Supplemental Guidance for WaterSense® Certification and Labeling of Weather-Based and Soil Moisture-Based Irrigation Controllers

1.0 Introduction

The U.S. Environmental Protection Agency (EPA) requires all products bearing the WaterSense label to be independently certified to conform to the relevant WaterSense product specification. To guide this certification process, EPA has developed the *WaterSense Product Certification System*, available on the WaterSense website at www.epa.gov/watersense/certification-systems. The product certification system describes the application, production process inspection, product testing, and ongoing surveillance requirements to ensure labeled products continue to conform to WaterSense specifications.

As this certification and labeling process may be new and unfamiliar to some irrigation controller manufacturers, EPA has developed the following guidance to provide clarification and specific direction on how the process works. This guidance applies to the certification and labeling of both weather-based and soil moisture-based irrigation controllers. It replaces an earlier document from November 2011 that applied only to weather-based irrigation controllers. The following documents are indispensable in the application of the WaterSense certification and labeling process for both types of controllers:

- *WaterSense Specification for Weather-Based Irrigation Controllers*
- *WaterSense Specification for Soil Moisture-Based Irrigation Controllers*
- *WaterSense Product Certification System*
- *Compendium of WaterSense Specification, Certification, and Labeling Clarifications*
- *WaterSense Manufacturer Partnership Agreement*
- *WaterSense Program Guidelines*
- *WaterSense Program Mark Guidelines*

Manufacturers should read each of these documents for a complete understanding about how product certification and labeling works under the WaterSense program. This guidance is supplemental to the above documents; it does not convey any program requirements.

The following documents will also be helpful in fully understanding the testing and certification of irrigation controllers to earn the WaterSense label.

- American National Standards Institute (ANSI)/American Society of Agricultural and Biological Engineers (ASABE) *Testing Protocol for Landscape Irrigation Soil Moisture-Based Control Technologies S633 May 2020*
- *Eighth draft of the Smart Water Application Technologies (SWAT) test protocol for climatologically based controllers or ANSI/ASABE S627 DEC2020*, *Weather-Based Landscape Irrigation Control Systems*[1]
- ISO/IEC 17065, *General requirements for bodies operating product certification systems*

[1] ANSI/ASABE S627 DEC2020 incorporates the eighth draft of the SWAT test protocol for climatologically based controllers plus the testing modifications included in the *WaterSense Specification for Weather-Based Irrigation Controllers*.

- ISO/IEC 17025, *General requirements for the competence of calibration and testing laboratories*

2.0 Background

WaterSense developed its product certification system as a mechanism to protect and maintain the integrity of the WaterSense label. Certification provides a means of evaluating product conformity with WaterSense specifications, not only when the product is initially tested, but on an ongoing basis after the product is being sold to consumers. Certification is a process demanded by stakeholders such as utilities looking to help consumers identify water-efficient, high-performing products. It also brings value to the WaterSense label and is an accepted and established practice in other industries.

EPA released its draft *WaterSense Product Certification System* for public comment in May 2007 and received public comments, including many from irrigation controller manufacturers. After considering the comments, EPA made appropriate revisions, and in March 2009 released the *WaterSense Product Certification System, Version 1.0*.

Based on its experience implementing the *WaterSense Product Certification System* and in preparation for the inclusion of weather-based irrigation controllers under the product certification process, WaterSense revised its product certification system and published Version 2.0 in September 2011. The revisions in part were designed to make the program more affordable and accessible to manufacturers of all sizes and to streamline and reduce delays in the certification process. EPA has since made additional minor revisions to the product certification system to provide clarity and ensure equitable interpretation and enforcement of the requirements—changes that did not materially affect the certification and labeling of products. To date, more than 34,000 product models have been successfully certified and labeled under this process.

Upon the release of the specifications for weather-based and soil moisture-based irrigation controllers, EPA worked to build the third-party certification infrastructure for controllers by providing training to interested product certifying bodies and testing laboratories on how to conduct the testing in accordance with the respective specification requirements.

The goal of this guidance is to create a clear and transparent process for irrigation controller manufacturers to understand and obtain product certification and authorization to use the WaterSense label in a timely, cost-effective manner.

