



FOR DISCUSSION PURPOSES ONLY

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Regulation 84 Stakeholder Meeting - April 25, 2019

NEW DEFINITIONS

- (1) Agricultural Irrigation means use of reclaimed water for irrigation of crops and trees, **including crops not grown for human consumption and non-commercially processed edible crops, commercially processed edible crops and edible and industrial hemp for human consumption.**
- (11) Commercially Processed Edible Crop means edible crops that are considered “covered crops” under the Food Safety Modernization Act, Produce Safety Rule, 21 CFR 112.4. This generally means that the farm on which these crops are grown will have an average annual monetary value of produce sold during the previous 3-year period of more than \$26,999 (on a rolling basis) as of 2018, with adjustments for inflation.
- (14) Cultivator means any individual or individuals that are interacting with irrigated edible crops, irrigation and/or soils that are irrigated with reclaimed water.
- (17) Edible Hemp means hemp seeds, oils, flowers and other hemp materials used to make edible products, dermal products, and internal use products for human use.
- (22) Industrial Hemp means a plant of the genus cannabis and any part of the plant, whether growing or not, containing delta-9 tetrahydrocannabinol concentration of no more than three-tenths of one percent on a dry weight basis (HB-35-61-101(7)17).
- (30) Non-commercially Processed Edible Crops means edible crops are not considered “covered crops” under the Food Safety Modernization Act, Produce Safety Rule 21 CFR 112.4. This generally means that the farm on which these crops are grown will have less than an average annual monetary profit of produce sold during the previous 3-year period of more than \$26,999 (on a rolling basis) as of 2018, with adjustments for inflation.
- (39) Site Manager means an individual or individuals who are the representative(s) of the User responsible for educating others, and ensuring that all requirements of this regulation are properly implemented on site. These individuals must be fully trained, educated and well versed in this regulation to ensure safe onsite practices amongst other site users.

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

- (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.
- (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-Commercially Processed Edible Crops, and Resident-Controlled 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:



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- (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:
 - (a) Disinfection that provides a minimum of 99.999 (5-log) inactivation of enteric viruses by at least one of the following treatment techniques.
 - (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).
 - (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).
 - (b) Filtration by any one of the following treatment techniques:
 - (i) Conventional or direct filtration.
 - (ii) Membrane filtration accepted for use by the Division in accordance with section 11.8 of 5 CCR 1002-11. (iii) Bag or cartridge filtration accepted for use by the Division in accordance with section 11.8 of 5 CCR 1002-11.
 - (iv) Alternative filtration technologies accepted by the Division in accordance with Wastewater Design Criteria Alternative Technology Acceptance that is third party challenge tested to reliably remove 99.9% of challenge particles that are at most 3 micron diameter.
 - (c) The treater must return any recycled spent filter backwash water, thickener supernatant, or liquids from the dewatering process to a location within the treatment process that is before the filtration technology or an alternative Department-approved location.
 - (i) For conventional or direct filtration, the location of return must be prior to the coagulant feed location. (ii) For all other filtration technologies, the location of return must be prior to the filtration process and approved by the Division.



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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, <u>31</u>
Washwater Applications	Not Allowed	Allowed	Allowed	2,3,7, <u>31</u>
Non-Discharging Construction and Road Maintenance	Allowed	Allowed	Allowed	3,7, <u>31</u>
Non-Evaporative Industrial Processes	Allowed	Allowed	Allowed	7, <u>31</u>
LANDSCAPE IRRIGATION				
Restricted Access	Allowed	Allowed	Allowed	
Unrestricted Access	Not Allowed	Allowed	Allowed	3,4, <u>31</u>
Resident-Controlled	Not Allowed	Not Allowed	Allowed	3,4,5, <u>31</u>
COMMERCIAL				
Zoo Operations	Allowed	Allowed	Allowed	, <u>31</u>
Commercial Laundries	Not Allowed	Allowed	Allowed	7, <u>31</u>
Automated Vehicle Washing	Not Allowed	Allowed	Allowed	3,8, <u>31</u>
Manual Non-Public Vehicle Washing	Not Allowed	Allowed	Allowed	3,8, <u>31</u>
FIRE PROTECTION				
Nonresidential Fire Protection	Not Allowed	Allowed	Allowed	6, <u>31</u>
Residential Fire Protection	Not Allowed	Not Allowed	Allowed	6, <u>31</u>
AGRICULTURAL IRRIGATION				



