



**Comments by Subject on the May 2008 Draft
Water-Efficient Single-Family New Home Specification**

September 2008

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§1.0-c1	Diane Freethy	EPA appears to be acting "sensibly" to encourage water use efficiency. However, given the threat of global warming and the inevitability of aquifer depletion in many areas of the country, more stringent restrictions on new homes and buildings are imperative and should be given high priority status to facilitate timely adoption. Diane Freethy, President Skagit Citizens Alliance for Rural Preservation Sedro-Woolley WA 98284
§1.0-c2	Connie Williams	TO: The EPA WaterSense Program RE: Requirements for a WaterSense Builder Partner The Plumbing-Heating-Cooling Contractors National Association has a vital interest in the specification for WaterSense New Homes. As the installers of water efficient products, PHCC members and other plumbing contractors are best positioned to insure that a quality installation is completed so that the home owner is able to achieve water efficiency with the proper installation of products that comply with applicable codes and standards. Most new homes do not have specifications for pipe/equipment sizing, venting and load calculations that are necessary to insure that the total installation is not only water efficient but also that it works to the satisfaction of the home owner. Anyone who is not properly trained in plumbing will make decisions that could compromise the entire plumbing system resulting in a poorly constructed system that does not meet the water efficiency that WaterSense is seeking. Therefore PHCC feels it is important that the WaterSense brand include specific requirements for the WaterSense Builder Partner to use a properly licensed plumbing contractor where licensing is required and a contractor or plumber who has received additional training in water efficient installations such as GreenPlumber® training, whenever possible. To achieve this important addition to the WaterSense specification for new homes, we recommend that you include the following language under 1.0 Scope and Objective: "A Builder Partner of the WaterSense Program shall insure that all plumbing installations are completed by a competent -- and where it is a requirement, licensed -- plumbing contractor. Additionally, it is highly recommended that the plumbing contractor and his/her workforce have additional training in water efficient installations such as that offered by the GreenPlumber® program." Thank you for your serious consideration to include this important statement in the WaterSense Home specification. We will be glad to offer additional information if necessary. Sincerely, Kevin Tindall, Jim Finley, D. L. "Ike" Casey
§1.0-c3	Hugh Gramling	Is there a quantifiable goal, either in terms of water use or percent savings? It is understandable that this may have been omitted by design since outdoor water use is so variable across the nation. While it is stated that the intent is not "to contravene local codes and ordinances," there should be a specific requirement that the homes, landscapes and irrigation systems meet all national, state and local regulations

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§1.0-c4	Tom Swihart	<p>“Section 1.0 Scope and Objective” should include a quantifiable goal, even if it is not an explicit requirement of the specification. Table 2 on page 14 of the Specification Supporting Statement indicates an expected 21% indoor savings. This would seem to be the minimum desirable goal.</p>
§1.0-c5	Steven Malloch	<p>General Comment: WaterSense certification is directed at reducing water consumption by occupants of a newly constructed home. However, this focus misses a critical element – given concern about water-related issues, should any house be built in this particular location? For instance, a house built within the hundred-year flood zone in a flood plain makes a mockery of a “WaterSense” certification. NWF suggests adding a short set of basic qualifying criteria that all homes must meet before being considered for certification: that the homes not be built within a hundred-year flood plain; in former wetlands; or in designated critical groundwater recharge zones.</p> <p>General Comment: NWF recommends adding WaterSense certification criteria that address erosion control and limiting impervious surface area. These criteria would at least partially address concerns that a standard that limits irrigated landscaping might tend to increase paving, or other impervious surfaces that lead to stormwater runoff and its attendant problems.</p> <p>General Comment: Given the rapid development of certification systems for construction and other goods, as well as expected evolution of products and approaches to water and energy conservation, EPA should provide for periodic comprehensive review of the WaterSense certification standards. We suggest that the standards be established with an explicit statement that they will be reviewed, revised and strengthened in 3 years. As topics to be incorporated in future certification systems, we strongly suggest strengthened fixture and appliance standards, onsite reuse of water, use of centrally supplied reclaimed water (purple pipe systems), rooftop stormwater capture and use systems, and on-site stormwater retention and management systems.</p> <p>General Comment: In the WaterSense certification program, EPA is attempting to create national standards for a country that has climate varying from temperate rain forest to blazing desert. While this range of climate is less important for indoor standards, it makes a huge difference for the outdoor water standards. While the standards put forward are a reasonable attempt to bridge those extremes, some recognition of climate variation is appropriate. As a means to recognize local variation, NWF suggests that, in addition to the requirement to meet national criteria, WaterSense certification be limited to homes designed to use less than 80% of the local median single-family dwelling annual water use. For this</p>

