WATER EFFICIENCY AND SANITATION STANDARD (WE-STAND)

TECHNICAL COMMITTEE MEETING

PUBLIC COMMENT MONOGRAPH

IAPMO WORLD HEADQUARTERS, ONTARIO, CA.

MARCH 24-25, 2020

Water Efficiency and Sanitation Standard (WE-Stand)
Technical Committee Meeting

IAPMO World Headquarters, Ontario, CA.
March 24-25, 2020 - 8:00 a.m.

AGENDA

March 24, 2020 - 8:00 a.m.

1. Call to Order
2. Chairman Comments
3. Announcements
4. Self Introductions
5. Review and Approval of Agenda
6. Task Group Reports
7. Review and Discussion of Public Comments to the Water Efficiency and Sanitation Standard (WE-Stand)
8. Adjournment for the day

March 25, 2020 - 8:00 a.m.

1. Call to Order
2. Chairman Comments
3. Announcements
4. Continuation of Review and Discussion of Public Comments to the Water Efficiency and Sanitation Standard (WE-Stand)
5. Other business
6. Tentative schedule for next cycle
7. Adjournment

Public Comment Recommendations and TC Actions

All Public Comments are recommendations for actions taken by the Technical Committee on the proposals published in the 2019 Report on Proposals. There are four possible recommendations forwarded by Public Comments for the Technical Committee to consider.

1. Request to reject the code change proposal by this public comment.
   No proposed changes. The request is to reject the original proposal completely.
2. Request to accept the code change proposal as submitted by this public comment.
   No proposed changes. The request is to accept the original proposal as submitted.
3. Request to accept the code change proposal as amended by the TC by this public comment.
   No proposed changes. The request is to accept the proposal as it was amended by the TC.
4. Request to accept the code change proposal as modified by this public comment.
   The proposed changes are included in the Proposed Text box.

At the open meeting, the Technical Committee will take action on each Public Comment by one of the following motions:

1. Accept the Comment as submitted;
2. Accept the Comment as amended; or
3. Reject the Comment

The motion will carry by majority vote. The TC action on Comments “accept as amended” or “rejected” shall include a statement, technical in nature, on the reason for the TC action. Such statement shall be sufficiently detailed so as to convey the TC’s rationale for its action.

After the open meeting, the TC action on Comments shall be submitted to a letter ballot. The balloting period for the TC is from April 17, 2020, through May 15, 2020.

Alternate Water Sources Task Group Report to the WEStand Technical Committee

Prepared By: Dan Cole, WEStand Secretariat

Chairman: Jim Kendzel

Members: Val Amezquita, Julius Ballanco, Taylor Chang, Paula Kehoe, Gary Klein, Pat Lando, Rick Layton, Markus Lenger, Dave Mann, Tom Pape, Shabbir Rawalpindiwala, Matt Sigler, Sharon Steiner, Amir Tabakh, Joelle Wirth

IAPMO Staff: Sal Aridi, Tom Palkon, Pete DeMarco

Scope of the Task Group: To further develop the provisions in proposal items 051 and 052 for onsite blackwater and onsite stormwater treatment systems. Attention was given to the following items recommended by the WEStand Technical Committee:

- Provide more design detail (what level of design – secondary or tertiary treatment?)
- Investigate monitoring techniques and specify what should be monitored
- Consider developing requirements for “acceptance testing” rather than commissioning
- More design detail for fail-safe mechanisms. Specify when the system is to shut down and include alarm requirements.
- Investigate and compare the risk-based approach with water quality output approach
- Specify types of disinfection
- Include testing and performance criteria and validation
- Provide better statements of meaning and conciseness for the definitions
- For onsite stormwater treatment systems, consider eliminating the percentage of wastewater contribution from Table 506.7. Is this applicable only for combination sewer systems?
- Consult other stormwater standards (ASPE 78 and Canadian standards)
- Consider ISO 30500 log reduction table
- Effluent water quality effects on the plumbing system
- Revisit the role of the AHJ in Proposals 051 and 052. Instead of AHJ, reference any standards available
- Include a Definition for *Malfunction*
- Clarify flow meters or water meters

Activity: The Task Group met six times via GoToMeeting from August 2019 through November 2019. Draft outlines for blackwater and stormwater provisions were prepared to initiate the work. During the first meeting, the Chairman discussed the scope of work commissioned by the Technical Committee and proposed a Strategy Team to develop a plan of action on how the Task Group was to move forward to accomplish the scope of work. A meeting schedule for every two weeks was also put into place.

Three working groups were formed as a result of the Strategy Team’s recommendations that would: 1) evaluate water quality criteria standards, 2) address validation and commissioning provisions, and 3) consider what is related to monitoring requirements. The scope of work outlined

above would be divided between these three working groups. The task group also accepted the Strategy Team's recommendation to divide both proposals into two separate sections that addressed manufactured (package) systems and systems that are site specific-designed and installed on-site. A similar approach was taken in the 2017 WE-Stand for composting systems.

The three working groups worked on their respective tasks and reported to the Task Group resulting in further deliberations and revisions. The last two conference calls finalized the Task Group recommended revisions by vote, and public comments were prepared for the WEStand Technical Committee for both Blackwater and Stormwater proposals.

Water Efficiency and Conservation Task Group Report to the WEStand Technical Committee

Prepared By: Dan Cole, WEStand Secretariat

Chairman: Ed Osann

Members: Julius Ballanco, Mike Collignon, Jim Kemper, Jim Kendzel, John Koeller, Pat Lando, Rick Layton, Markus Lenger, Dave Mann, Ramiro Mata, John Ossa, Tom Pape, Shabbir Rawalpindiwala, Jonah Schein, Matt Sigler, Amir Tabakh

Scope of the Task Group: to determine if the rating systems in WERS and HERS H2O can be used as a performance path in WEStand.

Activity: The Task Group met two times via GoToMeeting from August 2019 through November 2019. On behalf of the Chair Ed Osann, I reached out to representatives of WERS and HERS H2O to explain to the newly-formed Task Group the performance criteria for each index. Mike Collignon from Green Builder Coalition did a presentation on WERS, and Ryan Meres from RESNET did a presentation on HERS H2O.

Chairman Ed Osann sought volunteers to develop criteria for prototype homes including characteristics and locations. The working group consisted of John Ossa, Ed Osann, Jonah Schein, and Tom Pape. This Task Group did not conclude any further research to report to the Technical Committee.

TENTATIVE ORDER OF DISCUSSION
Proposed Changes to the 2020 WE-Stand

The following is the tentative order of discussion on which the proposed changes will be discussed at the WE-Stand Technical Committee Meeting. Proposed changes that are grouped together are those that are separated by lines. Indented proposed changes are those being discussed out of numerical order.

Item #006
Item #008

Item #012
Item #024
Item #027
Item #032

Item #033
Item #035

Item #038
Item #039

Item #041
Item #042

Item #046
Item #049
Item #051
Item #052
Item #053
Item #062

Name:	Jay Peters
Organization:	Codes and Standards International
Representing:	Falcon Waterfree Technologies
Recommendation:	Add text
Section Number:	223.0
Proposed Text:	**Urinal with Drain Cleansing Action.** A urinal that conveys waste into the drainage system without the use of water for flushing and automatically performs a drain-cleansing action after a predetermined amount of time.
Problem Statement:	This proposal is needed to correspond with another proposal for 402.3.2. It also correlates with the Uniform Plumbing Code. It is identical to the 2018 UPC.
Referenced Standards:	

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 17, NEGATIVE: 9, NOT RETURNED: 2 Barbarulo, S. Mann

NOTE: Item #006 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
CUDAHY: We should include a definition for non-water urinals in the WE-Stand too.
PAPE: This is a definition, not a requirement. This is not the place to debate the efficiency and durability of a non-water urinal.

EXPLANATION OF NEGATIVE:
FERRUCCIO: Agree with Matt Sigler.
HOLMES: My experience with the installation of this type of urinal, I have never witnessed any that where properly maintained after they were installed, I cannot support this. In fact, the project that these were installed on were replaced with in a year.
LENGER: I concur with Matt - no definition for non-water urinals - Ed also has a great point on this issue.
D. MANN: This should have been amended. A Non-water should be inserted before Urinal in the title and non-water inserted between A and Urinal in the definition.
MCLEOD: Agree with PMI. It is a non-water urinal with a feature. Needs to be corrected.
PREMER: This seems to be a product driven code amendment. The motivation is to enhance product sales, not solidify the intent of the code.
RUMMINGS: Agree with comments regarding the negative opinion.
SIGLER: There is no definition for non-water urinals in the WE-Stand. Why the need for a definition for urinals with draining cleansing action?
SMITH: There is no definition for non-water urinals in the WE-Stand. Why the need for a definition for urinals with draining cleansing action?

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (223.0) Item # 006

Name:	Jay Peters
Organization:	Codes and Standards International
Representing:	Falcon Waterfree Technologies
Recommendation:	Add text
Section Number:	223.0
Proposed Text:	**Urinal with Drain Cleansing Action.** A urinal that conveys waste into the drainage system without the use of water for flushing and automatically performs a drain-cleansing action after a predetermined amount of time.
Problem Statement:	This proposal is needed to correspond with another proposal for 402.3.2. It also correlates with the Uniform Plumbing Code. It is identical to the 2018 UPC.
Referenced Standards:	

Name:	Jay Peters
Organization:	Codes and Standards International
Representing:	Falcon Waterfree Technologies
Recommendation:	Add text
Section Number:	402.3.2
Proposed Text:	**402.3.2 Urinals with Drain Cleansing Action.** Urinals with drain cleansing action shall comply with ASME A112.19.19 and shall be cleaned, maintained and installed in accordance with the manufacturer's installation instructions. Urinals with drain cleansing action are exempt from the water supply rough-in and upstream drainage fixture connection requirements in section 402.3.1.
Problem Statement:	Urinals with Drain Cleansing Action do not require additional water supply rough-ins or an upstream fixture attached to the drainline because they already have a water supply connected to cleanse the drainline.
Referenced Standards:	ASME A112.19.19

Note: ASME A112.119.19 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 12, NEGATIVE: 13, ABSTENTION: 1, NOT RETURNED: 2
Barbarulo, S. Mann

NOTE: Item #008 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
SOVOCOOL: While this is an ASME A112.19.19 toilet which typically means "waterless urinal," this is a new subset within that heading that is able to utilize a smaller alternative supply in the interest of fully cleansing the fixture. It is a reasonable bridge between the traditional low-flow urinal and waterless which can have issues. Still requires plumbing. Why do we want to stifle innovation?

EXPLANATION OF NEGATIVE:
BRABAND: Should get water rough-in.
FERRUCCIO: Agree with David Mann
GRANGER: Should get water supply rough-in.
HOLMES: I agree with Dave Mann comment non water urinal should not be exempt from the water rough-in.

KLEIN: A water supply is needed in order for the automatic drain-cleansing function included in the definition to actually take place.
LAYTON: Should require a water supply in case of future change.
LENGER: I agree with Dave and Ed on this issue that non water urinal should not be exempt from the water rough-in.
MAJEROWICZ: Agree with David Mann.
D. MANN: This was amended at the UPC Technical Committee meeting which was held in Denver; April 29th and 30th. This should be amended. This urinal does not utilize water to flush or retain a trap seal. The title of ASME A112.19.19 is Vitreous China Nonwater Urinals. The Standard states that this fixture is a nonwater urinal and should not be exempt from the water rough-in.
POTTS: Water rough-in should be required.
PREMER: This standard will be proprietary to the exact spec of urinal, and should owner decide they do not like, will not have the plumbing to support another type.
RUMMINGS: Water supply rough-in should be provided.
SMITH: Using Dave Mann's comment here: This was amended at the UPC Technical Committee meeting which was held in Denver; April 29th and 30th. This should be amended. This urinal does not utilize water to flush or retain a trap seal. The title of ASME A112.19.19 is Vitreous China Nonwater Urinals. The Standard states that this fixture is a nonwater urinal and should not be exempt from the water rough-in.

COMMENT ON ABSTENTION:
MCLEOD: Abstained due to Item 006 re: conflict with definition in ASME A112.19.19 standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (402.3.2) Item # 008

Name:	Jay Peters
Organization:	Codes and Standards International
Representing:	Falcon Waterfree Technologies
Recommendation:	Add text
Section Number:	402.3.2
Proposed Text:	**402.3.2 Urinals with Drain Cleansing Action.** Urinals with drain cleansing action shall comply with ASME A112.19.19 and shall be cleaned, maintained and installed in accordance with the manufacturer's installation instructions. Urinals with drain cleansing action are exempt from the water supply rough-in and upstream drainage fixture connection requirements in section 402.3.1.
Problem Statement:	Urinals with Drain Cleansing Action do not require additional water supply rough-ins or an upstream fixture attached to the drainline because they already have a water supply connected to cleanse the drainline.
Referenced Standards:	ASME A112.19.19

Note: ASME A112.119.19 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

Name:	Thomas Pape
Organization:	BMP
Representing:	Alliance for Water Efficiency
Recommendation:	Revise text
Section Number:	402.6.1
Proposed Text:	**402.6.1 Multiple Showerheads Serving One Shower Compartment.** The total allowable flow rate of water from multiple showerheads flowing at any given time, with or without a diverter, including rain systems, waterfalls, bodysprays, and jets, shall not exceed 2.0 gpm (7.6 L/m) per shower compartment, where the floor area of the shower compartment is less than ~~1800~~ 2600 square inches (~~1.161~~ 1.677 m^2). For each increment of 1800 square inches (1.161 m^2) of floor area thereafter or any part thereof, additional showerheads are allowed, provided the total flow rate of water from all flowing devices shall not exceed 2.0 gpm (7.6 L/m) for each such increment.
Problem Statement:	There seems to be an ongoing problem of "or any part thereof" entering this provision without ample notice. The Alliance for Water Efficiency has a long-standing agreement with showerhead manufacturers to limit flow in typical bath/shower combination fixtures to 2.0 GPM in green codes and standards. When we agreed to the "1800 sq. in., the "or any part thereof" was not included. It is unreasonable for two people to shower in 1801 sq. in. space without genital contact.
Referenced Standards:	

TC Action:
Accept as amended.

402.6.1 Multiple Showerheads Serving One Shower Compartment. The total allowable flow rate of water from multiple showerheads flowing at any given time, with or without a diverter, including rain systems, waterfalls, bodysprays, and jets, shall not exceed 2.0 gpm (7.6 L/m) per shower compartment, where the floor area of the shower compartment is less than ~~1800~~ 2048 square inches (~~1.161~~ 1.3 m^2). For each increment of 1800 square inches (1.161 m^2) of floor area thereafter or any part thereof, additional showerheads are allowed, provided the total flow rate of water from all flowing devices shall not exceed 2.0 gpm (7.6 L/m) for each such increment.

TC Substantiation:
This allows twice the minimum shower compartment area for a single user required by the UPC to serve multiple shower heads for two users.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 11, NEGATIVE: 13, ABSTENTION: 2, NOT RETURNED: 2
Barbarulo, S. Mann

NOTE: Item #012 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
PAPE: Federal prison building codes require 1296 sq. inches for each shower user in multi person showers. The 900 sq. inch space in single user showers is allowable because there is not risk of body to body contact. The 95% male requires 42" of horizontal space to pick something up off the shower floor. Suggesting two adults can adequately shower in 1801 square inches is beyond laughable. We should not let financial profits turn our green codes yellow.
SOVOCOOL: Ugh, painful from a math perspective but having gone over it twice now I agree with the As Modified version of Tom's proposal that was passed in the meeting.
TINDALL: I agree mostly with Tom's statement I would like it to tie into one of the codes.

EXPLANATION OF NEGATIVE:
CUDAHY: OMG just pick a good technical number everybody. This is more restrictive.
FERRUCCIO: Agree with Cambria Mcleod.
GRANGER: I agree, no justification for the change.
HOLMES: Doesn't make sense.
KOELLER: In my view, comments on BOTH sides of this issue are non-persuasive. The original 1800 sq.in. number was derived after very extensive discussion by committee members in a prior meeting. Citing code minimums has nothing to do with what provisions already exist and what is being proposed. Furthermore, situations where two (or more) people are in a shower at the same time are probably exceedingly rare, but NO DATA is provided that gives us a percentage (in my opinion, less than 0.1% of the time). As such, citing '2-persons in a shower' situations is irrelevant. Therefore, the original 1800 threshold should stand until such time as data is provided and arguments are relevant to water use efficiency.
LENGER: Lacks justification.
MAJEROWICZ: Same as Dave Mann.
D.MANN: No justification for making the change. Let's double the size and it will all be better.
MCLEOD: This has nothing to do with prisons - look at it from a typical shower perspective, and with a very conservative perspective:
From human factors, using 95% of males (6'2" and 216#), the minimum showering space is 30"x30" of floor space or 900 sqin. This allows bathers to move about the shower and also provides bathers a safe zone away from the water during tempering or adjusting water components. Therefore, 1 bather (and the 95% bather at that) needs 900. Two bathers would minimally need 900+900 = 1800. Anything above that is more than suitable.
PREMER: After reading the "negative" comments, I agree with most of what was said. No need to change current verbiage.
SIGLER: No technical data was provided to justify the change in size from 1800 to 2048 square inches. Per analyses by human factors, based on the 95th percentile of males (6'2" and 216 pounds), a minimum of 30" x 30" of floor space (i.e. 900 square inches) is needed for a user. This allows bathers to move about the shower and also provides bathers a safe zone away from the water during temperature fluctuations. Therefore, if 900 square inches is used for the 95th percentile of male users, then 1800 is more than adequate.
SMITH: No need to increase or change the current verbiage.
TABAKH: The current code language is sufficient.