3.0 Product Certification

EPA is providing specific guidance for the certification and labeling of controllers based on the relevant requirements in the *WaterSense Specification for Weather-Based Irrigation Controllers* or *WaterSense Specification for Soil Moisture-Based Irrigation Controllers* and the general requirements outlined in the *WaterSense Product Certification System*, including:

- Application to a licensed certifying body (see Section 3.1 of this document)
- Initial production inspection and product testing (see Section 3.2)
- Product evaluation (see Section 3.3)
- Product certification listing (see Section 3.4)
- Authorization to use the WaterSense label (see Section 3.5)

- The process for listing products on the WaterSense labeled product registry (see Section 3.6)
- Ongoing surveillance (see Section 3.7)
- Label use suspension or withdrawal (see Section 3.8)

3.1 Application to a Licensed Certifying Body

3.1.1 WaterSense Partnership

Manufacturers seeking certification and the WaterSense label for their controllers must first have a WaterSense partnership agreement with EPA; more information can be found at www.epa.gov/watersense/join-watersense. This partnership is free. Manufacturers of components such as weather stations, soil mechanisms sold without an interface device, or weather services are not eligible for partnership based on those products alone.

3.1.2 Application

The second step is to apply directly to an EPA licensed certifying body that has been approved to certify weather-based or soil moisture-based controllers, depending upon the product for which certification is sought. A list of licensed certifying bodies approved to certify each eligible product category is posted on the WaterSense website at www.epa.gov/watersense/accreditation-licensed-certifying-bodies. The manufacturer must pay the licensed certifying body for its certification services. WaterSense has no role in establishing or overseeing fees that are charged for certification services.

The licensed certifying body will provide an application for certification, which will require the manufacturer to provide certain product information as indicated on the respective weather-based or soil moisture-based controller product notification template that is available on the WaterSense website at www.epa.gov/watersense/certification-systems. As applicable, the information provided in the application shall match product information on the packaging or other point-of-purchase materials that purchasers will see.

3.1.3 Private Labeling

At the time of application, if a manufacturer intends to have its products privately labeled or rebranded under a separate organization/brand name, it must inform the licensed certifying body. The manufacturer must provide the licensed certifying body with the same type of product information for the privately labeled product as it provided for its original product, and as required by the respective controller product notification template. Private labelers must also sign a WaterSense partnership agreement if they sell the WaterSense labeled product under their own brand name.

Often, private labeling arrangements are made after the initial certification of products. The manufacturers should notify the licensed certifying body and update its records accordingly if at any time it intends to have its products privately labeled. Private labelers may open their own certification files, but the licensed certifying body must collect private labeler/privately labeled product information and verify that the private labeler has the appropriate partnership agreement in place with EPA.

3.2 Initial Production Inspection and Product Testing

3.2.1 Initial Production Inspection

An initial production inspection is an optional requirement under the *WaterSense Product Certification System*. It is an assessment of the production process and quality management system of the manufacturing facility. Its purpose is to help the licensed certifying body determine if the manufacturer has the capability to mass produce products that will consistently meet the requirements of the specification. For controller manufacturers that are new to the WaterSense product certification process and/or do not have prior relationships with the selected licensed certifying body, the licensed certifying body may choose to perform a production inspection as part of their initial evaluation. The licensed certifying bodies have facilities and personnel capable of completing this inspection anywhere in the world where the products may be manufactured.

3.2.2 Initial Product Testing

Initial testing will be carried out in accordance with the applicable specification and *WaterSense Product Certification System* and will include the following evaluations.

3.2.2.1 Performance Testing Requirements

Weather-based irrigation controllers shall be tested according to Section 3.0 of the *WaterSense Specification for Weather-Based Irrigation Controllers*.

Soil moisture-based controllers shall be tested according to Section 2.0 of the *WaterSense Specification for Soil Moisture-Based Irrigation Controllers*.

As indicated in Appendix B of the *WaterSense Specification for Soil Moisture-Based Irrigation Controllers*, EPA has also clarified that products that integrate, into a single unit, **soil moisture-based** and **weather-based irrigation scheduling** shall be certified to meet the requirements of **both** the *WaterSense Specification for Moisture Based Irrigation Controllers* and the *WaterSense Specification for Weather-Based Irrigation Controllers* in order to bear the WaterSense label. This ensures that such products will meet EPA's requirements for efficiency and performance in both operating modes.