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		<p>purpose, local would mean either the municipal or private water district serving the home, or, if none, the county in which the home is located.</p> <p>General Comment: WaterSense certified homes should at a minimum meet or exceed the most stringent locally applicable codes, ordinances, guidance and guidelines.</p>
§1.0-c6	David Del Porto	<p>I have been watching the evolution of this standard with interest as I have been involved with water efficiency since 1972. I applaud the effort to identify technologies for efficiency as I serve on the NSF International Waste water Technology Committee and co-author ANSI-NSF performance Standards. We are presently drafting a reuse standard for on-site buildings and property owners. I am very concerned that that water reuse are not included! I have attached a compendium of reuse standards for your perusal.</p>
§1.0-c7	Cindy Patterson	<p>Thank you for this initiative for the draft specification for water-efficient single-family new homes. We also need to look at how we can reuse our gray water for new home construction. It will also be wonderful to retrofit the homes already built so that everyone will be under the WaterSense program. Thank you once again for this program. Cindy Patterson</p>
§1.0-c8	Jenny Hoffner	<p>We recommend that the final specification provide that the Watersense label is not available for homes built within 100-year flood plains as mapped by the Federal Emergency Management Agency or for homes that fill and/or destroy water bodies, including wetlands (as identified using the 1987 Corps of Engineers Wetlands Delineation Manual).</p> <p>By keeping home construction out of water bodies/wetlands, the natural filtering and sedimentation processes that cleanse our surface water sources can occur. This results in a cleaner water source and, therefore, less cost and processing on the part of the water utility to filter and treat the drinking water and will result in less microbial outbreaks and lower amounts of disinfectant and disinfectant by-products. Moreover, maintaining an intact natural hydrological system preserves sufficient supply of water via groundwater recharge and maintaining surface water flows. This is completely consistent with the purpose of WaterSense. We urge EPA to incorporate these changes to the WaterSense New Homes specification to provide a stronger and more effective program.</p>
§1.0-c9	Mike Baron	<p>CLCA recommends that the EPA use as a guiding principle the notion that whenever competing specifications are being considered for EPA WaterSense labeling, that the specification that favors freedom of choice for the consumer as well as freedom of choice for the green industry professional be preferred and more highly valued. This recognizes that EPA WaterSense partners, whether in the design, installation, maintenance or management part of the process, understand and want to promote</p>