COMMENT ON ABSTENTION:
ALLEN: I agree with Gary. I support saving water and limiting multiple showerheads, but I don't understand where the original numbers came from, and the current refiguring doesn't seem to be all based on relevant numbers (ie prison showers.)
KLEIN: The need for this proposal is somewhat confusing. The original language was heavily negotiated several years ago and many of the members of WEStand were parties to that negotiation. The 1800 square inches appears to have come from somewhere other than the UPC. The amended proposal wants to bring the minimum area to be in line with UPC. Fielders' choice.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (402.6.1) Item # 012

Name:	Thomas Pape
Organization:	BMP
Representing:	Alliance for Water Efficiency
Recommendation:	Revise text
Section Number:	402.6.1
Proposed Text:	**402.6.1 Multiple Showerheads Serving One Shower Compartment.** The total allowable flow rate of water from multiple showerheads flowing at any given time, with or without a diverter, including rain systems, waterfalls, bodysprays, and jets, shall not exceed 2.0 gpm (7.6 L/m) per shower compartment, where the floor area of the shower compartment is less than ~~1800~~ 2600 square inches (~~1.161~~ 1.677 m^2). For each increment of 1800 square inches (1.161 m^2) of floor area thereafter or any part thereof, additional showerheads are allowed, provided the total flow rate of water from all flowing devices shall not exceed 2.0 gpm (7.6 L/m) for each such increment.
Problem Statement:	There seems to be an ongoing problem of "or any part thereof" entering this provision without ample notice. The Alliance for Water Efficiency has a long-standing agreement with showerhead manufacturers to limit flow in typical bath/shower combination fixtures to 2.0 GPM in green codes and standards. When we agreed to the "1800 sq. in., the "or any part thereof" was not included. It is unreasonable for two people to shower in 1801 sq. in. space without genital contact.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (402.6.1) Item #012

Name:	Thomas Pape
Organization:	Best Management Partners
Representing:	Alliance for Water Efficiency
Recommendation:	Request to accept the code change proposed as modified by this public comment.
Section Number:	402.6.1

Proposed Text:	**402.6.1 Multiple Shower~~heads~~ Outlet Devices Serving One Shower Compartment.** The total ~~allowable~~ combined flow rate from all shower outlet devices controlled by one shower valve ~~of water from multiple showerheads flowing at any given time, with or without a diverter, including rain systems, waterfalls, bodysprays, and jets,~~ shall not exceed 2.0 gpm (7.6 L/m) ~~per shower compartment, where the floor area of the shower compartment is less than 2048 square inches (1.3 m^2). For each increment of 1800 square inches (1.161 m^2) of floor area thereafter or any part thereof, additional showerheads are allowed, provided the total flow rate of water from all flowing devices shall not exceed 2.0 gpm (7.6 L/m) for each such increment.~~ **Exceptions~~:~~** ~~(1) Gang showers in non-residential occupancies. Singular showerheads or multiple shower outlets serving one showering position in gang showers shall not have more than 2.0 gpm (7.6 L/m) total flow.~~ ~~(2)~~ Where provided, shower compartments required for persons with disabilities in accordance with Table 901.1 shall not have more than 4.0 gpm (15.0 L/m) total flow, where one outlet is the hand shower. **402.6.1.1 Shower Compartments Designed For Two Persons in Residences and Private Bathrooms in Lodging Facilities**. Where a second shower valve is installed in a shower compartment designed for two persons in residences and private bathrooms in lodging facilities, shower valves shall be installed not less than 96 inches (2438 mm) apart as measured horizontally. The total combined flow rate from all shower outlet devices from each shower valve shall not exceed 2.0 gpm (7.6 L/m). Shower compartments designed for more than two persons shall not be permitted. **402.6.1.2 Gang or Group Showers.** Each shower outlet device in gang or group showers shall not exceed 2.0 gpm (7.6 L/m) for each 1296 square inches (0.8361 m^2) of shower floor area. Where the shower outlet devices are wall mounted or ceiling mounted, the shower outlet devices shall be installed not less than 35 inches (889 mm) apart as measured horizontally. Add New definition: **Shower Outlet Devices** – Any outlet component supplied by a shower valve excluding tub spouts.
Problem Statement:	The existing requirements regarding shower efficiency needs clarity and updating to assure WEStand provides clear, comprehensive and enforceable provisions that provide for water efficiency on the subject of multi-showerheads in shower compartments. The Alliance for Water Efficiency and Plumbing Manufacturers Institute have come to an agreement on suitable requirements to improve water efficiency in showers, especially the conditions where multiple showerheads are allowed in a shower compartment. An MOU between the two organizations was signed on November 7, 2019. This proposal represents the preferred requirements of both organizations.
Referenced Standards:	

Name:	Markus Lenger
Organization:	CleanBlu Innovations Inc
Representing:	Chairman for WE-Stand Commercial Food Services Task Group
Recommendation:	Add text
Section Number:	407.4.1
Proposed Text:	**407.4 Grease Interceptors**. Grease interceptor maintenance procedures shall not include post-pumping/cleaning refill using potable water. Refill shall be by connected appliance accumulated discharge only. **407.4.1 Temperature.** Grease interceptors shall be designed and maintained at a temperature not exceeding 95°F (35°C). FOG (fats, oils, and greases) disposal systems in compliance with ASME A112.14.6 using biological cultures or mechanical grease reduction, shall not exceed 104°F (40°C).
Problem Statement:	Over the last few years a new generation of ultra-energy-efficient and water-efficient commercial dishwashers have been introduced into the market and continue to replace older less efficient dishwashers. While such dishwashers use considerably less water, they require more heat to achieve the same cleaning action and to ensure appropriate sterilization. Recent foodborne illnesses have increased and a need for increased sterilization in the form of higher temperatures is thought to be the solution. The FDA (Food and Drug Administration) requires a minimum water temperature of 185°F (85°C) for all commercial food service dishwashers. Such discharge temperatures are not only problematic for the plumbing system, but also severely impede the capability of Grease Interceptors (GI) to function. Such GI's typically require an effluent temperature of 95°F (35°C) or less to effectively separate and sequester the FOG's. At a discharge temperature above 95°F (35°C) the FOG's are still dissolved in the effluent and almost completely bypass these grease control devices. The result is failure to comply with local, state and federal discharge requirements. The proposed solution is intended to inform about this important but often overlooked source of failure and to clarify the maximum temperatures to ensure optimal performance. Systems compliant with ASME A112.14.6 have shown to have efficient FOG separation at higher temperature as GI's alone, as they do have additional separation/disposal mechanism beyond a regular interceptor per Z1001 standard. See supporting article, Furlong, Casey. Sewer Blockages for fats, oil, and grease. WE&T, Dec. 2018.
Referenced Standards:	ASME A112.14.6

Note: ASME A112.14.6 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

TC Action:
Accept as amended

407.4.1 Temperature. Grease interceptors shall be designed and maintained at a temperature not exceeding 95°F (35°C). FOG (fats, oils, and greases) disposal systems in compliance with ASME A112.14.6 using biological cultures ~~or mechanical grease reduction,~~ shall not exceed 104°F (40°C).

TC Substantiation:
The TC amended a technical error. Mechanical grease reduction is not applicable to ASME A112.14.6, but to ASME A112.14.3.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 19, NEGATIVE: 6, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

COMMENT ON AFFIRMATIVE:
KLEIN: Agree with the need to amend in public comment, but this is on the right track.
LENGER: I will rewrite in public comments.

EXPLANATION OF NEGATIVE:
BRABAND: Concur with other negative comments "the system is designed..."
MECHAM: Concur with the other negative comments.
OSANN: The first sentence ("Grease interceptors shall be designed and maintained at a temperature not exceeding 95°F (35°C).") is not enforceable at time of inspection. Perhaps the proponent means that "Grease interceptors shall be designed and installed so as to maintain a temperature . . . " or something similar. I would prefer to see this clarified with a public comment.
PAPE: The language is unenforceable. It should say "system is designed to maintain a temperature…"
RUMMINGS: Agree with other comments posted.
SOVOCOOL: Having a design temperature is one thing. A requirement of maintaining that in an actual installation, while a good intention, is of course impossible. I dare say every grease trap in my city (Las Vegas) is over that 95 F temp in summer due to the road temperature. Needs a rewrite.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (407.4.1) Item #024

Name:	Markus Lenger
Organization:	CleanBlu
Representing:	
Recommendation:	Request to accept the code change proposed as modified by this public comment
Section Number:	407.4.1
Proposed Text:	**407.4.1 Temperature.** Grease Interceptors shall be designed and ~~maintained~~ installed to maintain a mean ~~at a~~ temperature not exceeding 95°F (35°C). FOG (fats, oils, and greases) disposal systems in compliance with ASME A112.14.6 using biological cultures shall not exceed 104°F (40°C). Passive or active cooling and heat recovery to be employed where applicable.
Problem Statement:	Original language not enforceable at time of inspection. Changed wording to make enforceable. Added word mean to temperature to account for intermittent temperature peaks. added "Passive or active cooling and heat recovery to be employed where applicable." as means to achieve discharge temperature reduction if needed.
Referenced Standards:	

Name:	Julius Ballanco
Organization:	JB Engineering and Code Consulting, P.C.
Representing:	InSinkErator
Recommendation:	Revise text
Section Number:	407.6.1
Proposed Text:	**407.6.1 Pulpers and Mechanical Strainers.** The water use for the pulpers or mechanical strainers shall not exceed ~~2~~ 3 gpm. A flow restrictor shall be installed on the water supply to limit the water flow.
Problem Statement:	This modification would increase the allowable flow rate through pulpers and mechanical strainers. When this was originally developed (I served on the subcommittee), the flow rate for pulpers was taken from the available low flow values published by various manufacturers. However, since that time, studying have been done on optimum water use for pulpers. It is a known fact that there are available pulpers that can operate on a flow rate as low as 1 gpm. When the pulper operates at this low a flow, the speed of operation has to also slow down. The result is a much longer cycle of operation. There also is a high care required to avoid line stoppages. When a low flow pulper operates at 3 gpm, there is an optimum performance. The cycle time is shorter resulting in less total water usage when compared to operating at 1 or 2 gpm. The 3 gpm also provides better flow rate in the piping with few stoppages. The requirement should be based on total water usage of the system, not on an incremental flow rate that may result in higher total water usage. A similar proposal is being submitted to the change proposed to the Uniform Plumbing Code.
Referenced Standards:	

TC Action:
Reject

TC Substantiation:
Insufficient evidence to substantiate that the proposed amendment would improve water efficiency or sanitation.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 12, NEGATIVE: 11, ABSTENTION: 2, NOT RETURNED: 3
Barbarulo, S. Mann, Smith

NOTE: Item #027 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
FERRUCCIO: I agree with Matt Sigler.
OSANN: I agree with the proponent's argument that "The requirement should be based on total water usage of the system, not on an incremental flow rate that may result in higher total water usage." However, no documentation is provided for the assertion that 3 gpm is "optimal" and results in lower total water usage. The proponent should come back with documentation in a public comment.

PAPE: PULP FICTION! No evidence was provided by proponent or PMI that this improves water efficiency. PMI offered an opinion, but no evidence. We should not encourage pulpers to put more solids and FOGs into the wastewater system.

EXPLANATION OF NEGATIVE:
BRABAND: I agree with PMI.
CUDAHY: Agree with PMI.
GRANGER: Agree with PMI.
KOELLER: Agree with Matt Sigler's comment.
MAJEROWICZ: Agree with PMI.
MANN: I am in agreement with Matt Sigler on this Item.
MCLEOD: Agree with PMI.
POTTS: Agree with Matt Siegler with PMI.
SHAPIRO: Seems this change needed to improve water efficiency.
SIGLER: When a low flow pulper operates at 3 gpm (which is optimum performance), there is a shorter cycle time resulting in less total water usage when compared to operating at 1 or 2 gpm.
TINDALL: I agree with PMI

COMMENT ON ABSTENTION:
KLEIN: I do not have specific knowledge of these devices.
MECHAM: I don't have enough personal experience to determine which of the arguments are valid. Both seem logical, but currently can't determine who is the most accurate in the presented information.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT: 1

Name:	Julius Ballanco
Organization:	JB Engineering and Code Consulting, P.C.
Representing:	InSinkErator
Recommendation:	Revise text
Section Number:	407.6.1
Proposed Text:	**407.6.1 Pulpers and Mechanical Strainers.** The water use for the pulpers or mechanical strainers shall not exceed ~~2~~ 3 gpm. A flow restrictor shall be installed on the water supply to limit the water flow.
Problem Statement:	This modification would increase the allowable flow rate through pulpers and mechanical strainers. When this was originally developed (I served on the subcommittee), the flow rate for pulpers was taken from the available low flow values published by various manufacturers. However, since that time, studying have been done on optimum water use for pulpers. It is a known fact that there are available pulpers that can operate on a flow rate as low as 1 gpm. When the pulper operates at this low a flow, the speed of operation has to also slow down. The result is a much longer cycle of operation. There also is a high care required to avoid line stoppages. When a low flow pulper operates at 3 gpm, there is an optimum performance. The cycle time is shorter resulting in less total water usage when compared to operating at 1 or 2 gpm. The 3 gpm also provides better flow rate in the piping with few stoppages. The requirement should be based on total water usage of the system, not on an incremental flow rate that may result in higher total water usage. A similar proposal is being submitted to the change proposed to the Uniform Plumbing Code.

Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT: 2

WE-Stand 2020 – (407.6.1) Item #027

Name:	Julius Ballanco
Organization:	JB Engineering and Code Consulting, P.C.
Representing:	InSinkErator
Recommendation:	Request to accept the code change proposal as submitted
Section Number:	407.6.1
Proposed Text:	**407.6.1 Pulpers and Mechanical Strainers.** The water use for the pulpers or mechanical strainers shall not exceed ~~2~~ 3 gpm. A flow restrictor shall be installed on the water supply to limit the water flow.
Problem Statement:	The proposed change correctly identifies the issue regarding total use of water versus flow rate. While a flow rate of 2 gpm appears to use less water than a flow rate of 3 gpm, this is not correct based on cycle time. The cycle time of a pulper is faster when flowing 3 gpm. At 2 gpm or less, the cycle time must be increased resulting in greater water usage. There is also an increase in stoppages when the flow rate is reduce to 2 gpm. There is inadequate water to properly flow through the piping to the dewatering area of the pulper.
Referenced Standards:	

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Add text
Section Number:	415.1, 415.2
Proposed Text:	**415.1 General**. Where landscape irrigation systems are installed, They shall comply with Sections 415.2 through ~~415.15~~ 415.16. ~~Requirements limiting the amount of plant material used in landscapes shall be established by the Authority Having Jurisdiction.~~ ~~**Exception**: Plants grown for food production~~. **415.2 Plant and Irrigation System Limitations.** Nuisance, invasive and noxious plants as defined by the Authority Having Jurisdiction shall not be used in the landscape. Plants not requiring supplement irrigation and not principally used as an athletic field or public recreation shall be used in no less than 60 percent of the landscape that is not principally used as an athletic field or public recreation. In-ground irrigation system shall not be installed in more than than 40 percent of the landscaped area. **Exceptions:** a. Where average annual rainfall is less than 12 inches and in landscape areas where the plant materials have an annual ETc of not exceeding 15 inches, an in-ground irrigation system shall be allowed; b. Where neither potable or reclaimed (recycled) water is used in the irrigation system, an in-ground irrigation system shall be allowed in 100 percent of the landscaped area and vegetative roofs. (Renumber remaining sections)
Problem Statement:	Plant selection can have a large impact in irrigation water needs. This provision establishes that most of the landscape plant selection must be compatible with the natural rainfall. The exception (a) is to allow desert communities with less than 12 inches annual rainfall to have a complete vegetative landscape. The reason for the difference between ETc and rainfall is that plant ETc is based on maximum biomass, not minimum water needs to thrive. Exception (b) encourages alternate water collection and use.
Referenced Standards:	

TC Action:
Accept as amended

415.2 Plant and Irrigation System Limitations. Nuisance, invasive and noxious plants as defined by the Authority Having Jurisdiction shall not be used in the landscape. Plants not requiring supplemental irrigation ~~and not principally used as an athletic field or public recreation~~ shall be used in no less than 60 percent of the landscape that is not principally used as an athletic field or public recreation. In-ground irrigation system shall not be installed in more than than 40 percent of the landscaped area.
Exceptions:
c. Drip irrigation and microspray systems are not considered inground systems.
(Renumber remaining sections)

TC Substantiation:
Removed the unnecessary redundancy of referencing athletic fields and public recreation. Added the exception to allow the use of drip irrigation and microspray systems beyond the 40% limitation.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 22, NEGATIVE: 2, NOT RETURNED: 2 Barbarulo, S. Mann, Rummings, Smith

COMMENT ON AFFIRMATIVE:
HOLMES: as amended

EXPLANATION OF NEGATIVE:
MECHAM: The idea of limiting overhead irrigation to 40% of the site is a backdoor approach to limit the size of turfgrass area. Additionally, and more importantly what is the rational or justification of the 40% for all areas of the country? 40% has nothing to do with the water demand of various types of plants.
OSANN: This is a worthwhile effort to make a major improvement in landscape water efficiency under WE-Stand, but there are several problems with it that are not cured by the committee amendment. The proposal lacks definitions for such key terms as "in-ground irrigation," "landscape," and "landscaped area." With key requirements in the proposal expressed as percentages of the landscaped area, it is crucial to know what the landscape or the landscaped area consists of. Inclusion or exclusion of walkways, porous-surfaced paths, driveways, patios, fire pits, gazebos, and chaparral become very important. Also, to attempt to exclude drip emitters from an in-ground irrigation system (more appropriately, an automatic irrigation system) is quite a stretch. Additionally, the reason statement could use more justification for the 60-40 split, as noted in another committee member's comment. I urge the proponent to take another crack it this in public comment.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (415.1, 415.2) Item #032

