

California Leafy Greens Marketing Agreement (LGMA) Guidelines - *Proposed Changes*

Prepared for:
Western Growers and CA LGMA

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Summary:

Our focus for this proposal is on agricultural water systems, sourced mainly from Type A wells commonly found in the Santa Maria and Salinas Valleys. While Type A well water likely carries the lowest risk, the most recent metrics revision only gives a snapshot of water quality through initial and routine testing. We propose allowing monthly water sampling to verify water quality throughout the entire growing season. There are no proposed changes to Type B water nor B->A water. No additional science is referenced, as previous metrics were used as guidance.

Proposed Changes to Glossary Definitions:

GLOSSARY	
Agricultural Water System	Each combination of A distinct water system for agricultural use; consisting separate conveyance, storage, used to carry water from its primary source to its point of use; includes wells, irrigation canals, pumps, valves, storage tanks, reservoirs, meters, pipes, fittings, and sprinklers.
Water Distribution System	Distribution A conveyance system -s- consisting of pipes, pumps, valves, storage tanks, reservoirs, meters, fittings, and other hydraulic appurtenances - both above ground, underground, stationary, and mobile- to carry water from its primary a water source to a lettuce and leafy green crop.
Water Source	The location from which water originates into the water distribution system ; water sources can be municipal, well, or surface water (such as rivers, lakes or streams).
Monthly Water Quality Testing	Testing on a monthly basis (maximum 35-day intervals) to achieve verification of water quality within an agricultural water system.

Reason for Changes:

With changes to the metrics over the past year, there has been confusion as to whether a well is its own system. In the effort to minimize this confusion, we clarified differences between agricultural water systems, water distribution systems, and water sources. We also brought back into the metrics a requirement for monthly water quality testing and defined it based on previous metric requirements.

Proposed Changes to Type A Agricultural Water Systems Sourced from Private Wells:

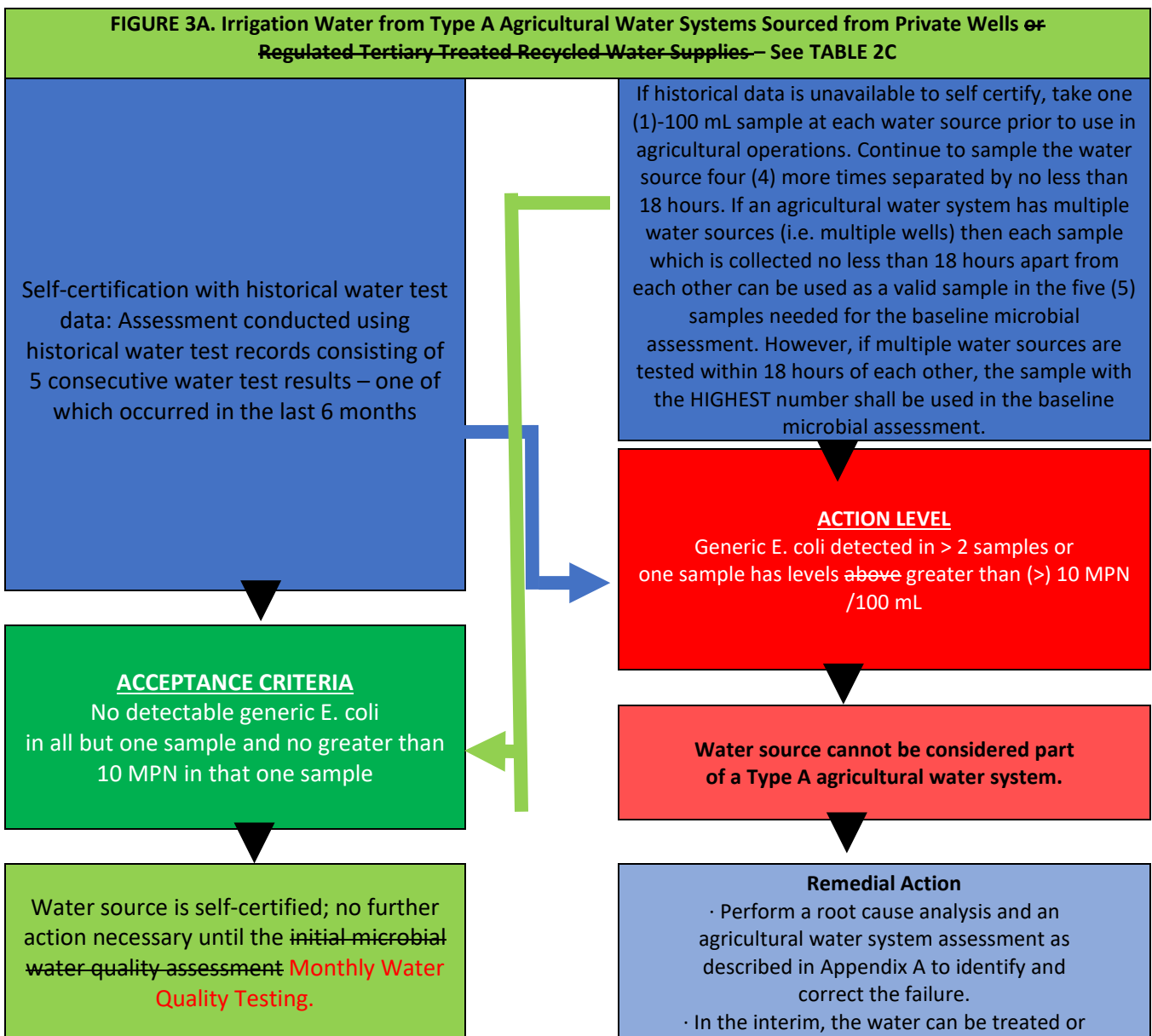
TABLE 2C. Irrigation Water from Type A Agricultural Water Systems Sourced from Private Wells or Regulated Tertiary Treated Recycled Water Supplies — See FIGURE 3A & 3B 3C	
Metric	Rationale/Remedial Actions
<p>Examples of water from Type A agricultural water systems:</p> <ul style="list-style-type: none"> • Regulated recycled waste water • Water sourced from a well – well water is conveyed to the field in a closed delivery system and applied to the crop via overhead sprinklers. 	<p>Irrigation water from Type A agricultural water systems with well source water would not be expected to contain generic E. coli due to natural filtration as the water passes through the soil. Water from regulated tertiary treated recycled water supplies may have low levels of generic E. coli due to regulatory allowable limits. Type A agricultural water systems must be stored and conveyed in well-maintained, closed systems and tested for generic E. coli. Remedial actions vary depending on when the water is being used in relation to harvest.</p>
C1. Baseline Microbial Assessment	
Target organism: Generic E. coli	
<p>Baseline Assessment Sampling Procedure: If historical water test data is not available, aseptically collect at least three one (1) 100 mL sample at the source.</p> <p>Baseline Assessment Sampling Frequency: Sample and test the water two an additional four times (with sampling events separated by no less than 7 days 18 hours) before using the water within the 21 days-to-scheduled-harvest window.</p> <p>Baseline Assessment Acceptance Criteria: Non-detectable generic E. coli in five (5) four (4) of six (6) five (5) 100 mL samples and < 10 MPN as the single sample maximum for one (1) sample. Note: For the purposes of</p>	<p>The purpose of a baseline assessment is to ensure your water source (e.g., a well or regulated tertiary treated recycled water) meets the microbial standards for generic E. coli. This baseline microbial assessment must be conducted before these Type A water sources can be used for overhead irrigation within 21 days to scheduled harvest. For agricultural water systems with multiple wells, each well must be tested prior to planting in order to validate the integrity of the agricultural water system.</p> <p>Self-certification with historical water test data: If at least four (4) of the last five (5) consecutive historical water tests (80%) have no detectable generic E. coli, the remaining one (1) sample does not exceed (< 10 MPN in 100 mL, and one (1) of those tests was taken within the last 6 months, then the water/well is self-certified as a Type A agricultural water source.</p> <p>Self-certification process when no historical data is available: If historical data is unavailable, test the each water source (i.e. well) or regulated recycled water twice (separated by no less than seven days) once (1) prior to use in agricultural operations as the source water for a Type A agricultural water system. Continue to sample the water source four (4) more times separated by no less than 18 hours. If at least five (5) four (4) of the six (6) five (5) total samples have no detectable generic E. coli and the remaining sample has < 10 MPN in 100 mL, then the water/well is self-certified as a Type A agricultural water source.</p> <p>*If an agricultural water system has multiple water sources (i.e. multiple wells), and a sample is taken from each source no less than 18 hours apart, then collectively, those samples can be used toward the five (5) samples needed for the baseline assessment. However, if multiple sources are tested within the same 18 hours, then only the test with the highest detectable number of generic E. coli qualifies for use in the baseline assessment.</p>

