotational crops which are
2432 crops used to reduce soil erosion, increase soil fertility and increase crop yield for the next crop to be grown;
2433 Categories 2 and 3 reclaimed water to be allowed for irrigation of hemp to be used for fiber products; and Category
2434 3 Plus to be allowed for irrigation of hemp to be used for edible and dermal products. Hemp stakeholders also
2435 recommended that clones not be irrigated with reclaimed water [84.9(A)(22)]. The Commission adopted these
2436 recommendations.

2437 The Commission required that potable water supplies and soap or hand sanitizer be on or near a site using
2438 reclaimed water for Users and Visitors to be able to wash their hands after harvesting crops and/or being present
2439 on the Site. This requirement is necessary to prevent hand to mouth ingestion of pathogens and is protective of
2440 public health. The Commission also required that if the hand washing supply is a portable hand washing station, the
2441 used water must be disposed of in an area whereby it will not come into contact with the crops, soils or infiltration
2442 into soils near crops because this is a requirement in the PSR. Also, the portable hand washing station must stay
2443 adequately full of potable water for Users [84.9(A)(17)].

2444 The Commission required that harvesting and public access shall be prohibited in areas where irrigation is
2445 occurring resulting in wet soils and/or crops [84.9(A)(21)]. The Commission also added a requirement that
2446 harvesting of produce not occur where irrigation is occurring and making the soil and/or plant wet [84.9(A)(21)].
2447 These requirements will reduce the potential for ingestion, inhalation and dermal exposure to pathogens and will
2448 protect Cultivators, employees and Visitors against potential illness.

2449 **VII. Additional Discussion Applicable to Multiple New Uses**

2450 A. Application of Basic BMPs to All New Uses

2451 The Commission applied a number of basic BMP similar to existing BMPs to all of the new uses, including the
2452 following: leaks in the irrigation system or hoses must be repaired immediately to avoid ponding and runoff and
2453 irrigation in excess of the agronomic rate [84.9(A)(25)]; a manual or display must be located at each of the
2454 reclaimed water sites; education and training must be conducted that is specific to each use; signage must be
2455 placed at specified distances throughout the site; all irrigation equipment and hoses must indicate that non-potable
2456 water is being used [84.9(A)(16), does not apply to resident-controlled]; and a ban on flood and sheet irrigation
2457 because it could result in an exceedance of irrigation at the agronomic rate [84.9(A)(30)].

2458 B. Tiered Approach to Oversight for New Uses

2459 The Commission adopted a tiered approach to oversight for Non-Commercial Food Crop Growing Operation and
2460 Resident-Controlled Food Crop Irrigation. The Division, the Treater and the Site Manager or Management User (for
2461 Resident-Controlled) each have oversight, authority, general and inspection responsibilities. Each tier of oversight
2462 has the authority to lock/disconnect the hose bibs, or terminate service of reclaimed water when a User is in
2463 violation of Regulation 84 [84.10]. This tiered approach will help to ensure that best management practices are
2464 being implemented, and provide a blanket of protection for public health and the environment.

2465 C User Plan to Comply Requirements

2466 The Commission adopted new User Plan to Comply Requirements for the new agricultural uses. The User Plans to
2467 Comply for the new uses require descriptions of how Users, Site Managers and Management Users intend to
2468 comply with the best management practices and adhere to the responsibilities and inspections required in
2469 Regulation 84 [84.12(D-G)]. Adding the new User Plan to Comply requirements sets forth the expectations by the
2470 Division and the Commission for the new uses and binds users to the requirements in the User Plan to Comply and
2471 NOA to protect public health and the environment. Should a user violate the requirements in the User Plan to
2472 Comply and the NOA, enforcement action can be implemented by the Division.

2473 D. Metals Reporting

2474 Based on stakeholder concerns regarding metals uptake in hemp, the Commission adopted a BMP for all food
2475 crops and hemp that a User may request and receive from a treater reclaimed water monitoring data that is less
2476 than 12 months old for nickel, arsenic, lead, cadmium and/or mercury concentrations.

2477 D. TDS

2478 For all new uses except hemp, the Commission adopted a requirement for Treaters to monitor and report TDS data
2479 to the Division in their Discharge Monitoring Reports on a quarterly basis, and email this data to all users for the
2480 new Food Crop users [84.9(A)(14)]. The Commission finds that Users and Cultivators that are irrigating food crops
2481 with reclaimed water will benefit from this information to determine if they want to use reclaimed water to irrigate
2482 crops and/or to determine which crops to grow according to plant specific TDS sensitivity. Reporting TDS or other
2483 pollutants through DMRs does not create any basis to imply that the use of reclaimed water is a discharge to state
2484 waters; rather the DMR system will be used for administrative purposes.
2485

2486 **84.28 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: AUGUST 10, 2020**
2487 **RULEMAKING; EFFECTIVE NOVEMBER 10, 2020**

2488 The provisions of sections 25-8-202, 25-8-205(1), and 25-8-308(1)(h), C.R.S., provide the specific statutory
2489 authority for adoption of amendments to this regulation. The Commission also adopted, in compliance with section
2490 24-4-203(4), C.R.S., the following statement of basis and purpose.