Name:	John Ossa, CID, CLIA
Organization:	Rain Bird Corporation
Representing:	Rain Bird Corporation
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.1, 415.2
Proposed Text:	**415.1 General**. Where landscape irrigation systems are installed, they shall comply with Sections 415.2 through 415.16. Requirements limiting the amount of plant material used in landscapes shall be established by the Authority Having Jurisdiction. **415.2 Plant and Irrigation System Limitations.** Nuisance, invasive and noxious plants as defined by the Authority Having Jurisdiction shall not be used in the landscape. ~~Plants not requiring supplemental irrigation shall be used in no less than 60 percent of the landscape that is not principally used as an athletic field or public recreation. In-ground irrigation system shall not be installed in more than 40 percent of the landscaped area.~~ **Exceptions:** a. ~~Where average annual rainfall is less than 12 inches and in landscape areas where the plant materials have an annual ETc of not exceeding 15 inches, an in-ground irrigation system shall be allowed;~~ <u>For all types of landscape, the Authority Having Jurisdiction shall determine</u>

	what is an acceptable in ground irrigation system as well as an acceptable system for temporary, establishment period irrigation. b. ~~Where neither potable or reclaimed (recycled) water is used in the irrigation system,~~ An in-ground irrigation system shall be allowed in 100 percent of the landscaped area ~~and~~ (including vegetative roofs) where neither potable or reclaimed water is used. ~~c. Drip irrigation and microspray systems are not considered inground systems.~~
Problem Statement:	There is an arbitrary use of 60% and 40%. There is no substantiation for these numbers, which are an opinion that presumes to set a starting point. Adding limitations to the amount of area an irrigation system can occupy does not guarantee efficient use of water. Whether a permanent, or temporary irrigation system--they all need proper design, installation and especially management to ensure the efficient use of water.
Referenced Standards:	

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Add text
Section Number:	415.2.1
Proposed Text:	**415.2.1 Vegetative Roofs and Walls.** Irrigation systems using reclaimed (recycled) or potable water for vegetative roofs and walls are prohibited. (Renumber remaining sections)
Problem Statement:	Many vegetative roofs and walls are not water efficient. Currently there is not an ANSI standard for designing and building these systems with adequate water efficiency provisions. Reclaimed water is now being used to recharge ground water basins and converted to potable water; thus needs to be protected from waste.
Referenced Standards:	

TC Action:
Reject

TC Substantiation:
The proposed prohibition is considered overly restrictive.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 22, NEGATIVE: 3, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

COMMENT ON AFFIRMATIVE:
CUDAHY: If these dry out, it's a fire hazard.
MECHAM: The use of recycled/reclaimed water for irrigation is a method to reduce potable water use for irrigation. In addition, the current language would prohibit on-site harvesting of water that would be recycled and reclaimed which seems counter to the goal of WE-Stand.
OSANN: I would like to see this prohibition re-written simply to bar use of potable water for green roofs after period of establishment, and no permanent potable water connection. Language of green walls does not distinguish between indoor and outdoor. Also, I don't agree with the prohibition of using recycled water for this purpose.

EXPLANATION OF NEGATIVE:
BRABAND: Water reuse should be used as much as possible.
PAPE: There is no design standards or water efficiency standard for vegetated walls and roofs. The vast majority of these features are grossly inefficient in water use. Both potable and reclaimed water supplies are stressed and should not be wasted on this nonsense.
PREMER: In agreement with previous comments for negative vote, overly restrictive verbiage and this seems to go against the goal of WE-Stand, which should be to allow safe re-use of water.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (415.2.1) Item #033

Name:	Thomas Pape
Organization:	BMP
Representing:	AWE
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.2.1
Proposed Text:	**415.2.1 Vegetative Roofs and Walls.** Irrigation systems using potable water for vegetative roofs and walls are prohibited. (renumber remaining sections)
Problem Statement:	Many vegetative roofs and walls are not water efficient. Currently there is not an ANSI standard for designing and building these systems with adequate water efficiency provisions.
Referenced Standards:	

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Revise text
Section Number:	415.5
Proposed Text:	**415.5 Irrigation Control Systems**. Where installed as part of a landscape irrigation system, irrigation control systems shall: (1) remains the same. (2) Utilize ~~on-site~~ sensors to inhibit or suspend irrigation ~~when adequate soil moisture is present or~~ during rainfall or freezing conditions. (3) remains the same. (4) Have the capability to program multiple and different run times for each irrigation zone to enable cycling of water applications and durations to mitigate surface water flowing off of the intended irrigation zone. (5) through (7) remains the same.
Problem Statement:	Smart sensors are not necessarily on site. Also removing redundancy with provision (3). Need to clarify that the intent is to mitigate SURFACE water.
Referenced Standards:	

TC Action:
Reject

TC Substantiation:
Onsite sensors are a preferred method of operating irrigation controller.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 15, NEGATIVE: 9, NOT RETURNED: 4 Barbarulo, Holmes, S. Mann, Smith

NOTE: Item #035 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
OSANN: The edit for surface water should come back in a public comment.

EXPLANATION OF NEGATIVE:
BRABAND: Need to include all types of sensors.
KLEIN: The proposed revisions are not overly restrictive and the substantiation is clear. While the TC prefers onsite sensors, the point is to have sensors assist in the decision making, not for example, timers. Location of the sensor is not relevant.
LENGER: Offsite sensors are more likely to be properly maintained by 3rd party. Online sensors are rarely maintained and can easily produce false reading. If I learned one thing it is that the end user does not maintain sensors well, if at all. Off site or web-based data may be less accurate but more consistent.

D.MANN: I agree with Tom Pape and others who voted negative.
MECHAM: Agree with Neal and Thomas that there needs to be flexibility for innovation and where sensors could be located.
PAPE: Need the flexibility and clarity this proposal provides.
PREMER: Code reform is unclear.
SHAPIRO: Allow use of all types of sensors, not just one type. Change does not prevent onsite sensor use. Expand options.
SOVOCOOL: Some sites really aren't suitable for onsite sensors to provide valid data. Moreover this should probably be market driven until there is clear proof that onsite sensors are better in some way.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (415.5) Item # 035

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Revise text
Section Number:	415.5
Proposed Text:	**415.5 Irrigation Control Systems**. Where installed as part of a landscape irrigation system, irrigation control systems shall: (1) remains the same. (2) Utilize ~~on-site~~ sensors to inhibit or suspend irrigation ~~when adequate soil moisture is present or~~ during rainfall or freezing conditions. (3) remains the same. (4) Have the capability to program multiple and different run times for each irrigation zone to enable cycling of water applications and durations to mitigate <u>surface</u> water flowing off of the intended irrigation zone. (5) through (7) remains the same.
Problem Statement:	Smart sensors are not necessarily on site. Also removing redundancy with provision (3). Need to clarify that the intent is to mitigate SURFACE water.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (415.5) Item #035

Name:	Thomas Pape
Organization:	BMP
Representing:	AWE

Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.5
Proposed Text:	**415.5. Irrigation Control System.** Where installed as part of a landscape irrigation system, irrigation control systems shall: (1) Automatically adjust the irrigation schedule to respond to plant water needs determined by weather ~~or soil moisture~~ conditions. (2) Utilize on-site sensors to inhibit or suspend irrigation when adequate soil moisture is present or during rainfall or freezing conditions. (3) Utilize ~~either one or more on-site sensors or~~ a weather-based irrigation controller listed to the US EPA Weather Based Irrigation Controller Specification operate irrigation system according to local weather conditions. ~~to suspend irrigation when adequate soil moisture is present for plant growth.~~ 4) Have the capability to program multiple and different run times for each irrigation zone to enable cycling of water applications and durations to mitigate <u>surface</u> water flowing off of the intended irrigation zone. (5) through (7) remains the same]
Problem Statement:	There is currently no standard for soil moisture sensors. The bad sensors are known to fail and give false readings. There is a current effort to develop a standard for soil moisture sensors. WEStand should not include this option until an ANSI Standards is completed and this committee has the ability to review the standard,
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 3:

WE-Stand 2020 – (415.5) Item #035

Name:	John Ossa, CID, CLIA
Organization:	Rain Bird Corporation
Representing:	Rain Bird Corporation
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.5
Proposed Text:	**415.5 Irrigation Control Systems**. Where installed as part of a landscape irrigation system, irrigation control systems shall: (1) remains the same. (2) Utilize on-site sensors to inhibit or suspend irrigation ~~when adequate soil moisture is present or~~ during rainfall ~~or~~ <u>and</u> freezing conditions. (3) through (7) remains the same.

Problem Statement:	We support committee action to reject. This is referencing rain fall sensors. On-site rain fall sensors are more accurate then off-site. Leave in "on-site". At this time, there is no standard for a soil moisture sensor.
Referenced Standards:	

WE-Stand 2020 – (415.11(6)) Item # 038

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Revise text
Section Number:	415.11(6)
Proposed Text:	**415.11 Irrigation System Inspection and Performance Check**. The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) through (5) remains the same. (6) Control system shall be installed as specified and <u>listed as</u> ~~include~~ a US EPA WaterSense ~~labeled~~ controller, and all sensors shall be ~~installed and~~ verified for proper <u>installation and</u> operation. (7) through (9) remains the same.
Problem Statement:	To be consistent with language elsewhere in WE-Stand as well as in the UPC.
Referenced Standards:	

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 22, NEGATIVE: 3, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

EXPLANATION OF NEGATIVE:
MECHAM: The proposed change implies that WaterSense makes a controller. Striking the word labeled is a mistake. While I agree with Ed Osann that soil moisture-based controllers are effective, the language should not restrict them when they are also labeled by WaterSense.
OSANN: There is no WaterSense specification for soil moisture sensor-based irrigation controllers. This requirement will limit controllers to weather-based controllers only, even though SMS-based controllers are well received in the trade. The requirement can be re-written to require either water-based or SMS-based controllers in public comment.
RUMMINGS: The negative comments are valid.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (415.11) Item #038

Name:	John Ossa, CID, CLIA
Organization:	Rain Bird Corporation
Representing:	Rain Bird Corporation

Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.11(6)
Proposed Text:	**415.11 Irrigation System Inspection and Performance Check**. The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) through (5) remains the same. (6) Control system shall be installed as specified and ~~listed as~~ include a US EPA WaterSense labeled controller, and all sensors shall be installed and verified for proper installation and operation. (7) through (9) remains the same.
Problem Statement:	Striking the word "labeled" is a mistake. A grammatically correct interpretation would suggest that the EPA is in the business of manufacturing controllers.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (415.11) Item #038

Name:	Robert Pickering
Organization:	Eastern Research Group, Inc.
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.11
Proposed Text:	**415.11 Irrigation System Inspection and Performance Check.** The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) through (5) remains the same. (6) Control system shall be installed as specified and listed as a US EPA WaterSense labeled controller, and all sensors shall be verified for proper installation and operation. (7) through (9) remains the same
Problem Statement:	Retain "labeled" wording to be consistent with how WaterSense labeled products are referred. WaterSense does not manufacturer products.
Referenced Standards:	

Name:	Kelsey Jacquard
Organization:	Hunter Industries
Recommendation:	Add text
Section Number:	415.11(7)
Proposed Text:	**415.11 Irrigation System Inspection and Performance Check**. The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) through (6) remains the same. (7) The peak demand irrigation schedule shall be posted near the controller or accessible through a mobile device, or the scheduling parameters for the controller shall be listed for each station including cycle and soak times. (8) through (9) remains the same.
Problem Statement:	Recommend adding language of "or accessible through a mobile device." If scheduling is controlled through a phone or tablet, the schedule may not be posted near the controller while still remaining accessible to those in charge of the controller.
Referenced Standards:	

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 21, NEGATIVE: 5, NOT RETURNED: 2 Barbarulo, S. Mann

COMMENT ON AFFIRMATIVE:
OSANN: I agree that more consideration should be given to cloud-based information that may remain accessible over a longer period of time than a sheet of paper posted in the dwelling. But we don't want to remove the posting requirement just yet.

EXPLANATION OF NEGATIVE:
ALLEN: This seems like it would allow for the issues of a change of owner or employee being able to take the data with them on their mobile device, and then the info could be lost. The current language doesn't exclude the use of a mobile device, but just requires that there is a hard copy somewhere, which seems like a good idea to me.
PAPE: The physical posting of the data should be required. The electronic is not reliably transferred.
RUMMINGS: Physical data should be accessible.
SMITH: The physical posting of the data should be required. The electronic is not reliably transferred.
SOVOCOOL: We need to continue the requirement for posting of the irrigation schedule. As a utility with an incentive program for controllers, the problem of the loss of the schedule is quite wide spread. It can even effectively "brick" the controller. We shouldn't be helping to further contribute to that.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (415.11) Item #039

Name:	Thomas Pape
Organization:	BMP
Representing:	AWE
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.11
Proposed Text:	**415.11 Irrigation System Inspection and Performance Check.** The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) through (5) remains the same. (6) Control system shall be installed as specified and ~~include~~ listed as a US EPA WaterSense ~~labeled~~ controller, and all sensors shall be ~~installed and~~ verified for proper installation and operation. (7) The peak demand irrigation schedule shall be posted near the controller ~~or accessible through a mobile device~~, or the scheduling parameters for the controller shall be listed for each station including cycle and soak times. (8) through (9) remains the same.
Problem Statement:	The physical posting of the data should be required. The electronic is not reliably transferred. Technology and communication devices change, the written word remains.
Referenced Standards:	

WE-Stand 2020 – (415.12.4) Item # 041

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Add text
Section Number:	415.12.4
Proposed Text:	**415.12.4 Sprinkler Head Maximum Precipitation Rate.** Where the slope of the landscape exceeds 25 percent, the precipitation rate of sprinkler heads shall not exceed 1.75 inches per hour when tested to ASABE/ICC 802.
Problem Statement:	Need to limit precipitation rates where run-off is likely to occur. Typical soil absorption is 1/3 inch per hour.
Referenced Standards:	ASABE/ICC 802

Note: ASABE/ICC 802 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 10, NEGATIVE: 16, NOT RETURNED: 2 Barbarulo, S. Mann

NOTE: Item #041 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
CUDAHY: Seems proposal could use a permeability minimum as well.
PAPE: People who do not understand soil absorption rates should educate themselves - or at least ask questions during meeting discussions. Soil absorption rates for landscape range from 1/4"/hr. to 1/2'/hr. 1/3"/hr. is the mid-range. 1.75" precipitation rate on a 25% slope is ridiculously high volume of water. All but 2 of the negative voters FAILED the test and revealed your complete lack of knowledge of irrigation.

EXPLANATION OF NEGATIVE:
BRABAND: Flow too high for steep slopes.
FERRUCCIO: Agree with David Mann.
GRANGER: need more info.
HOLMES: need more information.
KLEIN: Spray irrigation of steep slopes should not be allowed. Other methods are available.
KOELLER: Comment same as McCleod.
LAYTON: need more information to substantiate the addition of this requirement.
MAJEROWICZ: Same as D. Mann.
D.MANN: No substantiation whatsoever for this code change.