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<u>Non-Edible-Crop Irrigation and Silviculture</u>	<u>Allowed</u>	<u>Allowed</u>	<u>Allowed</u>	<u>3,31</u>
<u>Commercially Processed Edible Crop Irrigation</u>	<u>Not Allowed</u>	<u>Allowed</u>	<u>Allowed</u>	<u>3,13,14,15,16,17,22,23,24,26,29,30,31</u>
<u>Non-commercially Processed Edible Crop Irrigation</u>	<u>Not Allowed</u>	<u>Not Allowed</u>	<u>Allowed (Category 3 Plus)</u>	<u>3,13,15,16,17,19,20,21,22,24,26,30,31</u>
<u>Non-Edible Hemp Irrigation</u>	<u>Allowed</u>	<u>Allowed</u>	<u>Allowed</u>	<u>3,13,14,15,16,22,23,24,26,31</u>
<u>Edible Hemp Irrigation</u>	<u>Not Allowed</u>	<u>Not Allowed</u>	<u>Allowed (Category 3 Plus)</u>	<u>3,13,14,15,16,22,23,24,26,31</u>
<u>TOILET AND URINAL FLUSHING</u>	<u>Not Allowed</u>	<u>Not Allowed</u>	<u>Allowed (Category 3 Plus)</u>	<u>5,9,10,11,31</u>

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



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

- (6) The user shall develop and implement a program, including notices in fire department newsletters and fire department preplans, to educate the public and firefighters that reclaimed water is used for fire protection. The user shall develop a program to educate plumbing and fire protection system contractors and inspectors expected to access the fire protection system about the need to confirm that cross-connections between the reclaimed water and potable water systems do not exist and about the requirement to clearly identify the potable and reclaimed water systems throughout the building. All personnel authorized to use the reclaimed water for fire protection shall be educated to avoid contact with and strictly minimize ponding or runoff of the reclaimed water during non-emergency testing or training. An annual cross-connection inspection shall be made at each structure to which reclaimed water piping is extended for fire protection to ensure that no cross-connection exists. The treater shall maintain a map indicating the location of all fire hydrants, sprinkler systems and standpipe systems provided with reclaimed water.
- (7) Where there is the reasonable potential for worker or public exposure to aerosols generated in the use, users of Category 1 Reclaimed Water (if allowed for the use per Table A) or Category 2 Reclaimed Water shall employ measures to prevent the frequent exposure of workers and the public to aerosols generated in the use of reclaimed water. Measures shall include at least one of the following: minimum setback distance of 100 feet between the nearest source of aerosol generation and areas where workers or the public are normally present; physical barriers between aerosol sources and humans; personal protective equipment to prevent aerosol inhalation; functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist); or other means approved by the Division. Given the higher level of treatment provided for Category 3 Reclaimed Water, additional measures to address exposure of workers or the public to aerosols are not required.
- (8) Where there is the potential for worker or public exposure to aerosols generated in the use, users of Category 2 Reclaimed Water shall employ measures to prevent the inhalation of aerosols from reclaimed water by workers and the public. Measures shall include at least one of the following: personal protective equipment documented to prevent aerosol inhalation; or functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist) and documented to prevent aerosol inhalation.
- (9) Reclaimed water may be used for indoor uses provided that the user adopts and follows best management practices (BMPs) to minimize growth of and worker exposure to *Legionella* and other premise plumbing opportunistic pathogens. BMPs shall be specified in a site-specific operation and maintenance plan as described in section 84.11(C), and shall include at least one of the following:



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- (a) Maintenance of a minimum 0.2 mg/L of free chlorine disinfectant or 0.5 mg/L of monochloramine residual if ammonia is present in premise plumbing. The disinfection residual shall be measured at a location at a distance of no greater than 50 feet from the location of use at the distal end or a location that represents the oldest water age within the reclaimed water premise plumbing system. This may require chlorine “boosting” at the point that reclaimed water enters a structure. The monitoring frequency will be no less frequent than once (grab samples) per week. If the disinfectant residual is not in compliance with this requirement, the system must perform operations and maintenance and return all premise plumbing to a minimum 0.2 mg/L disinfection residual for free chlorine or 0.5 mg/L disinfection residual for monochloramine within 24 hours. Exact monitoring locations, and other compliance terms, will be identified in the site-specific operation and maintenance plan submitted as part of the user plan to comply. The system must maintain records of all sampling, locations, and corrective operations for review by the treater or **Division** upon request.
 - (b) An alternative disinfection method as approved by the Division with equivalent protection against premise plumbing pathogens as set forth in section 84.9(A)(9)(a) above. The effectiveness of an alternative disinfection method may be verified by monitoring. The monitoring plan and any requirements for implementation of any Division approved alternative disinfection method must be included in the user plan to comply and the NOA.
 - (c) Where reclaimed water is used for indoor nonpotable uses within a building where plumbing fixtures are accessible by the general public, a monitoring location for disinfection residual at a distance no greater than 50 feet from the location of use at the distal end or a location that represents the oldest water age within the reclaimed water premise plumbing system may be used as an alternate point of compliance for disinfection residual.
- (10) To minimize risk of unintended cross connections, plumbing modifications and repairs shall only be conducted by licensed plumbers. Signage shall indicate that plumbing modifications can only be done by authorized personnel. Signage shall be located where plumbing is accessible.
 - (11) Users receiving reclaimed water for use within an occupied premise, must include a backup potable water connection capable of supplying potable water to fixtures for flushing via an air gap should the localized reclaimed water treatment system fail or the reclaimed water is found to be non-compliant or insufficient in volume.
 - (12) Users may use reclaimed water for toilet and urinal flushing in multifamily residential structures and in nonresidential structures, only if the toilet and urinal installations are conducted in accordance with article 58 of title 12 [concerning plumbers] and rules promulgated pursuant to that article. Any toilet or urinal installation must conform to article 58 of title 12 and rules promulgated pursuant to that article.
 - (13) **Employees, contractors, non-commercially processed edible crops site managers and non-commercially processed edible crops cultivators using reclaimed water or coming into contact with irrigated crops or soils must receive training regarding reclaimed water, safety protocols for using reclaimed water and best management**



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practices prior to using reclaimed water. Annual trainings are required for all individuals using reclaimed water, and records of training dates and individuals that have been trained must be kept on site for Division review. Trainings can be done in person or online (with subsequent quizzes) by the treater and/or the site manager. Additional training may be required by the Division per the NOA. Training provided must be adequate to result in individuals being knowledgeable of the requirements and capable of implementation when they are responsible for implementing BMPs required by the User Plan to Comply and the User NOA, and/or for irrigation practices to prevent irrigation in excess of the agronomic rate and to minimize ponding or runoff of reclaimed water.

- (14) Visitors to the site shall be educated that reclaimed water is being used to irrigate edible crops. Education shall include that reclaimed water is not safe for drinking and that hand washing with potable water must occur after cultivation activities. Public access shall only be allowed 24 hours after the last irrigation event, and fencing with locked gates shall be provided to minimize access that does not meet the requirements of this part of the regulation. Education shall include an active confirmation by the User that the information is understood by the visitor and cannot rely solely on passive signage or literature provided to visitors.
- (15) Treaters must post monthly data regarding the total dissolved solids content of the reclaimed water on the treaters' website in a format that is easily accessible and easy to comprehend and must share this data with all edible crop Users. Upon request from the Division or Users, Treaters must sample and analyze its reclaimed water for nickel, arsenic, lead, cadmium and mercury concentrations in the water and provide this data to the Division and Users. Samples shall be taken at the Point of Compliance.
- (16) Signage must be placed in multiple areas of the non-commercially processed crop or commercially processed crop site indicating that non-potable water is being used to irrigate crops. One 8.5 x 11" sign should be placed at the entrance of the site that states, "Reclaimed Water - Do Not Drink" along with a graphic that indicates that the water is not for drinking. Signs should be placed throughout the site with the same verbiage no greater than 50 feet apart. Hoses and irrigation equipment must also indicate that reclaimed water is being used, and all irrigation equipment must be labeled as non-potable water and clearly distinguished as non-potable water (e.g. purple in color and/or indicated in a language that is appropriate for the User and Treater). Signage should also mandate hand washing after coming into contact with irrigated crops or soils and/or irrigation of crops. Signage should indicate that hands and produce should be washed after harvest.
- (17) Potable water supplies must be readily available when people are present/allowed onsite, at a reasonable distance within no less than 100 feet from the harvesting area for employees, visitors and cultivators to wash their hands. If a school, park or other facility is within a reasonable distance from potable sinks that employees, visitors and cultivators have access to at all times, this is sufficient. If not, a portable hand washing station located at the facility is required to be filled with potable water. Wastewater from portable hand washing stations must be disposed of in an area whereby it will not come into contact with crops, soils or infiltrate into soils near crops. The disposal must not create an unpermitted point source discharge to a water of the state. The site manager or the treater is responsible for ensuring that the portable hand washing station contains potable water for hygiene.