2491 **Basis and Purpose**

2492 Recognizing the importance of reclaimed water as a resource within the State of Colorado's Water Plan as a
2493 means to help offset the demand on other water resources, the Commission considered and adopted changes to
2494 Regulation 84 on August 10, 2020 to include Oil and Gas Operations as an approved use under use categories 2
2495 and 3.

2496 Oil and Gas Operations is a growing industry within Colorado and as the industry expands along the Front Range
2497 of Colorado, it is creating opportunities for municipalities, such as the City of Aurora, to provide alternative water
2498 supplies beyond those typically used by the industry. The Commission acknowledges the use of reclaimed water
2499 can help reduce the demand on other sources, such as groundwater and surface water, that can more readily be
2500 utilized for potable purposes. As such, the Commission is adopting several changes to Regulation 84 that will
2501 regulate the use of reclaimed water within Oil and Gas Operations processes. The changes are an important step
2502 toward furthering the goals of the State's Water Plan while ensuring the protection of public health and
2503 environment. The changes include several new definitions, new Additional Conditions to address the use of
2504 reclaimed water within Oil and Gas Operations, and new requirements to address user plans to comply for specific
2505 oil and gas operation sites.

2506 I. Definitions

2507 The Commission has included two new definitions; one for the new use category of "Oil and Gas Operations" and
2508 one for "lay-flat hose". The "Oil and Gas Operations" definition is meant to build continuity between regulations, and
2509 clarity on what is included in the new use category. "Lay-flat hose" is a common hose used within the oil and gas
2510 industry that can be useful for Treaters to provide a temporary distribution system for users. Several new best
2511 management practices (Additional Conditions) have been introduced within the regulation surrounding how
2512 reclaimed water is used by approved Users. The new definitions were added to reflect references for the new
2513 requirements and approved industrial uses in Regulation 84.

2514 Section 84.5 (28) - Lay-flat Hose is a staple for industries to transport liquids quickly, efficiently, and timely for
2515 temporary events. Oil and gas operation's is a growing industry within Colorado that has unique demands on water
2516 such that they often require very large volumes of water for a short period of time, and disposal after usage
2517 removes the water from the natural water cycle. For instance, a site may need 9 – 12 million gallons of water over a
2518 period of 5 – 7 days to complete a single well. The demand for water to any given Oil and Gas Operations site ends
2519 up being temporary in nature; therefore, the infrastructure necessary to deliver the water also tends to be temporary
2520 in nature as opposed to more permanent infrastructure. The use of temporary lay-flat hose helps to deliver the
2521 water supply, but also helps reduce road traffic and minimize environmental impacts that would result from the
2522 multitude of trips necessary to deliver large amounts of water over a short period.

2523 Section 84.5 (37) - The definition of Oil and Gas Operations replicates the definition adopted by the Colorado Oil
2524 and Gas Conservation Commission (COGCC) Rule 100 Series - Definitions. This develops continuity between the

2525 regulations, which will be helpful to all parties involved with this regulation, since COGCC regulations will oversee
2526 the disposal of used reclaimed water from Oil and Gas Operations Users.

2527 Section 84.5 (46) – The definition of Site was modified to include conveyance and storage, under the operational
2528 control of the user. This was necessary since temporary conveyance systems could be used by Oil and Gas
2529 Operations and other approved uses.

2530 Section 84.5 (55) – The definition of user plan to comply was modified to correct a citation typographic error.
2531 Section 84.11 as cited in the definition was a typographic error. The correct citation for user plan to comply
2532 requirements is 84.12.

2533 II. The commission approved the new use of Oil and Gas Operations and added it to section 84.9 Table A
2534 under Industrial uses. This requires the User to manage the reclaimed water in accordance with a Notice of
2535 Authorization under Regulation 84. Oil and Gas Operations primarily intends to use reclaimed water as the base
2536 liquid for drilling muds or producing hydrologic fracturing fluids for injection down hole. Category 2 and Category 3
2537 water are allowed for this new use. Category 1 water will not be allowed for this new use.

2538 III. The Commission included several Additional Conditions specific toward the use of reclaimed water within
2539 the use category of Oil and Gas Operations.

2540 Section 84.9 (A) Additional Conditions Required, was revised with the following modifications:

2541 Section 84.9 (A) (13) added an Additional Condition requiring advanced training of staff prior to their initial shift and
2542 annually thereafter. This is protective to the staff by informing them that reclaimed water was being used on site
2543 and the procedures they need to follow to be safe when working with reclaimed water. The training would include
2544 implementing Additional Conditions and the requirements in the User Plan to Comply (UPC).

2545 Section 84.9 (A) (16) The signage Additional Condition was modified by removing the phrase “to irrigate crops”.
2546 This modification removes this narrow interpretation that this Additional Condition is only applicable “to irrigate
2547 crops”. This Additional Condition can be applied to a majority of approved uses and can protect the public through
2548 notifications that reclaimed water is used at the location.