MCLEOD: Need more information regarding substantiation of typical soil absorption at 1/3" / hr.
MECHAM: Same as D. Mann.
OSANN: I am negative on this because the proposal is not strong enough. Sprinkler irrigation of slopes greater than 25% simply should not be allowed. MWELO, which is a statewide minimum requirement precludes turf installation on slopes greater than 25% where the toe of the slop is impermeable. MWELO Appendix D, which is an alternative compliance path, limits the application t=rate of any irrigation device (not just sprinklers) to 0.75 inches per hr on slopes greater than 25%. Sprinkler irrigation on slopes greater than 25% is asking for trouble.
PREMER: the statement for soils absorption is not accurate.
RUMMINGS: As written, the wording is too general.
SMITH: No substantiation whatsoever for this code change.
TINDALL: Need more information.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (415.12.4) Item # 041

Name:	Thomas Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Add text
Section Number:	415.12.4
Proposed Text:	**415.12.4 Sprinkler Head Maximum Precipitation Rate.** Where the slope of the landscape exceeds 25 percent, the precipitation rate of sprinkler heads shall not exceed 1.75 inches per hour when tested to ASABE/ICC 802.
Problem Statement:	Need to limit precipitation rates where run-off is likely to occur. Typical soil absorption is 1/3 inch per hour.
Referenced Standards:	ASABE/ICC 802

Note: ASABE/ICC 802 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (415.12.4) Item #041

Name:	John Ossa, CID, CLIA
Organization:	Rain Bird Corporation
Representing:	Rain Bird Corporation

Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	415.12.4
Proposed Text:	**415.12.4 Sprinkler Head Maximum Precipitation Rate**. Where the slope of the landscape exceeds 25 percent, ~~the precipitation rate of sprinkler heads shall not exceed 1.75 inches per hour when tested to ASABE/ICC 802~~ system management shall include principles of cycle and soak with the objective of eliminating runoff.
Problem Statement:	We reject the proposal as written. The premise that precipitation is a lever to improve water efficiency is a false premise. Many variables effect run-off on a slope. Pre-existing moisture content, soil type, structure, tilth, plant cover, etc. If the intent is to mitigate run-off, then state that plainly. Effective system management is the lens that aligns all the variables to eliminate run-off.
Referenced Standards:	

Attachments

FINAL - Precipitation Rate Limit position-2017-10.doc

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 3:

WE-Stand 2020 – (415.12.4) Item #041

Name:	Thomas Pape
Organization:	BMP
Representing:	AWE
Recommendation:	Request to accept the code change proposed as submitted
Section Number:	415.12.4
Proposed Text:	**415.12.4 Sprinkler Head Maximum Precipitation Rate.** Where the slope of the landscape exceeds 25 percent, the precipitation rate of sprinkler heads shall not exceed 1.75 inches per hour when tested to ASABE/ICC 802.
Problem Statement:	Need to limit precipitation rates where run-off is likely to occur. Typical soil absorption is 1/3 inch per hour. Soil absorption rates for landscape range from 1/4"/hr. to 1/2'/hr. 1/3"/hr. is the mid-range. A 1.75" precipitation rate on a 25% slope is ridiculously high volume of water.
Referenced Standards:	ASABE/ICC 802

Note: ASABE/ICC 802 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

WE-Stand 2020 – (418.3) Item # 042

Name:	Tom Pape
Organization:	BMP
Representing:	Chairman for WE-Stand Water Efficiency Task Group
Recommendation:	Revise text
Section Number:	418.3
Proposed Text:	**418.3 Covers.** ~~Heated~~ Pools and in-ground permanently installed spas~~, and portable spas~~ shall be provided with a non-liquid vapor retardant cover. The cover shall not prevent collection of rain water into outdoor pools. **~~Exception:~~** ~~Where more than 70 percent of the energy for heating, computed over an operating season, is from site recovered energy such as from a heat pump or solar energy source.~~
Problem Statement:	Rainwater entering the pool provides several benefits. Liquid type barriers do not provide as much evaporation prevention as physical barriers. The exception does not address water efficiency measures and is recommended to be removed.
Referenced Standards:	

TC Action:
Reject

TC Substantiation:
The proposed amendment is overly restrictive. The TC prefers the existing language.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 22, NEGATIVE: 3, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

EXPLANATION OF NEGATIVE:
KLEIN: The wording in the proposal is not overly restrictive.
OSANN: All outdoor pools should be provided with a cover to prevent evaporation losses, which are substantial in the areas of the country with the most private pools. While the presence of a cover does not ensure its use, the absence of a cover ensures that it will not be used.
PAPE: We should assure the water efficiency tools are made available to occupants.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (418.3) Item #042

Name:	Thomas Pape
Organization:	BMP
Representing:	AWE

Recommendation:	Request to accept the code change proposal as submitted
Section Number:	418.3 Covers.
Proposed Text:	**418.3 Covers.** ~~Heated~~ Pools and in-ground permanently installed spas, and portable spas shall be provided with a non-liquid vapor retardant cover. The cover shall not prevent collection of rain water into outdoor pools. ~~**Exception**: Where more than 70 percent of the energy for heating, computed over an operating season, is from site-recovered energy such as from a heat pump or solar energy source.~~
Problem Statement:	Pool covers are not just about energy savings. Rainwater entering the pool provides several benefits. Liquid type barriers do not provide as much evaporation prevention as physical barriers. The exception does not address water efficiency measures and is recommended to be removed.
Referenced Standards:	

Name:	Laura Allen
Organization:	Greywater Action
Recommendation:	Revise text
Section Number:	502.12.1 Single Family Dwellings and Multi-Family Dwellings.
Proposed Text:	**502.12.1 Single Family Dwellings and Multi-Family Dwellings.** The gray water discharge for single family and multi-family dwellings shall be calculated by water use records, calculations of local daily per person interior water use, or the following procedure: (1) remains the same. (2) The estimated gray water flows of each occupant shall be calculated as follows: Showers~~,~~ and bathtubs ~~and lavatories 25~~ 13 gallons ~~(95~~ 50 L) per day/occupant Lavatories 11 gallons (42 L) per day/occupant Laundry ~~15~~ 10 gallons ~~(57~~ 38 L) per day/occupant (3) remains the same.
Problem Statement:	The previous numbers of 25 gpcd for showers/baths/lav and 15 gpcd for washers are outdated and reflective of flow rates from the 1999 Residential End Use of Water Study (REUS). These estimates should be updated to reflect the new REUS study released in 2016. The study found that per capita indoor use has gone down overall. New numbers are: Clothes Washer- 9.6 gpcd Shower: 11.1 gpcd Bath 1.5 gpcd Faucets 11.1 gcd (this includes all sinks, which is not representative of graywater sink flow rates limited to the bathroom, but the study didn't provide any other numbers for sinks) View the study here http://www.waterrf.org/PublicReportLibrary/4309A.pdf Lavatory sinks should be separated from showers/bathtubs because many systems don't include the sink and there is currently no way to reduce the sizing to accommodate this. Also, if someone wanted to permit just a lavatory sink they should have an estimate that does not include showers/baths. Even though the number from the REUS for sinks combines lavatory and kitchen sinks there is no reputable study showing just lavatory sinks. It would be better to use this overly high estimate than have nothing at all for lavatory sinks.
Referenced Standards:	Residential End Uses of Water Executive Report

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 20, NEGATIVE: 5, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

COMMENT ON AFFIRMATIVE:
KLEIN: The revisions to the gallons per day are in line with the available data on dwellings with water-efficient fixtures and appliances. Much better than the original language!
SOVOCOOL: Yes, there is newer data, but rejecting this returns the estimates to an even older and higher flow standard. Let's at least get moving in the right direction here.

EXPLANATION OF NEGATIVE:
KOELLER: The metrics used to calculate water use are from a 20-YEAR OLD STUDY! Water consumption in the home today is significantly different than what it was in 1999. Subsequent, more reliable studies of water consumption should be used to develop the metrics required. Vote to REJECT the TC's approval.

OSANN: The proposal is a step in the right direction, but kitchen sinks should have been separated from the lavs. Peter Mayer, who was a principal on both REUWS studies, has done some work to tease this out of their data. This should be fixable with a public comment.
PAPE: Newer data is available that refutes these estimates.
PREMER: need more data to approve.
RUMMINGS: More information is needed.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (502.12.1) Item #046

Name:	Laura Allen
Organization:	Greywater Action
Representing:	Greywater Action
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	502.12.1
Proposed Text:	**502.12.1 Single Family Dwellings and Multi-Family Dwellings**. The gray water discharge for single family and multi-family dwellings shall be calculated by water use records, calculations of local daily per person interior water use, or the following procedure: (1) remains the same. (2) The estimated gray water flows of each occupant shall be calculated as follows: Showers, and bathtubs 13 gallons (50 L) per day/occupant Lavatories ~~11~~ 4 gallons (~~42~~ 15 L) per day/occupant Laundry 10 gallons (38 L) per day/occupant (3) remains the same.
Problem Statement:	I have amended the previously accepted proposal to separate out lavatory sink water from total faucet use (which includes kitchen sink). The new numbers for shower and washing machines are from the updated REUS study, which was explained in the past proposal. The new number for lavatory sinks are from page three of a report by Peter Meyer, who worked on both REUS studies. In his report he shows that lavatory sink use is 31% of total sink use. To calculate lavatory gray water production I multiplied 0.31 by 11.1 gpcd (total sink). 0.31 x 11.1= 3.4. I rounded up to 4 gpcd to have a whole number like all the other ones do. View the study here http://www.waterrf.org/PublicReportLibrary/4309A.pdf And the report is attached.
Referenced Standards:	

Attachments

Barnacle bathroom faucet use letter report.pdf

Name:	Laura Allen
Organization:	Greywater Action
Recommendation:	Revise text
Section Number:	Table 502.14.1

Proposed Text:

~~TYPE OF SOIL~~	~~MINIMUM SQUARE FEET OF IRRIGATION AREA PER 100 GALLONS OF ESTIMATED GRAY WATER DISCHARGE PER DAY~~	~~MAXIMUM ABSORPTION CAPACITY IN GALLONS PER SQUARE FOOT OF IRRIGATION/LEACHING AREA FOR A 24-HOUR PERIOD~~
~~Coarse sand or gravel~~	~~20~~	~~5.0~~
~~Fine sand~~	~~25~~	~~4.0~~
~~Sandy loam~~	~~40~~	~~2.5~~
~~Sandy clay~~	~~60~~	~~1.7~~
~~Clay with considerable sand or gravel~~	~~90~~	~~1.1~~
~~Clay with small amounts of sand or gravel~~	~~120~~	~~0.8~~

Proposed new table 502.14.1

Soil Class and Textures	**Maximum absorption capacity in gallons per square foot of irrigation/leaching area for a 24 hour period.**
Sandy Loam (Group A) (Textures: sand, loamy sand, sandy loam)	**11.9**
Loam (Group B) (Textures: loam, silt loam)	**4.5**
Sandy Clay Loam (Group C) (Textures: Sandy clay loam)	**3.0**
Clay Loam (Group D) (Textures: clay loam, silty clay loam, sandy clay, silty clay, clay	**0.9**

Problem Statement:	This is a joint submittal from Laura Allen (Greywater Action), Leigh Jerrard (principal of Greywater Corps, licensed architect and general contractor) and Sherry LeeBryan (Program Manager of Ecology Action). The existing Table 502.14.1 "Design of Six Typical Soils" does not appear to come from a referenced source and the names of the soils are not typical soils. If someone were to send their soil into a laboratory for testing, or perform an on-site test using standard soil texture identification methods (jar test or soil ribbon test) the soil names they would get would most likely not match this chart. We have not been able to find the original source for the information in this table. The information doesn't appear to come from septic design or irrigation system design: it appears the original creators of this table used some unknown infiltration rate and applied an unknown factor to come up with the provided coefficients for infiltration graywater into various types of soil. This new proposed table uses steady state infiltration rates from the Minnesota Stormwater Manual 2013. This manual compiled infiltration rates and recommendations based on a review of 30 guidance manuals and other stormwater references. Other agencies, like the San Francisco Public Utilities Commission, use the same table in their stormwater system sizing manuals. The table uses steady state infiltration rates and is based on the assumption that the soil is very deeply wetted below (or at field capacity), which builds in a safety factor into the numbers. (Graywater systems are typically shut off during the rainy season so the soil would not be at field capacity during irrigation time.) By adopting this new table WE-Stand would be using a soil infiltration table that is aligned with actual, published references that are used by stormwater, civil engineers, and landscape professionals. The proposed table includes both hydrologic groups, which a person could look up the property's hydrologic group on a GIS map or NRCS map, as well as soil textures which an on-site soil test could verify. The proposed table is more conservative for clay soil types, and so would have less potential for overloading slower draining soils than the existing table. The proposed table has higher infiltration rates for sandy and loam soils, which are soils that are verified by studies (see references for Stormwater Manual) to infiltrate much much more water than the current table permits. To create the new table we converted the units provided in the referenced table from inches/hour to gallons/day as shown in the reference material. This is the source for the steady state infiltration rates: Minnesota Stormwater Manual 2013 -thirty guidance manuals and many other stormwater references were reviewed to compile recommended infiltration rates. All of these sources use the following studies as the basis for their recommended infiltration rates: (1) Rawls, Brakensiek and Saxton (1982); (2) Rawls, Gimenez and Grossman (1998); (3) Bouwer and Rice (1984); and (4) Urban Hydrology for Small Watersheds (NRCS). SWWD, 2005, provides field documented data that supports the proposed infiltration rates. (view reference list here https://stormwater.pca.state.mn.us/index.php?title=References) The Full Minnesota Stormwater Manual is available on-line here: https://stormwater.pca.state.mn.us/index.php?title=Main_Page
Referenced Standards:	Minnesota Stormwater Manual

TC Action:
Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 15, NEGATIVE: 9, NOT RETURNED: 4 Barbarulo, S. Mann, Potts, Smith

NOTE: Item #049 failed to achieve the necessary 2/3 affirmative vote of returned ballots. In accordance with Section 6.8.2 of the Regulations Governing Consensus Development of WE•Stand, a public comment is requested for this proposal. The technical committee will reconsider this proposal as a public comment.

COMMENT ON AFFIRMATIVE:
MCLEOD: Hydrological soil groups appear to be more appropriate and using other sources, like Food and Ag info, the values appear to be plausible when converted to gal/24hr.

EXPLANATION OF NEGATIVE:
FERRUCCIO: I agree with Cambria McLeod,
HOLMES: Didn't make sense to me to mix stormwater and grey water together
KLEIN: The proposal only captures half of the intent of the original language, both parts are needed to provide an enforceable code section.
MAJEROWICZ: Agree with David Mann.
MANN: The proponent is mixing storm and grey water. Section 502 where this table is located is for grey water not storm water. Section 503 is storm water. The manual submitted is for municipal storm water regulations.
OSANN: I appreciate the work to harmonize this table with commonly used soil categories and their recognized absorption capacities. However, the purpose of this table is to establish the minimum effective area of a subsurface gray water irrigation field (and similar features). The proposal not only strikes the soil types and absorption capacities of the existing table, it also strikes -- without explanation -- the column providing the minimum square feet of irrigation area. The proposal implies that a further calculation will be done, but this calculation was explicitly provided in the current table. Thus, the proposal appears incomplete, although easily be remedied with a public comment.
PAPE: Some amendments are without evidence.
RUMMINGS: In agreement with the negative comments made.
TINDALL: No documentation for the change from the existing table, current table preferred.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (Table 502.14.1) Item # 049

Name:	Laura Allen
Organization:	Greywater Action
Recommendation:	Revise text
Section Number:	Table 502.14.1
Proposed Text:	~~TYPE OF SOIL~~ | ~~MINIMUM SQUARE FEET OF IRRIGATION AREA PER 100 GALLONS OF ESTIMATED GRAY WATER~~ | ~~MAXIMUM ABSORPTION CAPACITY IN GALLONS PER SQUARE FOOT OF IRRIGATION/LEACHING AREA FOR A 24-HOUR PERIOD~~

	~~DISCHARGE PER DAY~~	
~~Coarse sand or gravel~~	~~20~~	~~5.0~~
~~Fine sand~~	~~25~~	~~4.0~~
~~Sandy loam~~	~~40~~	~~2.5~~
~~Sandy clay~~	~~60~~	~~1.7~~
~~Clay with considerable sand or gravel~~	~~90~~	~~1.1~~
~~Clay with small amounts of sand or gravel~~	~~120~~	~~0.8~~

Proposed new table 502.14.1

Soil Class and Textures	**Maximum absorption capacity in gallons per square foot of irrigation/leaching area for a 24 hour period.**
Sandy Loam (Group A) (Textures: sand, loamy sand, sandy loam)	**11.9**
Loam (Group B) (Textures: loam, silt loam)	**4.5**
Sandy Clay Loam (Group C) (Textures: Sandy clay loam)	**3.0**
Clay Loam (Group D) (Textures: clay loam, silty clay loam, sandy clay, silty clay, clay	**0.9**

Problem Statement:

This is a joint submittal from Laura Allen (Greywater Action), Leigh Jerrard (principal of Greywater Corps, licensed architect and general contractor) and Sherry LeeBryan (Program Manager of Ecology Action).

The existing Table 502.14.1 "Design of Six Typical Soils" does not appear to come from a referenced source and the names of the soils are not typical soils. If someone were to send their soil into a laboratory for testing, or perform an on-site test using standard soil texture identification methods (jar test or soil ribbon test) the soil names they would get would most likely not match this chart. We have not been able to find the original source for the information in this table. The information doesn't appear to come from septic design or irrigation system design: it appears the original creators of this table used some unknown infiltration rate and applied an unknown factor to come up with the provided coefficients for infiltration graywater into various types of soil.

This new proposed table uses steady state infiltration rates from the Minnesota Stormwater Manual 2013. This manual compiled infiltration rates and recommendations based on a

	review of 30 guidance manuals and other stormwater references. Other agencies, like the San Francisco Public Utilities Commission, use the same table in their stormwater system sizing manuals. The table uses steady state infiltration rates and is based on the assumption that the soil is very deeply wetted below (or at field capacity), which builds in a safety factor into the numbers. (Graywater systems are typically shut off during the rainy season so the soil would not be at field capacity during irrigation time.) By adopting this new table WE-Stand would be using a soil infiltration table that is aligned with actual, published references that are used by stormwater, civil engineers, and landscape professionals. The proposed table includes both hydrologic groups, which a person could look up the property's hydrologic group on a GIS map or NRCS map, as well as soil textures which an on-site soil test could verify. The proposed table is more conservative for clay soil types, and so would have less potential for overloading slower draining soils than the existing table. The proposed table has higher infiltration rates for sandy and loam soils, which are soils that are verified by studies (see references for Stormwater Manual) to infiltrate much much more water than the current table permits. To create the new table we converted the units provided in the referenced table from inches/hour to gallons/day as shown in the reference material. This is the source for the steady state infiltration rates: Minnesota Stormwater Manual 2013 -thirty guidance manuals and many other stormwater references were reviewed to compile recommended infiltration rates. All of these sources use the following studies as the basis for their recommended infiltration rates: (1) Rawls, Brakensiek and Saxton (1982); (2) Rawls, Gimenez and Grossman (1998); (3) Bouwer and Rice (1984); and (4) Urban Hydrology for Small Watersheds (NRCS). SWWD, 2005, provides field documented data that supports the proposed infiltration rates. (view reference list here https://stormwater.pca.state.mn.us/index.php?title=References) The Full Minnesota Stormwater Manual is available on-line here: https://stormwater.pca.state.mn.us/index.php?title=Main_Page
Referenced Standards:	Minnesota Stormwater Manual

Name:	Jim Kendzel
Organization:	American Supply Association
Representing:	Chairman for WE-Stand Alternate Water Sources Task Group
Recommendation:	Add text
Section Number:	505.0

Proposed Text:

505.0 Onsite Blackwater Treatment Systems.

505.1 General. The provisions of this section shall apply to the water quality, monitoring, design, construction, alteration, repair, and operation requirements of onsite blackwater treatment systems for non-potable reuse.