3.2.2.2 Supplemental Capability Requirements

As part of the product testing, the licensed certifying body will evaluate the controller to verify that it has the required supplemental capabilities, as outlined in the relevant specification, in both smart (weather-based or soil moisture-based) and standard modes. This verification may be done through either a physical examination of the product or through evaluation of the product's documentation to confirm that it has each capability.

3.2.2.3 Sampling

For weather-based irrigation controllers, the licensed certifying body shall select one sample product at random from the entire inventory of the manufacturer's packed production. The sampled product must be representative of the models to be certified and made using the

components, subassemblies, and production tools and equipment identical to those used in production. Sampling in this manner will ensure that the controller is representative of the product sold to purchasers and that it meets the specification's packaging and product documentation requirements that dictate product configuration and testing. However, as described in Clarification IC-0617-1[2], licensed certifying bodies can implement the more general sample selection requirements in Section 7.2.3.1 of the *WaterSense Product Certification System* when the sampling requirement in Section 4.0 in Appendix B of the *WaterSense Specification for Weather-Based Irrigation Controllers* is not feasible. In this case, samples must be representative of the model to be certified and made using components and subassemblies identical to those used in production. The licensed certifying body shall not depend upon a manufacturer's preselected sample unless the licensed certifying body has conducted an adequate construction review and selected the model/types from the respective product family.

For soil moisture-based irrigation controllers, the licensed certifying body shall sample products for testing in accordance with Section 5.1 of ANSI/ASABE S633, which specifies that each test shall consist of three soil moisture-based irrigation controllers per manufacturer model randomly selected from a lot of at least 10 items supplied by the manufacturer.

3.2.2.4 Testing Laboratories

The licensed certifying body will determine how it will conduct the testing. It can use its own testing laboratory or outsource the testing to an external laboratory, including an independent testing laboratory, or to the manufacturer, under either a witnessed manufacturer testing laboratory program or a supervised manufacturer testing laboratory program. The licensed certifying body will evaluate any testing laboratories it uses for their ability to comply with ISO/IEC 17025, *General requirements for the competence of calibration and testing laboratories*. For more information on the laboratory testing options and qualifications, please review the *WaterSense Product Certification System* at www.epa.gov/watersense/certification-systems.

3.2.2.5 Base Models

It is important to note that EPA does not require every individual model of irrigation controller to be tested. Instead, the licensed certifying body may test a base model that is representative of other models that have the same performance, but that may have other attributes that do not affect performance, such as station count or product finish. The licensed certifying body has discretion as to what constitutes products covered by a base model and whether a specific model must be tested. The certification decision will apply to the base model and any other models that the base model represents.

3.2.2.6 General Controller Testing Configuration

The weather-based and soil moisture-based controller specifications each apply to stand-alone controllers, add-on devices, and plug-in devices. EPA provides specific direction in Appendix A of the respective specifications as to how each of these product types must be configured for testing. All controllers—stand-alone controllers, add-on devices, and plug-in devices—must be

[2] Clarification is available in the *Compendium of WaterSense Specification, Certification, and Labeling Clarifications* maintained on the WaterSense website at www.epa.gov/watersense/product-specifications.

supplied and tested with all weather stations, sensors, rainfall devices, interface devices or services required to meet the specification. Manufacturers must have no interaction with the product during testing.

For weather-based irrigation controllers, EPA has established two additional general testing configuration requirements to ensure consistency of testing:

- The licensed certifying body is only allowed to use the list of settings provided in publicly available literature (e.g., operation manual, manufacturer's website), as clarified in Clarification IC-0617-2[3], in order to properly set up the device for testing. The intent in specifying these configuration requirements is to make it clear to the licensed certifying body which components the controller must be tested with and which settings shall be used for the testing.
- The performance test for weather-based irrigation controllers includes six virtual zones, requiring a product to have at least six stations in order for the product to undergo the test. For products that have less than six stations, as directed in Clarification IC-0113-1[4], the licensed certifying body shall test two or more products simultaneously to cover the six-zone programming required by the specification, allowing for the weather data used during the test to remain consistent.