<p>water testing, MPN and CFU are considered equivalent.</p>	<p>Testing Failure: If test results do not meet the acceptance criteria, then the water/well cannot be considered a Type A agricultural water source. Perform a root cause analysis and an agricultural water system assessment as described in Appendix A to identify and correct the failure. In the interim, the water can be treated or used as a source for a Type B agricultural water system.</p>
<p>Test Method: Any FDA allowed method</p>	
<p>Records: Each water sample and analysis shall record the type of water source, date, time, and location of the sample, the method of analysis, and, if quantitative, the detection limit. All test results and remedial actions shall be documented and available for verification from the grower/handler who is the responsible party for a period of two years.</p>	

Proposed Addition for Monthly Water Quality Testing:

<p>*Proposed* C2. Monthly Water Quality Testing</p>	
<p>Target organism: Generic E. coli</p>	
<p>Monthly Water Quality testing Procedure: Aseptically collect one (1)-100 mL sample from the furthest point of distribution (i.e. sprinklers, drip tape, etc.) during the irrigation event.</p> <p>Monthly Water Quality Testing Frequency: Sample and test the water after the baseline microbial assessment is completed and each month thereafter (maximum 35-day interval or at the next irrigation event if greater than 35 days) to continue using the agricultural water system within the 21 days-to-scheduled-harvest window.</p> <p>Monthly Water Quality Testing Criteria: Non-detectable generic E. coli in four (4) of the five (5) 100 mL samples and <10 MPN as the single sample maximum for one (1) sample in all samples taken after the baseline microbial assessment. Note: For the purposes of water testing, MPN and CFU are considered equivalent.</p>	<p>The purpose of monthly water quality testing is to confirm that the water’s microbial quality is not being degraded as it passes through the system (i.e., due to equipment conditions). The assessment is performed to verify that your irrigation water distribution system maintains and delivers water of the same microbial quality (e.g., Type A) as the water source. To test your agricultural water system, sample and test irrigation water during an irrigation event. All agricultural water systems are to be tested before entering the 21-days-to-scheduled-harvest timeframe. All samples are to be taken at the furthest point of distribution where water contacts the crop.</p> <p>Initial Testing: You must have at least five (5) water samples taken no less than 18 hours apart prior to entering a 21-day to harvest period. Monthly water sampling must occur no greater than every 35 days thereafter (or at the next irrigation event if greater than 35 days).</p> <p>If at least four (4) of the last five (5) samples do not have detectable levels of generic E. coli, and the level in the one remaining sample is no greater than 10 MPN, then the water system maintains its Type A status. If at any point one (1) of the samples has a level of Generic E. coli greater than 10 MPN OR two (2) of the current samples has a detectable level of Generic E. coli then you must conduct follow-up testing.</p> <p>Testing Failure: If any one (1) of the current five (5) samples has a level of Generic E. coli greater than 10 MPN/100mL OR two (2) of the current five (5) samples has a detectable level of Generic E. coli then you must conduct follow-up testing.</p> <p>Follow-up Testing: Prior to the next irrigation event perform a root cause analysis and an agricultural water system assessment as described in</p>