505.2 Allowable Use of Blackwater. Where approved or required by the Authority Having Jurisdiction, blackwater shall be permitted to be used in lieu of potable water for uses such as, but not limited, to water closets, urinals, clothes washers, ornamental plant irrigation, and dust suppression.

505.3 System Design. Onsite blackwater treatment systems shall be designed in accordance with this section by a licensed plumbing contractor, Registered Design Professional, or a person who demonstrates competency to design blackwater treatment systems as required by the Authority Having Jurisdiction. Components, piping, and fittings used in any blackwater system shall be listed.

505.4 Permit. It shall be unlawful for any person to construct, install, alter, or cause to be constructed, installed, or altered any blackwater treatment system in a building or on a premise without first obtaining a permit to do such work from the Authority Having Jurisdiction.

505.5 Component Identification. System components shall be properly identified as to the manufacturer.

505.6 Material Compatibility. Blackwater treatment systems shall be constructed of materials that are compatible with the type of pipe and fitting materials, water treatment, and water conditions in the system.

505.7 Log Reduction Targets. Blackwater treatment systems shall be designed to meet the log reduction targets as set forth in Table 505.7. To meet the log reduction targets in Table 505.7, treatment processes used in blackwater systems shall comply with 505.8 for validation or be operated according to conditions approved by the Authority Having Jurisdiction.

Table 505.7
LOG REDUCTION TARGETS FOR 10^{-4} INFECTIONS PER PERSON PER YEAR
BENCHMARKS FOR BLACKWATER TREATMENT SYSTEMS

Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Ornamental plant irrigation[1]/dust suppression	8.0	7.0	6.0
Indoor Use	8.5	7.0	6.0

[1] Non-food

505.8 Validation. Where applicable, treatment processes shall be tested to verify their pathogen reduction performance. This can be accomplished through a validation test or by using a challenge test during field verification. The results of the validation test or challenge test shall be summarized in a validation report prepared by a Registered Design Professional. The validation report shall document the treatment technology's log reduction performance, including information on the operating conditions and surrogate parameters.

505.9 Health and Safety. Treated blackwater shall not create a nuisance or odor, nor threaten human health, or damage the quality of surface water or groundwater.

505.10 Monitoring Requirements. Treatment processes that are used to meet a log reduction target shall have continuous monitoring using surrogate parameters to verify the pathogen reduction performance. Instrumentation with continuous monitoring capabilities shall be routinely calibrated.

505.11 Design and Installation. The design and installation of onsite blackwater treatment systems shall meet the requirements of Section 505.11.1 through Section 505.11.6.

505.11.1 Connections to Potable or Reclaimed (Recycled) Water Systems. Blackwater treatment systems shall have no direct connection to any potable water supply or reclaimed (recycled) water source system. Potable water or reclaimed (recycled) water shall be permitted to be used as makeup water for a blackwater treatment system provided the potable or reclaimed (recycled) water supply connection is protected by an airgap.

505.11.2 Bypass Connection. A bypass shall be provided for the input connection to the blackwater treatment system. The bypass shall be a diverter valve normally open to the blackwater treatment system. The normally closed port of the diverter valve shall be connected directly to the plumbing drainage system according to the plumbing code.

505.11.3 Overflow Connection. Blackwater treatment overflow shall be connected directly to the plumbing drainage system. The overflow shall be provided with a backwater valve at the point of connection to the plumbing drainage system. The backwater valve shall be accessible for inspection and maintenance.

505.11.4 Fail-safe Mechanisms. Blackwater treatment systems shall be equipped with an automatic shutdown of the treatment process when a malfunction occurs.

505.11.5 Flow Meter. Buildings with blackwater treatment systems shall include a flow meter on the treated blackwater distribution system and a flow meter on the potable make-up water connection to the blackwater treatment system.

505.11.6 Cross-Connection Inspection and Testing. A cross-connection test is required in accordance with Section 501.11. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

505.12 Commissioning. Onsite blackwater treatment systems shall meet the commissioning requirements of Section 505.12.1 through Section 505.12.6.

505.12.1 Commissioning Requirements. Commissioning for blackwater treatment systems shall be included in the design and construction processes of the project. Commissioning shall be performed by a person who demonstrates competency in commissioning blackwater treatment systems as required by the Authority Having Jurisdiction.

505.12.2 Commissioning Plan. A commissioning plan shall be included in the construction documents and shall be completed to document the approach to how the blackwater treatment system will be commissioned and shall be started during the design phase of the project. The commissioning plan shall be approved by the Authority Having Jurisdiction prior to commissioning the blackwater treatment system. The commissioning plan shall include the following:

1) General project information.
2) Commissioning goals.
3) Equipment to be tested, including the extent of tests.
4) Functions to be tested.
5) Conditions under which the test shall be performed.
6) Measurable criteria for acceptable performance.
7) Commissioning team contact information.
8) Commissioning process activities, schedules, and responsibilities. Plans for the completion of functional performance testing, post construction documentation and training, and the commissioning report shall be included.

505.12.3 Functional Performance Testing. Functional performance tests shall demonstrate the correct installation and operation of the equipment of the blackwater treatment system in accordance with the approved plans and specifications. Functional performance testing reports shall be prepared and contain information addressing the equipment tested, the testing methods utilized, and proof of proper calibration of the equipment. The units of measure used in functional performance testing shall be the type of unit measurement acceptable to the Authority Having Jurisdiction.

505.12.4 Systems Operations Training. The training of the appropriate maintenance staff for each component of the blackwater treatment system shall include not less than the following:

1) Blackwater treatment system and equipment overview, including what each component is, what its function is, and what other systems or equipment it interfaces with.
2) Review of the information in the operations and maintenance manual.
3) Review of the record drawings on the system/equipment.

505.12.5 Commissioning Report. A complete report of commissioning process activities undertaken through the design, construction, and post-construction phases of the blackwater treatment system shall be completed, provided to the owner of the blackwater treatment system, and submitted to the Authority Having Jurisdiction upon completion of the commissioning of the blackwater treatment system.

505.12.6 Certificate of Completion. The Authority Having Jurisdiction shall not issue the final certificate of completion until the commissioning report has been submitted and approved. Copies of the commissioning report are required to be posted, or made available with the permit(s), and shall be made available to the Authority Having Jurisdiction at any time upon request.

505.13 Operation and Maintenance Manual. An operation and maintenance manual shall be provided in accordance with Section 501.6 and shall also include the following:

1) Instructions on operating and maintaining the system, including treatment process operations, instrumentation and alarms, and chemicals storage and handling.
2) Site equipment inventory and maintenance notes.
3) Equipment/system warranty documentation and information.
4) As-Built" design drawings.
5) Details on training requirements and qualifications of personnel responsible for operating the system.
6) Maintenance schedule.

505.14 Inspection. Field inspections shall take place during and after construction while the contractor is on-site to verify that the blackwater treatment system components have been properly supplied and installed according to the plans and specifications used for installation. Record drawings shall be maintained with changes to the approved plans by the contractor and available for periodic inspection as needed.

Add the following Definitions:

203.0

Air Gap, Drainage. The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe, plumbing fixture, appliance, or appurtenance conveying waste to the flood-level rim of the receptor.

Air Gap, Water Distribution. The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe or faucet conveying potable water to the flood-level rim of a tank, vat, or fixture.

204.0

Blackwater. Waste water containing bodily or other biological wastes discharged from toilets and kitchen sink waste.

205.0

Challenge Test. The evaluation of a unit treatment process for pathogen $\log_{10}$ reduction performance using selected surrogate or indigenous constituents.

	Continuous Monitoring. Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements. **Cross-connection.** A connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture or a tank, receptor, equipment, or device, through which it may be possible for non-potable, used, unclean, polluted, and contaminated water, or other substances to enter into a part of such potable water system under any condition. **208.0** **Field Verification.** Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning and may be repeated as needed. The need for, duration, and extent of the field verification procedure will depend on characteristics of the blackwater treatment system. **214.0** **Log_{10} Reduction.** The removal of a pathogen or surrogate in a unit process expressed in log_{10} units. A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on. **Log_{10} Reduction Target (LRT).** The log_{10} reduction target for the specified pathogen group (e.g., viruses, bacteria, or protozoa) to achieve the identified level of risk to individuals (e.g., 10^{-4} infection per year). **221.0** **Surrogate**. A biological, chemical, or physical parameter used to verify pathogen reductions performances. **224.0** **Validation Test.** Detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions. **Validation Report.** Report documenting the results of a validation test or challenge test conducted during field verification.
Problem Statement:	The Alternate Water Task Group (AWTG) proposes comprehensive requirements related to the water quality, monitoring, design, construction, commissioning, alteration, repair, and operation requirements of blackwater and stormwater systems for non-potable water reuse. These requirements for a properly designed system, together with appropriate construction, operation, and maintenance, will help ensure blackwater and stormwater systems will be implemented safely and reliably. The AWTG considered two treatment threshold approaches for blackwater. The first approach is published in ISO 30500 Non-Sewered Sanitation Systems and the other is published in Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems. The AWTG chose the latter as what is believed to be the more stringent approach. The AWTG proposes to incorporate health risk-based water quality requirements for blackwater and stormwater systems. The risk-based water quality approach was developed through recent research by the National Water Research Institute (NWRI) and the Water Research Foundation (WRF), culminating in the report Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems. Utilizing similar methodology as is employed in potable reuse and drinking water regulations, the risk-based LRTs align with the Water Safety Plan approach promoted by the World Health Organization. Blackwater and stormwater may contain pathogenic microorganisms that, if not properly treated, can cause infection due to exposure to these waters when recycled and used onsite. The intent of the risk-based framework is to determine the appropriate level of treatment for pathogens that is needed to protect public health, accounting for such factors as the source water quality, specific end use, and acceptable risk of infection from exposure to the treated water. The risk threshold used for this application is the same as has been previously applied in the context of municipal drinking water, i.e. exposure to this water via toilet flushing, irrigation, and other non-potable uses poses no greater risk than drinking municipally supplied drinking water. Because the amount of pathogen reduction for reuse usually spans orders of magnitude, pathogen treatment requirements are specified in terms of log10 reduction; 1-log10 reduction equates to 90% removal, 2-log10 reduction to 99%

	removal, 3-log10 reduction to 99.9% removal, and so on. The treatment requirements developed using the risk-based methodology in this case are called log reduction targets, or LRTs. The LRTs were developed using a Quantitative Microbial Risk Assessment (QMRA). QMRA is a scientific approach to estimating the potential human health risks associated with exposure to microbial hazards (in this case, human pathogenic viruses, bacteria, and protozoa). LRTs for blackwater and stormwater reuse for unrestricted irrigation and toilet flushing were developed based on the annual risk level of 10-4 infections per person per year. Unit treatment processes that are effective at removing and/or inactivating pathogens can be used to meet the LRTs. In most cases, several unit processes are needed in series to provide sufficient treatment. The ability of unit processes to provide a certain level of treatment is verified through the use of ongoing monitoring and, in some cases, validation. For some unit processes, validation is critical to determine how the process can be used to achieve the LRTs. The AWTG also proposes to incorporate a monitoring approach for blackwater and stormwater systems that aligns with the research. The framework for monitoring deviates from traditional approaches of monitoring fecal indicator organisms (FIOs) in grab samples because there are recognized limitations of using FIOs. The primary limitation of FIO monitoring is that it cannot be done continuously to ensure safe water is delivered to the end use at all times. Rather, the AWTG is proposing continuous water quality monitoring of surrogate parameters such as turbidity, residual chlorine, ultraviolet transmittance, and others to verify that treatment processes are operating as designed. Discussion: The AWTG supports the use of a health risk-based approach to guide treatment and design requirements for blackwater and stormwater systems because it ensures that systems implemented using this framework are safe and reliable. The requirements being proposed are intended to ensure that public health is protected while still allowing for flexibility in design, as it does not prescribe that specific treatment processes must be used. It is timely that AWTG is proposing these requirements because several states have recently moved forward to adopt the risk-based framework at the state level. Much of this work has been driven by the work of the National Blue Ribbon Commission for Onsite Non-potable Water Systems, a coalition of public health agencies and water and wastewater utilities committed to advancing the safe, practical, and sustainable implementation of alternate water source systems. As a result of the Commission's work, several states including California, Colorado, Minnesota, Oregon, Washington, and Hawaii are proposing legislation to adopt the risk-based approach. Therefore, institutionalizing the risk-based approach in WE•Stand will create further consistency across the country by aligning plumbing and health code requirements for alternate water source systems. Resources: The AWTG used the following resources to develop the proposed text for both stormwater and blackwater treatment systems. These resources provided the AWTG with a technically sound template for the development of requirements for blackwater and stormwater treatment systems that fit well into the both the scope and format structure of model codes used by WE•Stand. 1. Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems https://www.werf.org/a/ka/Search/ResearchProfile.aspx?ReportId=SIWM10C15 2. A Guidebook for Developing and Implementing Regulations for Onsite Non-potable Water Systems developed by the National Blue Ribbon Commission for Onsite Non-Potable Water Systems https://sfwater.org/Modules/ShowDocument.aspx?documentID=11586 3. San Francisco Department of Public Health Director's Rules and Regulations Regarding the Operation of Alternate Water Source Systems https://www.sfdph.org/dph/files/EHSdocs/ehsWaterdocs/NonPotable/SFHC_12C_Rules.pdf
Referenced Standards:	Risk-Based Framework for DNWS Report_Final; SFHC_12C Rules for Alternate Water Source Systems; NBRC Guidebook for Developing ONWS Regulations

TC Action:
Reject

TC Substantiation:
The proposal is underdeveloped and needs further details in the provisions. There is insufficient information to maintain public health. The section on Validation lacks specificity. The definitions need better defining. The TC commissioned a task group to further research and develop the proposal.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 24, NEGATIVE: 1, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

EXPLANATION OF NEGATIVE:
SHAPIRO: This section is sorely needed to promote this water use.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (205.0, 208.0, 214.0, 224.0) Item #051

Name:	Jim Kendzel
Organization:	Chair - Alt. Water Source Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	205.0, 208.0, 214.0, 224.0
Proposed Text:	**205.0** **Challenge Test.** The evaluation of a unit treatment process for pathogen log_{10} reduction performance using selected surrogate or indigenous constituents. This includes a detailed technology evaluation study conducted to challenge the treatment technology over a wide range of operational conditions. **208.0** **Field Verification.** Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning ~~and may be repeated as needed. The need for, duration, and extent of the field verification procedure will depend on characteristics of the blackwater treatment system~~. **214.0** **Log_{10} Reduction.** The removal of a pathogen or surrogate in a unit process expressed in log_{10} units of the effluent concentration over the influent concentration. Note: A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on. **224.0** **Validation Report.** Report documenting the results of a ~~validation test or~~ challenge test conducted during field verification.
Problem Statement:	Proposed changes to definition are intended to help provide clarity.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (505.3, Table 901.1) Item #051

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.3 and Table 901.1
Proposed Text:	**505.3 Design and Construction Requirements.** Onsite blackwater treatment systems shall meet the design, construction, and performance requirements of Section 505.3.1 or 505.3.2. **505.3.1 Listed Blackwater Treatment Systems.** Onsite blackwater treatment systems shall be listed to NSF 350, installed according to the manufacturer's instructions, and commissioned in accordance with Section 505.12. **505.3.2 Alternative Design Systems.** Where approved by the Authority Having Jurisdiction, onsite blackwater treatment systems for residential and commercial applications shall comply with the provisions of Sections 505.4 through 505.14. [Renumber remaining Sections] Add Standard update: **Table 901.1** NSF 350 -2018 Onsite Residential and Commercial Water Reuse Treatment Systems
Problem Statement:	This proposal is intended to address Technical Committee (TC) concerns related to lack of specificity in testing of systems in the original proposal. The Alternate Water Source Task Group (TG) decided to propose a solution by using the existing format already followed in the WE-Stand model code for composing systems. The proposed format provides the option for systems to comply with an existing nationally recognized standard, NSF 350, or show compliance through the AHJ. Unanimous consent was not reached by the Task Group. The reference to NSF 350 was approved based on a vote of 8 ayes, 2 nays, and 1 abstention. The overall text provided in the proposal was approved by a vote of 7 ayes, 4 nays and 1 abstention. The nays centered on the perceived cost of testing to NSF 350; confusion as to which version of NSF 350 was being considered; and concern with the use of the term “blackwater” instead of the term “sewage”. The correct edition of NSF 350 (2018) is provided with this proposal. The issue related to terms used was addressed during the last TC meeting with a letter sent to the U.S. EPA requesting they look at development a consistent set of terms to be used for alternate waste water systems. The TG would like the Technical Committee to know that there was unanimous support for the use of risk-based criteria (based on log-reduction) which is currently part of the complete black-water system proposal. The TG understands that the current version of NSF 350 does not use pass/fail criteria based on a risk-based, log-reduction format but was willing to accept reference to

	NSF 350 at this time with the understanding that there is activity to revise NSF 350 in the future to incorporate appropriate risk based criteria consistent with the criteria currently in the proposal
Referenced Standards:	NSF 350 - 2018 - Onsite Residential and Commercial Water Reuse.pdf

Note: NSF 350-2018 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 3:

WE-Stand 2020 – (505.8) Item #051

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.8
Proposed Text:	**505.8 Effluent Water Quality Parameters.** Blackwater treatment systems shall be designed to meet the effluent water quality parameters for fixture indoor use listed in Table 505.8.