3.2.2.7 Add-on and Plug-in Device Testing Configuration

WaterSense evaluates whether a product can deliver both water efficiency and performance. If a retrofit or component product that is designed to modify or control the water use of a base product cannot ensure the expected level of performance of the base product, it is not a candidate for the WaterSense label. Therefore, add-on and plug-in devices must be tested with a base controller with which it will meet the requirements of the specification. As a unit, the base controller and the add-on or plug-in device must meet all of the requirements contained in the specification in order for the add-on or plug-in device to be certified.

It is important to note that this testing configuration requirement does not necessarily mean that the add-on or plug-in device must be tested with every individual base controller model available. At the discretion of the licensed certifying body, the manufacturer may identify, without additional testing, other compatible base controller models with which the add-on or plug-in device can be paired, and that together as a unit meet the requirements of the respective specification, including the supplemental capability requirements. As discussed in Section 3.2.3 below, add-on or plug-in device product documentation must identify (or provide access to a list of) all compatible base controllers with which the device can be paired.

3.2.3 Product Packaging and Documentation Evaluation

To ensure product efficiency and performance (and to provide guidance for testing), Section 4.0 of the *WaterSense Specification for Soil Moisture-Based Irrigation Controllers* and Section 5.0 of the *WaterSense Specification for Weather-Based Irrigation Controllers* outline specific product

[3] Clarification is available in the *Compendium of WaterSense Specification, Certification, and Labeling Clarifications* on the WaterSense website at www.epa.gov/watersense/product-specifications.
[4] Clarification is available in the *Compendium of WaterSense Specification, Certification, and Labeling Clarifications* on the WaterSense website at www.epa.gov/watersense/product-specifications.

documentation requirements with which manufacturers of each product type must comply in order to earn the WaterSense label. For both products, this includes requirements prohibiting packaging or marking that would encourage the operation of the controller in standard mode. Any instructions related to the maintenance of the product must direct the user on how to return the controller to the smart mode.

Add-on and plug-in devices are not required to be packaged with compatible base controllers; however, the product documentation for the add-on or plug-in device must list or provide access to a list of specific base controllers with which the device was tested or that have been determined compatible. The documentation must also contain a statement to the effect that the device is only WaterSense labeled when used in combination with a base controller on the provided list. The intent is to ensure that the purchaser is able to identify the combination(s) of base controller and add-on or plug-in device that will deliver the efficiency and performance required by the respective specification. The licensed certifying body will verify that product documentation meets these requirements.

The controller, as packaged, shall include the same components (excluding the base controller for add-on or plug-in devices) or attributes that it was tested with to meet the requirements of the respective specification. For controllers with weather stations, sensors, rainfall devices, or interface devices, all components tested with the controller must be packaged with the controller.

3.3 Product Evaluation

In addition to the production inspection and product testing, the licensed certifying body will also complete a comprehensive review of the quality management documentation, product literature, and schematics to determine if the product can be manufactured in accordance with the specification.

In summary, the evaluation and ultimate certification decision will be based on a review of the following components, *all* of which must be met to the satisfaction of the licensed certifying body:

- Signed partnership agreement with EPA (for the original manufacturer and any private labelers who rebrand and sell the products);
- Initial production inspection (if required);
- Initial product testing;
- Product packaging and documentation review; and
- Quality management, product literature, and schematic review.

The licensed certifying body can work with the manufacturer to correct minor deficiencies before issuing the final certification decision. As part of the evaluation, the licensed certifying body may also require the manufacturer to submit a sample or describe how it intends to use the WaterSense label on the product and/or product packaging.

3.4 Licensed Certifying Body's WaterSense Labeled Product Listing

The licensed certifying body is required to maintain a WaterSense labeled product listing (certification listing) for each manufacturer, which lists information for each product it has successfully certified. The certification listing must contain, at a minimum, all of the information that is required by EPA to be displayed on the certification listing as indicated in the respective product notification template available on the WaterSense website at www.epa.gov/watersense/certification-systems. For add-on and plug-in devices, this listing must include each base controller model (or group of models) with which the device was tested or with which it has been deemed compatible.