<p>Follow-up Testing Acceptance Criteria:</p> <p>Non-detectable in four (4) of five (5)-100 mL samples and < 10 MPN as the single sample maximum for one (1) sample with samples taken no less than 18 hours apart.</p>	<p>Appendix A to identify and correct the failure. After assessing the system, retest the system for generic E. coli by collecting five (5) 100mL samples during the next irrigation event. Water samples can be pulled from the end of any system nodes/branches in the irrigation system of concern. Of the five (5) follow-up samples, four (4) must have no detectable generic E. coli and the one (1) must be less than 10 MPN/100mL</p>
<p>Test Method: Any FDA allowed method</p>	
<p>Records: Each water sample and analysis shall record the type of water source, date, time, and location of the sample, the method of analysis, and, if quantitative, the detection limit. All test results and remedial actions shall be documented and available for verification from the grower/handler who is the responsible party for a period of two years.</p>	
<p>C2. Initial Microbial Water Quality Assessment</p>	
<p>C3. Routine Verification of Microbial Water Quality</p>	



used as a source for a Type B agricultural water system. If you choose to treat the water, follow Type B-A water system requirements.

- See Appendix A for guidance on mitigation measures such as shock treatment for contaminated wells

FIGURE 3B. Irrigation Water from Type A Agricultural Water Systems Sourced from Private Wells or Regulated Tertiary Treated Recycled Water Supplies— See TABLE 2C

INITIAL MICROBIAL WATER QUALITY ASSESSMENT Monthly Water Quality Testing

To test the irrigation water delivery agricultural water system, collect three (3) one (1) 100 mL sample during one irrigation event at the end of the delivery system further point of distribution (i.e. last sprinkler head, drip tape, etc.) and analyze for generic E. coli using a FDA-allowed method.

ACCEPTANCE CRITERIA

No detectable generic E. coli in at least 2 of 3 samples and < 10 MPN in one remaining sample
Non-detectable generic E. coli in four (4) of the five (5) 100 mL samples and < 10 MPN as the single sample maximum for one (1) sample in all samples taken after the baseline microbial assessment

No further action necessary. Water may be used in leafy green operations as outlined in Table 1.

ACCEPTANCE CRITERIA

No detectable generic E. coli in at least 4 of 5 samples and < 10 MPN in one remaining sample

ACTION LEVEL

Generic E. coli detected in > 2 samples or levels above greater than (>) 10 MPN/100 mL in a single sample.

OR

As you work towards obtaining the initial five (5) tests. If at any point one (1) of the samples has a level of Generic E. coli greater than 10 MPN OR two (2) of the current samples has a detectable level of Generic E. coli

Follow-up Testing:

- Pause irrigation to perform a root cause analysis and an agricultural water system assessment as described in Appendix A to identify and correct the failure.
- After conducting the analysis and assessment, retest the water in five (5) 100 mL samples collected during the next irrigation event (sampling locations can be at the end of any segment or node/branch within the irrigation system of concern).

After assessing the system, retest the system for generic E. coli by collecting five (5) 100mL samples during the next irrigation event. Water samples can be pulled from the end of any system nodes/branches in the irrigation system of concern.

ACTION LEVEL

Generic E. coli detected in > 2 samples OR > 1 sample has level above (>) 10 MPN / 100 mL

Agricultural water system is disqualified for Type A usage; however, water can be used as a Type B agricultural water system.

Reason for Changes:

Multiple samples from a water source taken over the course of several days or weeks provides a better assessment of water quality than water samples taken consecutively during the same irrigation event. Current metrics allow growers flexibility to conduct initial and routine sampling during periods of the season where there may be lower microbial risks. Proposed changes offer a better detection solution allowing for verification of water source quality and agricultural water system integrity.

Proposed Change to Post-Harvest Direct Product Contact or Food-Contact Surfaces:

We propose removing the Municipal and Well Exemption for Post-Harvest Direct Product Contact or Food-Contact Surfaces water, as it relates to wells. This water poses a higher risk to the crop and should be regularly monitored to verify the U.S. EPA Maximum Contaminate Level Goal for generic E. coli or contain an approved disinfectant at a sufficient concentration to prevent contamination.