Table 505.8
Effluent Water Quality Parameters for Fixture Indoor Use

	Minimum	Maximum
Alkalinity	20 mg/L	200mg/L
TDS	0	500mg/L
Turbidity NTU	0	5
pH	6.0	9.0
Odor	Non-Offensive	
Oily Film and Foam	Visual Non-detectable	
Free Chlorine Residual ppm	NA	4
Combined Chlorine ppm	NA	4
Chloramines	NA	4

[Renumber Remaining Sections]

Problem Statement:	This proposal is intended to address the issue of effluent water from blackwater systems meeting minimum quality parameters so that the effluent does not have a negative impact on plumbing fixture performance or service life. The parameters chosen are based on recommendations developed by the Plumbing Manufacturers International (PMI). The motion passed the TG by a vote of 11 ayes to 1 nay.

Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 4:

WE-Stand 2020 – (505.8) Item #051

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.8
Proposed Text:	**505.8 Validation**. Where ~~applicable,~~ required by the authority having jurisdiction, treatment processes shall be tested to verify ~~their~~ the pathogen reduction performance. ~~This can be accomplished through a validation test or by using a challenge test during field verification. The results of the validation test or challenge test~~ The treatment processes shall be validated through third-party component validation or field verification using challenge testing. The results of the third-party component validation and/or challenge testing shall be summarized in a validation report prepared by a Registered Design Professional. The validation report shall document the treatment technology's log reduction performance, including information on the operating conditions and surrogate parameters. Delete Definition: 224.0 ~~**Validation Test.** Detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions.~~
Problem Statement:	The proposal is being submitted by the Alternate Water Source Task Group in response to the concerns raised at the Technical Committee meeting related to incorporating the AHJ into the process and to better define the process. The definition for "validation test" is being removed since it is no longer used in the proposal. The proposal passed the TG with a vote of 9 ayes and 2 nays.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 5:

WE-Stand 2020 – (505.10) Item #051

Name:	Jim Kendzel
Organization:	Chairman – Alternate Water Sources Task Group
Representing:	

Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.10

Proposed Text:

505.10 Monitoring Requirements. ~~Treatment processes that are used to meet a log reduction target shall have continuous monitoring using surrogate parameters to verify the pathogen reduction performance. Instrumentation with continuous monitoring capabilities shall be routinely calibrated.~~ Monitoring of blackwater treatment systems shall be based on the risk level in accordance with Table 505.10(1). The parameters listed in Table 505.10(2) shall be monitored by sensors placed in the effluent of the system and connected to a smart controller. The smart controller shall activate an alarm when the parameters in Table 505.10(2) are outside the specifications and shall shut the system down when the alarm is not acknowledged after a period of 8 hours has elapsed. For Category 2, quarterly grab samples shall be taken out of the effluent and analyzed by an accredited lab. The sensors' accuracy and response shall be validated upon commissioning of the system by an independent third party.

Table 505.10(1)
Risk Levels

Risk Level	***Treated Water Usage[1]***
1	Ornamental plant irrigation and dust suppression
2	Water closets, urinals, clothes washers

[1.] See Section 505.2 for other uses approved by the AHJ.

Table 505.10(2)
Monitoring Parameters

Category	***PARAMETERS TO BE MONITORED***	***Validation Procedure***
1	Turbidity ORP UV intensity (if used)	IGC 324 -Sensor validation procedure using 5.4.1.1 (a), (b), (c), and (d)., as applicable
2	Turbidity ORP UV intensity (if used) pH Quarterly lab Sample for Total Coliform	

Add New Standard:

Table 901.1
IAPMO IGC 324-2019 Alternate Water Source Systems for Multi-family, Residential, and Commercial Use

Delete Definition
205.0
~~Continuous Monitoring.~~ ~~Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements.~~

Problem Statement:	Proposed changes are being recommended by the TG to address concerns raised by the Technical Committee that the monitoring section did not provide sufficient specificity. The motion did not receive a unanimous consent from the TG receiving a vote of 5 ayes, 3 nays and 2 abstentions. Concerns raised on the proposal related to a perceived lack of clarity in what is meant by the term "ornamental plant" in table 506.10 (1) and that the referenced standard IGC 324 was not yet published during the TG activity. The IGC 324 is now a published standard. The definition for Continuous Monitoring is no longer used in the text based on this public comment.
Referenced Standards:	IGC 324 Alternate Water Source Systems for Multi-Family, Residential, and Commercial Use

Note: IGC 324 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 6:

WE-Stand 2020 – (505.11.5) Item #051

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.11.5
Proposed Text:	**505.11.5 Flow Meter <u>Totalizer</u>.** Buildings with blackwater treatment systems shall include a flow meter <u>totalizer</u> on the treated blackwater distribution system and a flow meter <u>totalizer</u> on the potable make-up water connection to the blackwater treatment system.
Problem Statement:	The term "totalizer" is being added to be consistent with the terminology used in the marketplace.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 7:

WE-Stand 2020 – (505.12) Item #051

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	

Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	505.12
Proposed Text:	**505.12 Commissioning.** Onsite blackwater treatment systems shall ~~meet the commissioning~~ be commissioned in accordance with the requirements of Section 505.12.1 through Section 505.12.~~6~~4. **505.12.1 Commissioning Requirements.** Commissioning of a blackwater treatment systems shall be included in the design and construction processes of the project. Commissioning shall be performed by a person who demonstrates competency in commissioning blackwater treatment systems as required by the Authority Having Jurisdiction. **505.12.2 Commissioning Plan.** ~~A commissioning plan shall be included in~~ The construction documents ~~and~~ shall include the commissioning plan for the blackwater treatment system ~~be completed to document the approach to how the blackwater treatment system will be commissioned and shall be started during the design phase of the project~~. The commissioning plan shall be approved by the Authority Having Jurisdiction prior to commissioning the blackwater treatment system. The commissioning plan shall include the following: 1) General project information. 2) ~~Commissioning goals~~ Equipment to be tested, including the test methodology. 3) ~~Equipment to be tested, including the extent of tests.~~ Processes to be tested. 4) ~~Functions to be tested.~~ Criteria or process for testing. 5) ~~Conditions under which the test shall be performed~~ Criteria for acceptance. 6) ~~Measurable criteria for acceptable performance~~ Commissioning team contact information. 7) ~~Commissioning team contact information.~~ Commissioning process activities, schedules, and responsibilities. 8) ~~Commissioning process activities, schedules, and responsibilities. Plans for the completion of functional performance testing,~~ Plans for the completion of functional performance testing, post construction documentation and training, and the commissioning report. **505.12.3 ~~Functional~~ Performance Testing.** ~~Functional~~ Performance tests shall verify that ~~demonstrate~~ the ~~correct~~ installation and operation of the equipment of the blackwater treatment system is in accordance with the approved plans and specifications. ~~Functional~~ The performance test~~ing~~ report~~s~~ shall ~~be prepared and contain information addressing~~ include the equipment tested, the testing methods utilized, and proof of proper calibration of the equipment. ~~The units of measure used in functional performance testing shall be the type of unit measurement acceptable to the Authority Having Jurisdiction.~~ ~~**505.12.4 Systems Operations Training.** The training of the appropriate maintenance staff for each component of the blackwater treatment system shall include not less than the following:~~ ~~1) Blackwater treatment system and equipment overview, including what each component is, what its function is, and what other systems or equipment it interfaces with.~~ ~~2) Review of the information in the operations and maintenance manual.~~

	~~3) Review of the record drawings on the system/equipment.~~ **505.12.~~5~~4 Commissioning Report.** The commissioning report shall be ~~A complete report of commissioning process activities undertaken through the design, construction, and post-construction phases of the blackwater treatment system shall be completed, provided to the owner of the blackwater treatment system, and~~ submitted to the authority having jurisdiction ~~upon completion of the commissioning of the blackwater treatment system~~. ~~**505.12.6 Certificate of Completion.** The Authority Having Jurisdiction shall not issue the final certificate of completion until the commissioning report has been submitted and approved. Copies of the commissioning report are required to be posted, or made available with the permit(s), and shall be made available to the Authority Having Jurisdiction at any time upon request.~~ **Add new Definition:** **205.0** **Commissioning.** The activities associated with bringing a new process into normal working condition.
Problem Statement:	Proposed changes intended to provide clarity to the existing text. The proposed changes were unanimously approved by the TG.
Referenced Standards:	

Name:	Jim Kendzel
Organization:	American Supply Association
Representing:	Chairman for WE-Stand Alternate Water Sources Task Group
Recommendation:	Add text
Section Number:	506.0

Proposed Text:

506.0 Onsite Stormwater Treatment Systems.

506.1 General. The provisions of this section shall apply to the water quality, monitoring, design, construction, alteration, repair, and operation requirements of onsite Stormwater treatment systems for non-potable use.

506.2 Allowable Use of Stormwater. Where approved or required by the Authority Having Jurisdiction, Stormwater shall be permitted to be used in lieu of potable water for uses such as, but not limited to, water closets, urinals, clothes washers, ornamental plant irrigation, and dust suppression.

506.3 System Design. Onsite Stormwater treatment systems shall be designed in accordance with this section by a licensed plumbing contractor, Registered Design Professional, or a person who demonstrates competency to design Stormwater treatment systems as required by the Authority Having Jurisdiction. Components, piping, and fittings used in any Stormwater system shall be listed.

506.4 Permit. It shall be unlawful for any person to construct, install, alter, or cause to be constructed, installed, or altered any Stormwater treatment system in a building or on a premise without first obtaining a permit to do such work from the Authority Having Jurisdiction.

506.5 Component Identification. System components shall be properly identified as to the manufacturer.

506.6 Material Compatibility. Stormwater treatment systems shall be constructed of materials that are compatible with the type of pipe and fitting materials, water treatment, and water conditions in the system.

506.7 Log Reduction Targets. Stormwater treatment systems shall be designed to meet the log reduction targets as set forth in Table 506.7. To meet the log reduction in Table 506.7, treatment processes used in Stormwater systems shall comply with 506.8 for validation or be operated according to conditions approved by the Authority Having Jurisdiction.

Table 506.7
LOG REDUCTION TARGETS FOR 10^{-4} INFECTIONS PER PERSON PER YEAR
BENCHMARKS FOR STORMWATER TREATMENT SYSTEMS

Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Stormwater with 10% wastewater contribution[2]			
Ornamental plant irrigation[1]/dust suppression	5.0	4.5	4.0
Indoor Use	5.5	5.5	5.0
Stormwater with 0.1% wastewater contribution[2]			
Ornamental plant irrigation[1]/dust suppression	3.0	2.5	2.0
Indoor Use	3.5	3.5	3.0

[1] Non-food

[2] Stormwater can contain some quantity of municipal wastewater. The extent of wastewater present will depend on site-specific conditions. The appropriate Log_{10} Reduction Target (LRT) to apply for a Stormwater treatment system depend on the site-specific extent of likely contamination of Stormwater with municipal wastewater.

506.8 Validation. Where applicable, treatment processes shall be tested to verify their pathogen reduction performance. This can be accomplished through a validation test or by using a challenge test during field verification. The results of the validation test or challenge test shall be summarized in a validation report prepared by a Registered Design Professional. The validation report shall document the treatment technology's log reduction performance, including information on the operating conditions and surrogate parameters.

506.9 Health and Safety. Treated Stormwater shall not create a nuisance or odor, nor threaten human health, or damage the quality of surface water or groundwater.

506.10 Monitoring Requirements. Treatment processes that are used to meet a log reduction target shall have continuous monitoring using surrogate parameters to verify the pathogen reduction performance. Instrumentation with continuous monitoring capabilities shall be routinely calibrated.

506.11 Design and Installation. The design and installation of onsite Stormwater treatment systems shall meet the requirements of Section 505.11.1 through Section 505.11.6.

506.11.1 Connections to Potable or Reclaimed (Recycled) Water Systems. Stormwater treatment systems shall have no direct connection to any potable water supply or reclaimed (recycled) water source system. Potable water or reclaimed (recycled) water shall be permitted to be used as makeup water for a Stormwater treatment system provided the potable or reclaimed (recycled) water supply connection is protected by an airgap.

506.11.2 Bypass Connection. A bypass shall be provided for the input connection to the Stormwater treatment system. The bypass shall be a diverter valve normally open to the Stormwater treatment system. The normally closed port of the diverter valve shall be connected directly to the storm drainage system or combined sewer system according to the plumbing code.

506.11.3 Overflow Connection. Stormwater treatment overflow shall be connected directly to the storm drainage or combined sewer system according to the plumbing code. The overflow shall be provided with a backwater valve at the point of connection to the storm drainage or combined sewer system. The backwater valve shall be accessible for inspection and maintenance.

506.11.4 Fail-safe Mechanisms. Stormwater treatment systems must be equipped with features that result in a controlled and non-hazardous automatic shutdown of the treatment process in the event of a malfunction.

506.11.5 Flow Meter. Buildings with Stormwater treatment systems shall include a flow meter on the treated Stormwater distribution system and a flow meter on the potable make-up water pipeline to the Stormwater treatment system.

506.11.6 Cross-connection Inspection and Testing. A cross-connection test is required in accordance with Section 501.11. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

506.12 Commissioning. Onsite Stormwater treatment systems shall meet the commissioning requirements of Section 505.12.1 through Section 505.12.6.

506.12.1 Commissioning Requirements. Commissioning for Stormwater treatment systems shall be included in the design and construction processes of the project. Commissioning shall be performed by a person who demonstrates competency in commissioning Stormwater treatment systems as required by the Authority Having Jurisdiction.

506.12.2 Commissioning Plan. A commissioning plan shall be included in the construction documents and shall be completed to document the approach to how the Stormwater treatment system will be commissioned and shall be started during the design phase of the project. The commissioning plan shall be approved by the Authority Having Jurisdiction prior

to commissioning the Stormwater treatment system. The commissioning plan shall include the following:

1) General project information.
2) Commissioning goals.
3) Equipment to be tested, including the extent of tests.
4) Functions to be tested.
5) Conditions under which the test shall be performed.
6) Measurable criteria for acceptable performance.
7) Commissioning team contact information.
8) Commissioning process activities, schedules, and responsibilities. Plans for the completion of functional performance testing, post construction documentation and training, and the commissioning report shall be included.

506.12.3 Functional Performance Testing. Functional performance tests shall demonstrate the correct installation and operation of the equipment of the Stormwater treatment system in accordance with the approved plans and specifications. Functional performance testing reports shall be prepared and contain information addressing the equipment tested, the testing methods utilized, and proof of proper calibration of the equipment. The units of measure used in functional performance testing shall be the type of unit measurement acceptable to the Authority Having Jurisdiction.

506.12.4 Systems Operations Training. The training of the appropriate maintenance staff for each component of the Stormwater treatment system shall include not less than the following:

1) Stormwater treatment system and equipment overview, including what each component is, what its function is, and what other systems or equipment it interfaces with.
2) Review of the information in the operations and maintenance manual.
3) Review of the record drawings on the system/equipment.

506.12.5 Commissioning Report. A complete report of commissioning process activities undertaken through the design, construction, and post-construction phases of the Stormwater treatment system shall be completed, provided to the owner of the Stormwater treatment system, and submitted to the Authority Having Jurisdiction upon completion of the commissioning of the Stormwater treatment system.

506.12.6 Certificate of Completion. The Authority Having Jurisdiction shall not issue the final certificate of completion until the commissioning report has been submitted and approved. Copies of the commissioning report are required to be posted, or made available with the permit(s), and shall be made available to the Authority Having Jurisdiction at any time upon request.

506.13 Operation and Maintenance Manual. An operation and maintenance manual shall be provided in accordance with Section 501.6 and shall also include the following:

1) Instructions on operating and maintaining the system, including treatment process operations, instrumentation and alarms, and chemicals storage and handling.
2) Site equipment inventory and maintenance notes.
3) Equipment/system warranty documentation and information.
4) "As-Built" design drawings.
5) Details on training requirements and qualifications of personnel responsible for operating the system.
6) Maintenance schedule.

506.14 Inspection. Field inspections shall take place during and after construction while the contractor is on-site to verify that the Stormwater treatment system components have been properly supplied and installed according to the plans and specifications used for installation. Record drawings shall be maintained with changes to the approved plans by the contractor and available for periodic inspection as needed.