This certification listing will not include specific test data or results, nor will it list any products that were not successfully certified. It is simply a public record to indicate that the listed products meet the minimum requirements contained in the specification and are authorized to bear the WaterSense label.

Manufacturers are responsible for ensuring that the certification listing is accurate and complete. This is an important step because the licensed certifying body reports the information on the certification listing to EPA via the respective product notification templates for inclusion on the WaterSense Product Search Tool (as described in Section 3.6 below). The search tool conveys labeled product information to consumers and informs many utility product rebate lists. In addition, the licensed certifying body may charge a fee for any changes to the certification listing. To help facilitate the listing process and avoid delays or extra charges, EPA is providing tips in the following subsections.

3.4.1 Product Marketing Information

It is critical to ensure that the product information, specifically the brand name model number, included on the certification listing matches how the product is packaged and advertised to the purchaser. WaterSense must be able to trace and verify each product's certification, so EPA or the licensed certifying body might review the manufacturer's website or request sample product packaging to ensure the information matches.

3.4.2 Additional Models Covered by a Base Model

In some cases, models may come with various attributes or options that do not affect product performance. In these instances, the licensed certifying body may certify a base model, covering the additional models with these various attributes.

If the models covered by a base model share a common base model number, the base model number on the certification listing may include placeholders indicating prefix or suffix characters to denote non-performance-related variations of the additional models covered, so that each model does not have to be individually listed. If base models are listed in this manner, the certification listing must also contain a legend or key, listing and denoting the meaning of the associated prefixes or suffixes that may be added to the base model number. If questions arise regarding whether a specific model covered by a base model is labeled, EPA may refer to the certification listing and associated legend or key to verify the product's certification.

If the models covered by a base model do not share a common base model number, each individual model covered by the base model must be listed on the certification listing. In these instances, the licensed certifying body will report and EPA will identify on its product registry each individual model covered by the base model so that consumers and other purchasers can easily identify labeled products.

Regardless of how the products are listed on the certification listing and reported to EPA, the licensed certifying body will keep track of all models covered by a base model for the purpose of determining the number of models that are eligible for surveillance testing as described in Section 3.7 below.

3.4.3 Private Labeled Products

For products that are privately labeled, the certification listing must also contain all the information that is required to be displayed on the certification listing as indicated in the respective controller product notification template available on the WaterSense website. The private labeler may request a separate certification listing from the manufacturer, provided the licensed certifying body keeps a record of the linkage between the two listings, so EPA can track a product's certification back to the original manufacturer if necessary.

3.5 Authorization to Use the WaterSense Label

Once a product has been certified to meet the specification, the licensed certifying body, not EPA, will authorize the manufacturer to use the WaterSense label and provide the label graphic artwork. The label will be provided in color and black and white and in various file types to suit different advertising media. It will also contain the words "Certified by [Name of Licensed Certifying Body]" underneath. **It is important that the manufacturer does not alter the label artwork provided.** Specifically, do not remove the "Certified by [Name of Licensed Certifying Body]", change the label color or fonts, or skew the image. The manufacturer must use this label in accordance with the *WaterSense Program Mark Guidelines* available on the WaterSense website, www.epa.gov/watersense/program-guidelines. The licensed certifying body, as part of its surveillance, will evaluate and ensure the label's proper use.

Private labelers may also be authorized to use the WaterSense label, provided they are WaterSense partners and are included on a certification listing. The label use authorization and graphic artwork may be obtained either from the licensed certifying body or from the original manufacturer, as dictated by the licensed certifying body's policies. The original manufacturer is responsible for ensuring that its private labelers use the WaterSense label properly.

Appendix B of both specifications outlines additional requirements for labeling of add-on and plug-in devices. Only the add-on or plug-in devices that have been certified may bear the WaterSense label. Base controllers with which the add-on or plug-in devices are tested and/or determined to be compatible shall not bear the WaterSense label. To avoid confusion about labeled products in the marketplace, compatible base controllers may bear the WaterSense **promotional** label and a statement to the effect of "Look for the WaterSense labeled [plug-in or add-on device] to improve the water efficiency capabilities of this controller." See the *WaterSense Program Mark Guidelines* (www.epa.gov/watersense/program-guidelines) for more information about use of the WaterSense promotional label.