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- (19) Hoses that supply reclaimed water for irrigation must be locked to prevent the supply of water when not in use, and when an individual trained in accordance with 13 is not present at the site.
- (20) Only children that are five years of age or older are allowed on sites with hoses that supply reclaimed water.
- (20b) *Only children that are ten years of age or older are allowed on sites with hoses that supply reclaimed water. The division may grant a Regulation 84.13 variance from this BMP at a site upon findings that: the site's user and treater have fully complied with this Regulation and the applicable NOAs for at least two years at the site and on-site monitoring of the reclaimed water demonstrates that [meets pathogen screening].*
- (21) *Community garden sites where students attending any public or private school that are 5 years of age or older interact with the site require a minimum of a 10:1 guardian to student ratio. Students and legal guardians shall be notified in advance that reclaimed water is being used to irrigate. Records should be kept on an annual basis that legal guardians have been educated about the fact that reclaimed water is being used at the school site, and a signature that acknowledges the the understanding that the reclaimed water is non-potable water being used to irrigate the site is kept onsite by each guardian.*
- (22) A manual or display must be onsite at all times that describe what reclaimed water is, and the BMPs required by the User Plan to Comply and the User NOA and for irrigation practices to prevent irrigation in excess of the agronomic rate and to minimize ponding or runoff of reclaimed water. This must be accessible to all visitors, employees and site Users.
- (23) Harvesting crops during irrigation events is prohibited.
- (24) Irrigation of sprouts is prohibited.
- (25) If the site is irrigated with an automatic irrigation system, the site must be on a separate irrigation zone when using reclaimed water.
- (26) Leaks in the irrigation system and/or hoses must be fixed immediately.
- (29) Commercially Processed Edible Crops must comply with any applicable requirements of the Food Safety Modernization Act, Produce Safety Rule, 21 C.F.R. Part 112 as implemented by the State of Colorado. Compliance information with the Produce Safety Rule must be described in the Annual Report.
- (30) Flood and sheet irrigation are prohibited unless it is stored in a container that is not exposed to the open environment.
- (31) The Treater and the User shall furnish to the Division, within a reasonable time, any information which the Division may request to determine whether cause exists for modifying, revoking and reissuing the NOA, or to determine compliance with this regulation or the applicable NOA.



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TREATER AND SITE MANAGER RESPONSIBILITIES

84.X TREATER AND SITE MANAGER RESPONSIBILITIES FOR NON-COMMERCIALY PROCESSED EDIBLE CROPS

(A) Treater Responsibilities

(1) General Responsibilities

- (X) Ensure an accurate User Plan to Comply is onsite.
- (X) Maintains accurate records of all current Users.
- (X) Ensure the signage required by this regulation is intact in the appropriate locations and distances, and that signage is legible so that Users can comprehend that reclaimed water is being used and is not for drinking.
- (X) 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.