Add the following Definitions:
203.0

	Air Gap, Drainage. The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe, plumbing fixture, appliance, or appurtenance conveying waste to the flood-level rim of the receptor. **Air Gap, Water Distribution.** The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe or faucet conveying potable water to the flood-level rim of a tank, vat, or fixture. **204.0** **Challenge Test.** The evaluation of a unit treatment process for pathogen log_{10} reduction performance using selected surrogate or indigenous constituents. **Continuous Monitoring.** Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements. **Cross-connection.** A connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture or a tank, receptor, equipment, or device, through which it may be possible for nonpotable, used, unclean, polluted, and contaminated water, or other substances to enter into a part of such potable water system under any condition. **208.0** **Field Verification.** Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning and may be repeated as needed. The need for, duration, and extent of the field verification procedure will depend on characteristics of the Stormwater treatment system. **214.0** **Log_{10} Reduction.** The removal of a pathogen or surrogate in a unit process expressed in log_{10} units. A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on. **Log_{10} Reduction Target (LRT).** The log_{10} reduction target for the specified pathogen group (e.g., viruses, bacteria, or protozoa) to achieve the identified level of risk to individuals (e.g., 10^{-4} infection per year). **221.0** **Surrogate**. A biological, chemical, or physical parameter used to verify pathogen reductions performances. **224.0** **Validation Test.** Detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions. **Validation Report.** Report documenting the results of a validation test or challenge test conducted during field verification.
Problem Statement:	The Alternate Water Task Group (AWTG) proposes comprehensive requirements related to the water quality, monitoring, design, construction, commissioning, alteration, repair, and operation requirements of blackwater and stormwater systems for non-potable water reuse. These requirements for a properly designed system, together with appropriate construction, operation, and maintenance, will help ensure blackwater and stormwater systems will be implemented safely and reliably. The AWTG proposes to incorporate health risk-based water quality requirements for blackwater and stormwater systems. The risk-based water quality approach was developed through recent research by the National Water Research Institute (NWRI) and the Water Research Foundation (WRF), culminating in the report Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems. Utilizing similar methodology as is employed in potable reuse and drinking water regulations, the risk-based LRTs align with the Water Safety Plan approach promoted by the World Health Organization. Blackwater and stormwater may contain pathogenic microorganisms that, if not properly treated, can cause infection due to exposure to these waters when recycled and used onsite. The intent of the risk-based framework is to determine the appropriate level of treatment for pathogens that is needed to protect public health, accounting for such factors as the source water quality, specific end use, and acceptable risk of infection from exposure to the treated water. The risk threshold used for this application is the same as has been previously applied in the context of municipal drinking water, i.e. exposure to this water via toilet flushing, irrigation,

	and other nonpotable uses poses no greater risk than drinking municipally supplied drinking water. Because the amount of pathogen reduction for reuse usually spans orders of magnitude, pathogen treatment requirements are specified in terms of log_{10} reduction; 1-log_{10} reduction equates to 90% removal, 2-log_{10} reduction to 99% removal, 3-log_{10} reduction to 99.9% removal, and so on. The treatment requirements developed using the risk-based methodology in this case are called log reduction targets, or LRTs. The LRTs were developed using a Quantitative Microbial Risk Assessment (QMRA). QMRA is a scientific approach to estimating the potential human health risks associated with exposure to microbial hazards (in this case, human pathogenic viruses, bacteria, and protozoa). LRTs for blackwater and stormwater reuse for unrestricted irrigation and toilet flushing were developed based on the annual risk level of 10-4 infections per person per year. Unit treatment processes that are effective at removing and/or inactivating pathogens can be used to meet the LRTs. In most cases, several unit processes are needed in series to provide sufficient treatment. The ability of unit processes to provide a certain level of treatment is verified through the use of ongoing monitoring and, in some cases, validation. For some unit processes, validation is critical to determine how the process can be used to achieve the LRTs. The AWTG also proposes to incorporate a monitoring approach for blackwater and stormwater systems that aligns with the research. The framework for monitoring deviates from traditional approaches of monitoring fecal indicator organisms (FIOs) in grab samples because there are recognized limitations of using FIOs. The primary limitation of FIO monitoring is that it cannot be done continuously to ensure safe water is delivered to the end use at all times. Rather, the AWTG is proposing continuous water quality monitoring of surrogate parameters such as turbidity, residual chlorine, ultraviolet transmittance, and others to verify that treatment processes are operating as designed. Discussion: The AWTG supports the use of a health risk-based approach to guide treatment and design requirements for blackwater and stormwater systems because it ensures that systems implemented using this framework are safe and reliable. The requirements being proposed are intended to ensure that public health is protected while still allowing for flexibility in design, as it does not prescribe that specific treatment processes must be used. It is timely that AWTG is proposing these requirements because several states have recently moved forward to adopt the risk-based framework at the state level. Much of this work has been driven by the work of the National Blue Ribbon Commission for Onsite Nonpotable Water Systems, a coalition of public health agencies and water and wastewater utilities committed to advancing the safe, practical, and sustainable implementation of alternate water source systems. As a result of the Commission's work, several states including California, Colorado, Minnesota, Oregon, Washington, and Hawaii are proposing legislation to adopt the risk-based approach. Therefore, institutionalizing the risk-based approach in WE•Stand will create further consistency across the country by aligning plumbing and health code requirements for alternate water source systems. Resources: The AWTG used the following resources to develop the proposed text for both stormwater and blackwater treatment systems. These resources provided the AWTG with a technically sound template for the development of requirements for blackwater and stormwater treatment systems that fit well into the both the scope and format structure of model codes used by WE•Stand. 1. Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems https://www.werf.org/a/ka/Search/ResearchProfile.aspx?ReportId=SIWM10C15 2. A Guidebook for Developing and Implementing Regulations for Onsite Non-potable Water Systems developed by the National Blue Ribbon Commission for Onsite Non-Potable Water Systems https://sfwater.org/Modules/ShowDocument.aspx?documentID=11586 3. San Francisco Department of Public Health Director's Rules and Regulations Regarding the Operation of Alternate Water Source Systems https://www.sfdph.org/dph/files/EHSdocs/ehsWaterdocs/NonPotable/SFHC_12C_Rules.pdf
Referenced Standards:	Risk-Based Framework for DNWS Report_Final; SFHC_12C Rules for Alternate Water Source Systems; NBRC Guidebook for Developing ONWS Regulations

TC Action:

Reject

TC Substantiation:
The proposal is underdeveloped and needs further details in the provisions. There is insufficient information to maintain public health. The section on Validation lacks specificity. The definitions need better defining. The TC commissioned a task group to further research and develop the proposal.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 24, NEGATIVE: 1, NOT RETURNED: 3 Barbarulo, S. Mann, Smith

COMMENT ON AFFIRMATIVE:
LENGER: This amendment contains a LOT of great work - hopefully it gets corrected in public comments so we can include it. Unfortunately, as it is written it is not sufficient.

EXPLANATION OF NEGATIVE:
SHAPIRO: Need this section to promote more alternate water use.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 1:

WE-Stand 2020 – (205.0, 208.0, 214.0, 224.0) Item #052

Name:	Jim Kendzel
Organization:	American Supply Association
Representing:	American Supply Association
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	205.0, 208.0, 214.0, 224.0
Proposed Text:	**205.0** **Challenge Test.** The evaluation of a unit treatment process for pathogen log_{10} reduction performance using selected surrogate or indigenous constituents. This includes a detailed technology evaluation study conducted to challenge the treatment technology over a wide range of operational conditions. **208.0** **Field Verification.** Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning ~~and may be repeated as needed. The need for, duration, and extent of the field verification procedure will depend on characteristics of the blackwater treatment system~~. **214.0** **Log_{10} Reduction.** The removal of a pathogen or surrogate in a unit process expressed in log_{10} units of the effluent concentration over the influent concentration. Note: A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on.

	224.0 **Validation Report.** Report documenting the results of a ~~validation test or~~ challenge test conducted during field verification.
Problem Statement:	Task group is providing proposed revisions to existing definitions to add clarity and consistency with standard code language.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 2:

WE-Stand 2020 – (506.3) Item #052

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.3 and Table 901.1
Proposed Text:	**506.3 Design and Construction Requirements.** Onsite stormwater treatment systems shall meet the design, construction, and performance requirements of Section 506.3.1 or 506.3.2. **506.3.1 Listed Stormwater Treatment Systems.** Onsite stormwater treatment systems shall be listed to ASPE/ARCSA 78, installed according to the manufacturer's instructions, and commissioned in accordance with Section 506.13. **506.3.2 Alternative Design Systems.** Where approved by the Authority Having Jurisdiction, onsite stormwater treatment systems for residential and commercial applications shall comply with the provisions of Sections 506.4 through 506.15. [Renumber remaining Sections] Add new Standard **Table 901.1** ARCSA/ASPE 78-2015 Stormwater Harvesting System Design for Direct End-Use Applications
Problem Statement:	This proposal is intended to address Technical Committee concerns related to lack of specificity in testing of systems in the original proposal. The Alternate Water Source Task Group (TG) decided to propose a solution by using the existing format already followed in the WE-Stand model code for composing systems. The proposed format provides the option for systems to comply with an existing nationally recognized standard, NSF 350, or show compliance through the AHJ. Unanimous consent was not reached by the Task Group. The reference to NSF 350 was approved based on a vote of 8 ayes, 2 nays, and 1 abstention. The overall text provided in the proposal was approved by a vote of 7 ayes, 4 nays and 1 abstention. The concerns centered on the perceived cost of testing to NSF 350 and some confusion as to which version of NSF 350 was being considered. The correct edition of NSF 350 (2018) is provided with this proposal. In addition, one of the nays was based on a concern that there is a lack of consistency in terminology in the field and across various

	standards as it relates to "blackwater" and the term sewage should be used. Although this issue only applies to item 51, the same vote was used to incorporate revisions to item 52. As a reminder, the issue of inconsistent terminology was addressed at the last TC meeting and a letter was sent to the U.S. EPA requesting their attention to this issue. The TG would like the Technical Committee to know that there was unanimous support for the use of risk-based criteria (based on log-reduction) which is currently part of the complete black-water system proposal. The TG understands that the current version of NSF 350 does not use pass/fail criteria based on a risk-based, log-reduction format but was willing to accept reference to NSF 350 at this time with the understanding that there is activity to revise NSF 350 in the future to incorporate appropriate risk based criteria consistent with the criteria currently in the proposal.
Referenced Standards:	ASPE/ARCSA 78 Stormwater Harvesting System Design for Direct End-Use Applications

Note: ASPE/ARCSA meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 3:

WE-Stand 2020 – (506.7) Item #052

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.7

Proposed Text:

Table 506.7
LOG REDUCTION TARGETS FOR 10^{-4} INFECTIONS PER PERSON PER YEAR
BENCHMARKS FOR STORMWATER TREATMENT SYSTEMS

Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Stormwater with 10% wastewater contribution[2]			
Ornamental plant irrigation[1]/dust suppression	5.0	4.5	4.0
Indoor Use	5.5	5.5	5.0
Stormwater with 0.1% wastewater contribution[2]			
Ornamental plant irrigation[1]/dust suppression	3.0	2.5	2.0
Indoor Use	3.5	3.5	3.0

[1] Non-food

[2] Stormwater can contain some quantity of <u>fecal contamination</u> ~~municipal wastewater~~. The extent of <u>fecal contamination</u> ~~wastewater~~ present will depend on site specific conditions. The appropriate LRTs to apply for a Stormwater treatment system depend on the site-specific extent of likely contamination of Stormwater with <u>fecal contamination</u> ~~municipal wastewater~~.

Problem Statement:	The stormwater LRTs are not related to the type of sewer system present (i.e. combined vs. separate), because for onsite water reuse the stormwater would be collected prior to entering the sewer. Thus, there would not be a different set of LRTs for a jurisdiction with a separate storm sewer. Footnote 2 is revised to clarify that it is the potential range of likely fecal contamination, depending on the type of surfaces from which stormwater is collected. A range is provided because of a lack of data on pathogen concentrations in stormwater. LRTs for stormwater corresponding to the 0.1% wastewater contribution is required because the stormwater may still have some fecal contamination from contact with at- or below-grade surfaces.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 4:

WE-Stand 2020 – (506.8) Item #052

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.8
Proposed Text:	**506.8 Validation**. Where ~~applicable,~~ required by the authority having jurisdiction, treatment processes shall be tested to verify ~~their~~ the pathogen reduction performance. ~~This can be accomplished through a validation test or by using a challenge test during field verification. The results of the validation test or challenge test~~ The treatment processes shall be validated through third-party component validation or field verification using challenge testing. The results of the third-party component validation and/or challenge testing shall be summarized in a validation report prepared by a Registered Design Professional. The validation report shall document the treatment technology's log reduction performance, including information on the operating conditions and surrogate parameters. Delete Definition: 224.0 ~~**Validation Test.** Detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions.~~
Problem Statement:	The proposal is being submitted by the Alternate Water Source Task Group in response to the concerns raised at the Technical Committee meeting related to incorporating the AHJ into the process and to better define the process. The definition for "validation test" is being removed since it is no longer used in the proposal. The proposal passed the TG with a vote of 9 ayes and 2 nays.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 5:

WE-Stand 2020 – (506.8) Item #052

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.8 and Table 506.8
Proposed Text:	**506.8 Effluent Water Quality Parameters.** Stormwater treatment systems shall be designed to meet the effluent water quality parameters for fixture indoor use listed in Table 506.8. **Table 506.8** **Effluent Water Quality Parameters for Fixture Indoor Use** [Renumber Remaining Sections]
Problem Statement:	This proposal is intended to address the issue of effluent water from stormwater systems meeting minimum quality parameters so that the effluent does not have a negative impact on plumbing fixture performance or service life. The parameters chosen are based on recommendations developed by the Plumbing Manufacturers International (PMI). The TG accepted the proposal based on 11 ayes and 1 nay.
Referenced Standards:	

	Minimum	Maximum
Alkalinity	20 mg/L	200mg/L
TDS	0	500mg/L
Turbidity NTU	0	5
pH	6.0	9.0
Odor	Non-Offensive	
Oily Film and Foam	Visual Non-detectable	
Free Chlorine Residual ppm	NA	4
Combined Chlorine ppm	NA	4
Chloramines	NA	4

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 6:

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.10

Proposed Text:

506.10 Monitoring Requirements. ~~Treatment processes that are used to meet a log reduction target shall have continuous monitoring using surrogate parameters to verify the pathogen reduction performance. Instrumentation with continuous monitoring capabilities shall be routinely calibrated.~~ Monitoring of stormwater treatment systems shall be based on the risk level in accordance with Table 506.10(1). The parameters listed in Table 506.10(2) shall be monitored by sensors placed in the effluent of the system and connected to a smart controller. The smart controller shall activate an alarm when the parameters in Table 506.10(2) are outside the specifications and shall shut the system down when the alarm is not acknowledged after a period of 8 hours has elapsed. For Category 2, quarterly grab samples shall be taken out of the effluent and analyzed by an accredited lab. The sensors' accuracy and response shall be validated upon commissioning of the system by an independent third party.

Table 506.10(1)
Risk Levels

Risk Level	***Treated Water Usage[1]***
1	Ornamental plant irrigation and dust suppression
2	Water closets, urinals, clothes washers

1. See Section 506.2 for other uses approved by the AHJ.

Table 506.10(2)
Monitoring Parameters

Category	***PARAMETERS TO BE MONITORED***	***Validation Procedure***
1	Turbidity ORP UV intensity (if used)	IGC 324 -Sensor validation procedure using 5.4.1.1 (a), (b), (c), and (d)., as applicable
2	Turbidity ORP UV intensity (if used) pH Quarterly lab Sample for Total Coliform	

Add New Standard
Table 901.1
IAPMO IGC 324-2019 Alternate Water Source Systems for Multi-family, Residential, and Commercial Use

Delete Definition

	205.0 **~~Continuous Monitoring.~~** ~~Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements.~~
Problem Statement:	Proposed changes are being recommended by the TG to address concerns raised by the Technical Committee that the monitoring section did not provide sufficient specificity. The motion did not receive a unanimous consent from the TG receiving a vote of 5 ayes, 3 nays and 2 abstentions. Concerns raised on the proposal related to a perceived lack of clarity in what is meant by the term "ornamental plan" in table 506.10 (1) and that the referenced standard IGC 324 was not yet published during the TG activity. The IGC 324 is now a published standard. The definition is no longer used in the text based on this public comment.
Referenced Standards:	IGC 324 Alternate Water Source Systems for Multi-Family, Residential and Commercial Use

Note: IGC 324 meets the requirements for a mandatory reference standard in accordance with Section 15.0 of the Regulations Governing Consensus Development of the Water Efficiency and Sanitation Standard.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 7:

WE-Stand 2020 – (506.11.5) Item #052

Name:	Jim Kendzel
Organization:	Chair - Alt. Water Source Task Group
Representing:	
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.11.5
Proposed Text:	**506.11.5 Flow Meter <u>Totalizer</u>.** Buildings with stormwater treatment systems shall include a flow meter <u>totalizer</u> on the treated stormwater distribution system and a flow meter <u>totalizer</u> on the potable make-up water connection to the stormwater treatment system.
Problem Statement:	The term "totalizer" is being added to be consistent with the terminology used in the marketplace.
Referenced Standards:	

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT 8:

WE-Stand 2020 – (506.12) Item #052

Name:	Jim Kendzel
Organization:	Chairman - Alternate Water Sources Task Group
Representing:	Chairman - Alternate Water Sources Task Group
Recommendation:	Request to accept the code change proposal as modified by this public comment
Section Number:	506.12
Proposed Text:	**506.12 Commissioning.** Onsite stormwater treatment systems shall ~~meet the commissioning~~ be commissioned in accordance with the requirements of Section 506.12.1 through Section 506.12.~~6~~4. **506.12.1 Commissioning Requirements.** Commissioning of a stormwater treatment systems shall be included in the design and construction processes of the project. Commissioning shall be performed by a person who demonstrates competency in commissioning stormwater treatment systems as required by the Authority Having Jurisdiction. **506.12.2 Commissioning Plan.** ~~A commissioning plan shall be included in~~ The construction documents ~~and~~ shall include the commissioning plan for the stormwater treatment system ~~be completed to document the approach to how the stormwater treatment system will be commissioned and shall be started during the design phase of the project~~. The commissioning plan shall be approved by the Authority Having Jurisdiction prior to commissioning the stormwater treatment system. The commissioning plan shall include the following: 1) General project information. 2) ~~Commissioning goals~~ Equipment to be tested, including the test methodology. 3) ~~Equipment to be tested, including the extent of tests.~~ Processes to be tested. 4) ~~Functions to be tested.~~ Criteria or process for testing. 5) ~~Conditions under which the test shall be performed~~ Criteria for acceptance. 6) ~~Measurable criteria for acceptable performance~~ Commissioning team contact information. 7) ~~Commissioning team contact information.~~ Commissioning process activities, schedules, and responsibilities. 8) ~~Commissioning process activities, schedules, and responsibilities. Plans for the completion of functional performance testing,~~ Plans for the completion of functional performance testing, post construction documentation and training, and the commissioning report. **506.12.3 ~~Functional~~ Performance Testing.** ~~Functional~~ Performance tests shall verify that ~~demonstrate~~ the ~~correct~~ installation and operation of the equipment of the stormwater treatment system is in accordance with the approved plans and specifications. ~~Functional~~ The performance test~~ing~~ report~~s~~ shall ~~be prepared and contain information addressing~~ include the equipment tested, the testing methods utilized, and proof of proper calibration of the equipment. ~~The units of measure used in functional performance testing shall be the type of unit measurement acceptable to the Authority Having Jurisdiction.~~ ~~**506.12.4 Systems Operations Training.** The training of the appropriate maintenance staff for each component of the stormwater treatment system shall include not less than the following:~~

	~~1) stormwater treatment system and equipment overview, including what each component is, what its function is, and what other systems or equipment it interfaces with.~~ ~~2) Review of the information in the operations and maintenance manual.~~ ~~3) Review of the record drawings on the system/equipment.~~ **506.12.~~5~~4 Commissioning Report.** The commissioning report shall be ~~A complete report of commissioning process activities undertaken through the design, construction, and post-construction phases of the stormwater treatment system shall be completed, provided to the owner of the stormwater treatment system, and~~ submitted to the authority having jurisdiction ~~upon completion of the commissioning of the stormwater treatment system~~. ~~**506.12.6 Certificate of Completion.** The Authority Having Jurisdiction shall not issue the final certificate of completion until the commissioning report has been submitted and approved. Copies of the commissioning report are required to be posted, or made available with the permit(s), and shall be made available to the Authority Having Jurisdiction at any time upon request.~~ **Add new Definition:** **205.0** **Commissioning.** The activities associated with bringing a new process into normal working condition.
Problem Statement:	The proposed revisions to section 506.12 are intended to address the TC concerns related to providing more clarity to the proposal and use of acceptable code language.
Referenced Standards:	

WE-Stand 2020 – (603.14) Item # 053

Name:	Laura Allen
Organization:	Greywater Action
Recommendation:	Revise text
Section Number:	603.14
Proposed Text:	**603.14 Inspection and Testing.** Rainwater catchment systems shall be inspected and tested in accordance with Section 603.14.1 ~~and~~. When any portion of the rainwater catchment system is located indoors, or if the system includes a pump, the system shall be inspected and tested in accordance with Section 603.14.2.
Problem Statement:	Cross-connection testing and inspection should be required for any system that has potential for cross-connection. Some systems are isolated from any potable water system and non-pressurized, and so would not require cross-connection testing. I included a qualifier to clarify which systems would and would not require such testing.
Referenced Standards:	

TC Action:
Reject

TC Substantiation:
The amendment would eliminate necessary testing for all systems according to Section 603.14.1.

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 22, NEGATIVE: 2, NOT RETURNED: 4 Barbarulo, S. Mann, Potts, Smith

EXPLANATION OF NEGATIVE:
OSANN: The committee action fails to account for isolated rainwater catchment systems.
SHAPIRO: I support promoting graywater use to the maximum.

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:

WE-Stand 2020 – (603.14) Item #053

Name:	Laura Allen
Organization:	Greywater Action
Representing:	Greywater Action
Recommendation:	Request to accept code change proposal as modified by this public comment

Section Number:	603.14
Proposed Text:	**603.14 Inspection and Testing**. Rainwater catchment systems shall be inspected and tested in accordance with Section 603.14.1 and Section 603.14.2. Isolated, outdoor, gravity-flow, irrigation systems shall be exempt from testing requirements 603.14.2.
Problem Statement:	Cross-connection testing and inspection should be required for any system that has potential for cross-connection. Some systems are isolated from any potable water system and non-pressurized, and so would not require cross-connection testing. I included a qualifier to clarify which systems would and would not require such testing.
Referenced Standards:	

WE-Stand 2020 – (Table 901.1) Item # 062

Name:	IAPMO Staff
Organization:	
Recommendation:	Edit text
Section Number:	Table 901.1

Proposed Text:

TABLE 901.1 REFERENCED STANDARDS

STANDARD NUMBER-YEAR	STANDARD TITLE	REFERENCED SECTION
AHRI 1160 (I-P)-2014	Performance Rating of Heat Pump Pool Heaters	Table 705.2
APSP-14 2014*	Portable Electric Spa Energy Efficiency	418.3.1
APSP-15a-2013*	Residential Swimming Pool and Spa Energy Efficiency	418.5
ARCSA/ASPE 63-2013*	Rainwater Catchment Systems	602.1, A 104.9.1
ASABE/ICC 802-2014*	Landscape Irrigation Sprinkler and Emitter Standard	415.7, 415.12
ASHRAE 90.1-2016 (I-P)*	Energy Standard for Buildings Except Low-Rise Residential Buildings	702.1.2, 702.3, 704.2, 704.3, 704.4, 704.5, 704.6, 705.1, 705.2, Table 705.2, 705.5, 705.6
~~ASHRAE 90.2-2007~~	~~Energy Efficient Design of Low-Rise Residential Buildings~~	~~702.1.1, 703.2, 703.4~~
ASHRAE 146-2011*	Method of Testing Pool Heaters	Table 705.2
ASME A112.18.1/CSA B125.1- ~~2012~~ 2018*	Plumbing Supply Fittings	402.5.1, 402.5.2.1, 402.6
ASME A112.19.2/CSA B45.1- ~~2013~~ 2018*	Ceramic Plumbing Fixtures	402.2.1, 402.2.2, 402.3
ASME A112.19.3/CSA B45.4- ~~2008 (R2013)~~ 2017*	Stainless Steel Plumbing Fixtures	402.3.1
ASME A112.19.14-2013 (R2018)*	Six-Liter Water Closets Equipped With a Dual Flushing Device	402.2.1
ASME A112.19.19-~~2006 (R2011)~~ 2016*	Vitreous China Nonwater Urinals	402.3.1
ASSE 1016/ASME A112.1016/ CSA B125.16-~~2011~~ 2017*	Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	402.8
ASTM F2831-2012 (R2017)*	Standard Practice for Internal Non Structural Epoxy Barrier Coating Material Used in Rehabilitation of Metallic Pressurized Piping Systems	303.2
CFR 49, 178.274	Specifications for UN Portable Tanks	403.8.4.1.3, 403.9.11.4

CSA B45.5/IAPMO Z124-~~2011~~ 2017*	Plastic Plumbing Fixtures	402.3, 402.3.1
CSA B651-~~2012~~ 2018	Accessible Design for the Built Environment	402.6.1(2)
CSA Z21.10.3-~~2014~~ 2017*	Gas Water Heaters, Volume III, Storage Water Heaters With Input Ratings Above 75 000 BTU per Hour, circulating and Instantaneous (same as CSA 4.3)	Table 705.2
EPA/625/R-04/108-2004	Guidelines for Water Reuse	501.7, A 101.7
EPA/625/R-92/013-2003	Control of Pathogens and Vector Attraction in Sewage Sludge	403.8.5.2
EPA WaterSense-2007	High-Efficiency Lavatory Faucet Specification, Version 1.0	402.5.1
EPA WaterSense-2009	Specification for Flushing Urinals	402.3, Table 402.1
EPA WaterSense-2010	Specification for Showerheads	402.6
EPA WaterSense-2011	Specification for Weather-Based Irrigation Controllers	415.5
EPA WaterSense-2013	Specification for Commercial Pre-Rinse Spray Valves	402.9
EPA WaterSense-2014	Specification for Tank-Type Toilets	402.2.1, Table 402.1
EPA WaterSense-2015	Specification for Flushometer Valve Water Closets	402.2.2
IAPMO IGC 115-2013	Automatic Water Leak Detection and Control Devices	409.1
IAPMO IGC 207-2009a	Reclaimed Water Conservation System for Flushing Toilets	504.7
IAPMO PS 76-2012a	Trap Primers for Fill Valves and Flushometer Valves	416.1
IAPMO PS 92-2013e1	Heat Exchangers and Indirect Water Heaters	709.0
IAPMO UMC ~~2015~~ 2018*	Uniform Mechanical Code	101.6.3
IAPMO UPC ~~2015~~ 2018*	Uniform Plumbing Code	103.6.4
IAPMO ~~USEC~~ USHGC ~~2015~~ 2018*	Uniform Solar, Hydronics and Geothermal ~~Energy~~ Code	101.6.5
IAPMO USPSHTC-~~2015~~ 2018*	Uniform Swimming Pool, Spa, and Hot Tub Code	101.6.6
ICC A117.1-~~2009~~ 2017*	Accessible and Usable Buildings and Facilities	402.6.1(2)
NSF 14-~~2016b~~ 2018*	Plastics Piping System Components and Related Materials	302.1.1
NSF 41-~~2011~~ 2018*	Non-Liquid Saturated Treatment Systems	403.2.1
NSF 44-~~2014~~ 2018*	Residential Cation Exchange Water Softeners	406.1
NSF 53-~~2014~~ 2017*	Drinking Water Treatment Units – Health Effects	A 104.3.1
NSF 58-~~2015~~ 2017*	Reverse Osmosis Drinking Water Treatment Systems	406.3

	<table><tr><td>NSF 61-~~2015a~~ 2017*</td><td>Drinking Water Systems Components - Health Effects</td><td>A 103.2, A 104.5.1</td></tr><tr><td>NSF 350-~~2014~~ 2017*</td><td>Onsite Residential and Commercial Reuse Treatment Systems</td><td>501.7, 504.7</td></tr><tr><td>NSF P151-~~1995~~ 2014</td><td>Health Effects from Rainwater Catchment System Components</td><td>A 103.1, A 103.2</td></tr><tr><td>WQA/ASPE S-803-~~2014~~ 2017*</td><td>Sustainable Drinking Water Treatment Systems</td><td>406.4</td></tr></table> (portions of table not shown remain unchanged)
Problem Statement:	To update referenced standards to the most current documents.
Referenced Standards:	

TC Action:

Accept

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 26, NOT RETURNED: 2 Barbarulo, S. Mann

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT: 1

WE-Stand 2020 – (Table 901.1) Item # 062

Name:	IAPMO Staff
Organization:	
Recommendation:	Edit text
Section Number:	Table 901.1
Proposed Text:	**TABLE 901.1 REFERENCED STANDARDS** **STANDARD NUMBER-YEAR** / **STANDARD TITLE** / **REFERENCED SECTION** AHRI 1160 (I-P)-2014 — Performance Rating of Heat Pump Pool Heaters — Table 705.2 ANSI/CAN/IAPMO/ISO 30500-2019 — Non-Sewered Sanitation Systems — Prefabricated Integrated Treatment Units — General Safety and Performance Requirements for Design and Testing — 404.0 APSP-14 2014* — Portable Electric Spa Energy Efficiency — 418.3.1 APSP-15a-2013* — Residential Swimming Pool and Spa Energy Efficiency — 418.5 ARCSA/ASPE 63-2013* — Rainwater Catchment Systems — 602.1, A 104.9.1

ASABE/ICC 802-2014*	Landscape Irrigation Sprinkler and Emitter Standard	415.7, 415.12
ASHRAE 90.1-2016 (I-P)*	Energy Standard for Buildings Except Low-Rise Residential Buildings	702.1.2, 702.3, 704.2, 704.3, 704.4, 704.5, 704.6, 705.1, 705.2, Table 705.2, 705.5, 705.6
ASHRAE 146-2011*	Method of Testing Pool Heaters	Table 705.2
ASME A112.18.1/CSA B125.1-2018*	Plumbing Supply Fittings	402.5.1, 402.5.2.1, 402.6
ASME A112.19.2/CSA B45.1-2018*	Ceramic Plumbing Fixtures	402.2.1, 402.2.2, 402.3
ASME A112.19.3/CSA B45.4-2017*	Stainless Steel Plumbing Fixtures	402.3.1
ASME A112.19.14-2013 (R2018)*	Six-Liter Water Closets Equipped With a Dual Flushing Device	402.2.1
ASME A112.19.19-2016*	Vitreous China Nonwater Urinals	402.3.1
ASSE 1016/ASME A112.1016/ CSA B125.16-2017*	Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	402.8
ASTM F2831-2012 (R2017)*	Standard Practice for Internal Non Structural Epoxy Barrier Coating Material Used in Rehabilitation of Metallic Pressurized Piping Systems	303.2
CFR 10, Part 430	Energy Conservation Program for Consumer Products — Test Procedures	Table 705.2
CFR 49, 178.274-2011	Specifications for UN Portable Tanks	403.8.4.1.3, 403.9.11.4
CSA B45.5/IAPMO Z124-2017*	Plastic Plumbing Fixtures	402.3, 402.3.1
CSA B651-2018	Accessible Design for the Built Environment	402.6.1(2)
CSA Z21.10.3-2017*	Gas Water Heaters, Volume III, Storage Water Heaters With Input Ratings Above 75 000 BTU per Hour, circulating and Instantaneous (same as CSA 4.3)	Table 705.2
EPA/625/R-04/108-2004	Guidelines for Water Reuse	501.7, A 101.7
EPA/625/R-92/013-2003	Control of Pathogens and Vector Attraction in Sewage Sludge	403.8.5.2
EPA WaterSense-2007	High-Efficiency Lavatory Faucet Specification, Version 1.0	402.5.1
EPA WaterSense-2009	Specification for Flushing Urinals	402.3, Table 402.1
EPA WaterSense-2010	Specification for Showerheads	402.6
EPA WaterSense-2011	Specification for Weather-Based Irrigation Controllers	415.5
~~EPA WaterSense-2013~~	~~Specification for Commercial Pre-Rinse Spray Valves~~	~~402.9~~
EPA WaterSense-2014	Specification for Tank-Type Toilets	402.2.1, Table 402.1

	EPA WaterSense-2015	Specification for Flushometer Valve Water Closets	402.2.2
	IAPMO IGC 115-2013<u>e1</u>	Automatic Water Leak Detection and Control Devices	409.1
	IAPMO IGC 207-2009a	Reclaimed Water Conservation System for Flushing Toilets	504.7
	<u>IAPMO IGC 330-2018</u>	<u>Recirculating Shower System</u>	<u>220.0, 402.12</u>
	<u>IAPMO IGC 349-2018</u>	<u>Electronic Plumbing Supply System Integrity Protection Devices</u>	<u>409.1</u>
	IAPMO PS 76-2012a	Trap Primers for Fill Valves and Flushometer Valves	416.1
	IAPMO PS 92-2013e1	Heat Exchangers and Indirect Water Heaters	709.0
	IAPMO UMC 2018*	Uniform Mechanical Code	101.6.3
	IAPMO UPC 2018*	Uniform Plumbing Code	103.6.4
	IAPMO USHGC 2018*	Uniform Solar, Hydronics and Geothermal Code	101.6.5
	IAPMO USPSHTC 2018*	Uniform Swimming Pool, Spa, and Hot Tub Code	101.6.6
	ICC A117.1-2017*	Accessible and Usable Buildings and Facilities	402.6.1(2)
	NSF 14-2018*	Plastics Piping System Components and Related Materials	302.1.1
	NSF 41-2018*	Non-Liquid Saturated Treatment Systems	403.2.1
	NSF 44-2018*	Residential Cation Exchange Water Softeners	406.1
	NSF 53-2018<u>17</u>~~17~~*	Drinking Water Treatment Units – Health Effects	A 104.3.1
	NSF 58-2018<u>17</u>~~17~~*	Reverse Osmosis Drinking Water Treatment Systems	406.3
	NSF 61-2018<u>17</u>~~17~~*	Drinking Water Systems Components - Health Effects	A 103.2, A 104.5.1
	NSF 350-2019<u>17</u>~~17~~*	Onsite Residential and Commercial Reuse Treatment Systems	501.7, 504.7
	NSF P151-2014	Health Effects from Rainwater Catchment System Components	A 103.1, A 103.2
	WQA/ASPE S-803-2017*	Sustainable Drinking Water Treatment Systems	406.4
	(portions of table not shown remain unchanged)		
Problem Statement:	To update referenced standards to the most current documents.		
Referenced Standards:			

A PUBLIC COMMENT(S) WAS SUBMITTED FOR REVIEW AND CONSIDERATION.
PUBLIC COMMENT:2

WE-Stand 2020 – (Table 901.1) Item #062

Name:	Robert Pickering
Organization:	Eastern Research Group, Inc.
Representing:	
Recommendation:	Delete text
Section Number:	Table 901.1
Proposed Text:	~~EPA WaterSense-2013. Specification for Commercial Pre-Rinse Spray Valves. 402.9~~
Problem Statement:	Remove reference to the WaterSense Specification for Commercial Pre-Rinse Spray Valves. This specification was sunset January 1, 2019 and EPA is no longer labeling this product category. Reference to the specification was approved for removal based on Item #013.
Referenced Standards:	