The licensed certifying body reserves the right to evaluate pre-production artwork samples and markups for compliance with packaging and labeling requirements and may evaluate conformance with package and labeling requirements as part of its annual market surveillance. At the request of a manufacturer partner, EPA is also willing to review packaging, specification sheets, and other product documentation to ensure proper label use.

3.6 Process for Listing Products on the WaterSense Product Search Tool

Product Search Tool users can search for WaterSense labeled products by manufacturer, model, or compatible base controller. It is incumbent upon the manufacturer to ensure that the information provided to the licensed certifying body that is subsequently reported to WaterSense is accurate. Once per month (or when there are updates, changes, or removal of products from any certification listings) the licensed certifying body will report to EPA all the controllers that it has certified and labeled. Reports will be developed using the respective controller product notification template available on the WaterSense website. EPA will use the information contained in the product notification template to update the WaterSense Product Search Tool found at https://lookforwatersense.epa.gov/. Note that EPA will only display in the Product Search Tool the product information on the controller product notification template that is indicated in the columns denoted with "Displayed on Product Search Tool." For add-on and plug-in devices, for example, EPA lists in its Product Search Tool each base controller model with which the device was determined to be compatible.

3.7 Surveillance

3.7.1 Production Inspection

The licensed certifying body will audit the production process and quality management system each year to ensure that the manufacturer continues to have the capability to produce products that conform to the specification. As issues are identified, the licensed certifying body may work with the manufacturer to ensure that appropriate actions are taken to correct deficiencies.

3.7.2 Product Retesting

Every year, the licensed certifying body will retest at least 15 percent of the controllers it has certified to ensure that they continue to meet specification requirements. Note that this means that not every manufacturer will have models retested each year.

As described in Section 7.6.2 of the *WaterSense Product Certification System*, not every individual certified model will be eligible for or included in the annual product retesting under the 15 percent requirement. EPA has provided guidance on how to determine which products are eligible for retesting, taking into consideration recently tested models, privately labeled models, and individual models covered by a base model. EPA has also provided an example annual market surveillance sampling scheme in Appendix A of the product certification system to facilitate understanding of the annual market surveillance process.

For retesting, an inspector appointed by the licensed certifying body will select sample products from the manufacturer's warehouse or retail outlet/distribution center (including online retail/distribution sites) where the product is being sold. If the product cannot be obtained from

any of these sources, the inspector may select sample products from the production line. This is to ensure that the product retested is representative of what is being sold to purchasers.

As clarified in IC-1214-1[5] and in *WaterSense Product Certification System,* a licensed certifying body can, for the purposes of retesting, decide whether to group products together as a family of product models manufactured by the same manufacturer that use the same software, provided they are confident that all of the models with that software installed provide the same performance attributes. As indicated in Section 7.6.2 of the *WaterSense Product Certification System*, when determining the pool of eligible products for retesting, base models or families of products that demonstrate the same efficiency and performance but that have variations in other non-performance-related attributes can be counted as a single model. Only one of the models covered by the base model would then be subject to retesting.

3.7.3 Label Use Surveillance

The licensed certifying body will also assess proper use of the WaterSense label on product packaging, specification sheets, and advertising materials for all products selected for annual retesting.

3.8 Label Suspension or Withdrawal

Based upon its surveillance activities, the licensed certifying body can suspend or withdraw use of the WaterSense label, if the manufacturer's products do not continue to conform to the specification or for improper label use. In most cases, the licensed certifying body will work with the manufacturer to correct minor deficiencies, which would not result in a suspension or withdrawal of the WaterSense label or reporting to EPA.

4.0 Testing Software

WaterSense has prepared customized spreadsheets that the licensed certifying bodies will use to perform the performance test protocols as described in the respective specifications. Please note that EPA only provides technical support for the software to its licensed certifying bodies as part of the certification process. WaterSense manufacturer partners may request a copy of the software or request assistance regarding any other issues related to WaterSense certification by contacting the WaterSense Helpline at watersense@epa.gov or 866 WTR SENSE (987-7367).

[5] Clarification is available in the *Compendium of WaterSense Specification, Certification, and Labeling Clarifications* on the WaterSense website at www.epa.gov/watersense/product-specifications.