(2) Inspections

- (X) Pre-Irrigation Inspection: Conduct one inspection prior to the first use of reclaimed water at a site each calendar year.
- (XX) Irrigation Season Inspection: Conduct a second inspection during the period when irrigation is occurring each year and at least 30 days from the initial inspection (unless irrigation only occurs for 45 days).
- (XX) The inspection must be completed with a site manager or user representative on site and include an interview with the site manager.
- (XX) Inspections must assess and document if all BMPs are being implemented, or are in place and ready to implement for the pre-irrigation inspection, as required by the User Plan to Comply and the User NOA, to prevent irrigation in excess of the agronomic rate, and to minimize ponding or runoff of reclaimed water.
- (XX) If a site is in non-compliance, unless the non-compliance issue(s) are corrected during the inspection, reinspect the site once the correction(s) are made and document and keep record(s) of the corrective actions. Treaters are required to assist the user with compliance plans and corrective actions. If hoses are being used, the Treater and/or the Division reserve the right to disconnect the hose until corrective actions are complete.



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(B) Site Manager Responsibilities. The user shall ensure that a site manager is designated that meets the following requirements:

(1) General Responsibilities

- (X) Ensure an accurate User Plan to Comply is onsite.
- (X) Maintains accurate records of all current Users.
- (X) Ensure site users are educated about reclaimed water per education requirements in section 84.9.
- (XX) Ensure best management practices and requirements are implemented, and ready to implement for the pre-irrigation inspection, as required by the User Plan to Comply and the User NOA for all best management practices including prevention of excess irrigation of the agronomic rate, and to minimize ponding and runoff of reclaimed water.
- (X) Maintain accurate User Plan to Comply onsite, and submit modifications to the Treater to subsequently send to the Division.
- (X) Ensure specified amount of signage per section 84.9 is implemented, and that signage is legible for Users to comprehend that reclaimed water is being used and is not for drinking.

(2) Inspections

- (X) Ensure one inspection is required prior to the first use of reclaimed water at a site each calendar year.
- (X) Ensure routine inspections are required every 14 days and at least 5 days from the previous inspection. Inspections must include and document that all Best Management Practices and conditions in the User Plan to Comply and NOA are being met and available for the Division to review.
- (X) Ensure hand washing station is adequately full, and wastewater is disposed of properly and away from produce and soils

USER PLAN TO COMPLY REQUIREMENTS

COMMERCIALY PROCESSED CROPS

- (D) Commercially processed crops users shall include the following information in their user plan to comply:
 - (5) A description of training methods and verification that all new employees and site managers will receive training prior to beginning work, and annual training are conducted.



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- (6) A description of how visitors are educated prior to entering irrigated areas.
- (7) A description of the location of signs throughout site.
- (8) A description of the location(s) of potable water supplies for hand washing.
- (9) A description of the location of the manual(s) and display(s) that describe what reclaimed water is and best management practices that must be followed.
- (10) A description of irrigation times and how harvesting produce will be prohibited during irrigation events.

NON-COMMERCIALY PROCESSED CROPS

(X) Non-commercially processed crops users shall include the following information in their user plan to comply:

- (1) A description of the training methods and verification that cultivators and site managers will receive training prior to beginning work, and annual trainings are conducted;
- (2) A description of the locations of signs, number of signs and verbiage and pictures on signs.
- (3) A description of the location(s) of potable water supplies for hand washing;
- (4) Verification that hoses are locked at all times when not in use.
- (5) Verification that children that are under five years of age are not allowed on site.
- (6) When applicable, description of the student to guardian ratio including number of students and number of guardians (on average over the course of the irrigation season).
- (7) A description of the location of manual(s) and display(s) that describe what reclaimed water is and the best management practices that must be followed.
- (8) Any additional information necessary to identify the implementation and maintenance of BMPs to comply with 84.9 and to prevent irrigation in excess of the agronomic rate and to minimize ponding or runoff of reclaimed water. BMPs include any method used to protect public health and the environment. BMPs include, but are not limited to, schedules of activities, prohibitions of practices, maintenance procedures, and other management practices.

HEMP

(X) Hemp users shall include the following information in their user plan to comply



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- (5) A description of the training methods and verification that all new employees and site managers are receiving training prior to beginning work, and annual trainings are conducted.
- (6) A description of how visitors are educated prior to entering the irrigated areas.
- (7) A description of the location of signs throughout the site.
- (8) A description of the use type for the hemp; non-edible or edible applications.