2549 Section 84.9 (A) (37) Additional Conditions for lay-flat hoses, couplings, and other appurtenances were created for
2550 lay-flat hose deployment and usage. Lay-flat hose will be installed in accordance to industry standards for integrity
2551 utilizing hydrostatic pressure testing procedures. The requirement includes cross-connection control methods be
2552 implemented when connecting to other water sources. The User is required to install and maintain leak detection
2553 equipment on the lay-flat hose and perform daily inspection of the entire transmission line for spill prevention and
2554 countermeasure. The hose will be marked as non-potable water transmission line and signage, identifying the liquid
2555 being transmitted within the hose, is required at the mid-point of each section of hose or approximately every 350
2556 feet. These requirements serve to notify the public, Users, and Treaters about the content within the hose. These
2557 preventive and notification requirements are industry standards that are required during installation of more
2558 permanent pipelines and applicable to temporary conveyance systems. The signage and labeling requirements
2559 protect the public by informing them of the contents of the hose and notifying them that it is non-potable water.

2560 Section 84.9 (A) (38) Additional Conditions for vehicles and tank trailers were created for hauling reclaimed water.
2561 The requirement includes cross-connection control methods that must be implemented when loading the tanker,
2562 labelling the tanker as containing non-potable water, and spill reporting requirement. These requirements will
2563 protect other water supplies that maybe accessed by the hauler and protect the public by notifying them of the
2564 contents in the tank. The potential for spills exists with any transfer or transportation operation, hence the
2565 requirement for reporting a spill as required by CRS §25-8-601(2).

2566 Section 84.9 (A) (39) An additional Condition for delivery through temporary conveyances was created to reiterate
2567 the requirement that the conveyance system needs to comply with the definition of lay-flat hose. The conveyance
2568 shall be deployed utilizing the industry standards identified in the definition of lay-flat hose and the associated
2569 Additional Condition. This clarifies that the temporary conveyances shall be protect the environment by following
2570 the industry standards and that the public will be able to identify the contents in the conveyance.

2571 Section 84.9 (A) (40) An Additional Condition for disposal of reclaimed water was created for managing the
2572 disposal of reclaimed water from any storage, conveyance or other source. The User is required to dispose of

2573 reclaimed water in a manner that doesn't create a point source discharge of pollution into State Waters or is a
2574 reportable spill as specified in §25-8-601(2) CRS. This requirement protects the environment and public by advising
2575 the User of the need to properly dispose of any excess reclaimed water or to obtain a permit for a point source
2576 discharge.

2577 Section 84.9 (A) (41) The Additional Condition for notification of conveyance deployment, usage, or removal
2578 requires the User to notify the Division and Treater when a temporary conveyance is being used or is being
2579 withdrawn for service. This notification allows the Treater to manage the reclaimed water by knowing when and
2580 where reclaimed water is used and to schedule compliance activities as necessary. The Division would receive the
2581 notification for use in scheduling their compliance activities.

2582 Section 84.9 (A) (42) An Additional Condition requiring analysis of the reclaimed water for adenosine triphosphate
2583 (ATP) to determine the amount and type of biocide an operator will add to the reclaimed water. Oil and gas
2584 operations use this test and dosage of biocide to the source water to protect their interests in the downhole
2585 properties of the well and formation.

2586 IV. The Commission adopted specific treater and site manager requirements for the Oil and Gas Operations
2587 use category to ensure responsibilities and expectations are clear between the Treater and the User.

2588 Section 84.10 (D) was added to detail the responsibilities of the Treater and Site Manager of Oil and Gas Operation
2589 sites. The Treater is responsible for reviewing the User Plan to Comply (UPC) for completeness, accuracy,
2590 recordkeeping, inspections, and implementation of Additional Conditions. The Site Manager is responsible for
2591 adherence to NOA and UPC requirements. Specifying the responsibilities supports the overall hierachal structure
2592 of Regulation 84 and clearly identifies accountability of the parties involved with managing reclaimed water.

2593 Section 84.12 (J) was added to provide specific requirements in the User Plan to Comply for Oil and Gas Operation
2594 sites. These include, contact information, description of how and where reclaimed water is used, cross-connection
2595 control requirements, hydrostatic testing requirements for temporary lay-flat hose or pipelines, and labelling
2596 requirements for temporary lay-flat hose or pipelines. This requirement was developed by modifying the
2597 requirements in Section 84.12 (B) and adding details specific to Oil and Gas Operations. The baseline information
2598 is the same for all Users, however the specifics associated with conveyance systems and labeling temporary lay-
2599 flat hose or pipelines is necessary to protect the environment and notify the public.

2600	
2601	Editor's Notes
2602	History
2603	Rules 84.4, 84.5, 84.6.A, 84.24 eff. 09/30/2007.
2604	Rules 84.4-84.5, 84.6(A)(3), 84.8-84.10, 84.25 eff. 07/30/2013.
2605	Rules 84.1, 84.4-84.6, 84.8-84.15, 84.26 eff. 11/30/2018.
2606	Rules 84.1, 84.4-84.6, 84.8-84.16, 84.27 eff. 01/14/2020.
2607	Rules 84.5, 84.9, 84.10, 84.12, 84.28 eff. 11/10/2020.

2608