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		<p>the intent of the EPA WaterSense labeling program and that they will avail themselves of those practices and products most likely to help achieve WaterSense labeling goals. By minimizing specific proscriptions for product selection or design elements and instead focusing on the desired outcome –to reduce water use by 20 percent over the marketplace norm –the EPA will make more progress in achieving its WaterSense labeling objectives than by detailing the minutiae of design parameters and/or product performance characteristics.</p>
§1.0-c10	Carole Baker	<p>The Alliance for Water Efficiency welcomes the publication of the draft specification for WaterSense New Homes. Across our diverse membership of water utilities, environmental organizations, manufacturers, and installers, Alliance members maintain a strong level of support for the WaterSense Program and a desire to see it expand in a timely and orderly way. The April 23 draft of the WaterSense New Homes specification marks a solid beginning for WaterSense participation in the labeling of whole buildings based upon published criteria of sustainability – a field seeing explosive new growth in the level of public interest. This letter briefly summarizes some general concerns. More detailed section-by-section comments are contained in the attachment. These comments have been prepared by our WaterSense and Water Efficient Products Committee and affirmed by our Board of Directors. A successful New Homes specification will involve many more WaterSense Partners, and bring with it a concurrent obligation for EPA to remain vigilant that the WaterSense brand is not compromised through its application in dubious circumstances that will raise questions in the minds of the public. As noted in the attachment, WaterSense-labeled new homes built in flood plains or wetlands have great potential to tarnish the brand, and there are many other circumstances as well that could diminish the value of the label. The number of homebuilders is far larger than the number of manufacturers of any single product in the WaterSense program. Accordingly, we recommend that EPA give special attention to the need for close collaboration with WaterSense homebuilder partners, to ensure that technical compliance with the criteria is accompanied by respect for the integrity of the brand. As noted in the past, the WaterSense Program is designed to bring savings to individuals and to communities. Lowering consumer utility bills and lowering community infrastructure costs are two sides of the same coin. Both aspects of the value of WaterSense should be stressed at every opportunity, including the Scope and Objectives section of the New Homes specification. While we believe that the April 23 draft is a good start, we note that there are some significant gaps that should be remedied before this version of the specification becomes final. First, the specification is silent about the overall system of compliance verification and certification, although reference is made to a landscape audit. There is an inevitable interplay between the specifics of</p>

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		<p>the performance criteria and the demands of a practical and affordable certification regime. The system of compliance verification should be spelled out before the specification is finalized to ensure that the two are fully compatible. Similarly, the methodology for preparing and applying a water budget to landscape water use is alluded to but not included in the current draft. It is difficult to asses the likely success of the water budget approach to landscape water management without the opportunity to review the specific methodology. This also should be made available before the specification is finalized.</p> <p>Also lacking from the draft specification is any targeted metric for the increment of water savings expected or sought from the WaterSense New Homes criteria. Other elements of the program have aimed for at least 20% savings above standard offerings. This would seem to be a reasonable and obtainable goal for the New Homes specification. EPA’s intentions in this regard should be shared with stakeholders prior to finalization of the specification.</p> <p>Additionally, we believe that the lack consideration for stormwater management is a substantial shortcoming that should be remedied. Stormwater management is a significant part of the community water and wastewater infrastructure gap that EPA has identified nationwide. Benefits for the protection of groundwater supplies and surface water quality will leverage additional value from the WaterSense brand without detracting from end-use efficiency measures which have similar objectives. While a truly ambitious set of criteria must necessarily await a subsequent version of this specification, even a basic stormwater management component will make this version of WaterSense New Homes more valuable in more communities. The attached comments offer suggested language for this initial effort. In future years, the New Homes specification must necessarily be subject to periodic review and revision. We recommend that EPA consider the subject of on-site reuse of reclaimed water and stormwater for comprehensive treatment in a subsequent version of the specification. We also note that product-specific WaterSense specifications are under development for showerheads and irrigation controllers. This first version of the New Homes specification should make provision to incorporate such product-specific specifications when complete, without waiting upon an entire reissuance of the specification.</p>
§1.0-c11	Clint Elston	<p>As a Stakeholder, the Equaris Corporation appreciates the opportunity to offer comments regarding the proposed specification for Water-Efficient Single-Family New Homes. Equaris Corporation (Equaris) is, and has been engaged in the water conserving, pollution-preventing wastewater treatment industry for more than 30 years, and in the rainwater harvesting and greywater/recycling industry for almost 10 years. Over this period, Equaris has garnered the requisite experience in these industries. Very few entities have such experience in all of these industries. Equaris has been recognized as a leader in the</p>

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		<p>rainwater harvesting and separation of blackwater and greywater treatment and recycling businesses, and has engineered several improvements and innovations -- a point not lost in the three United States Patents issued to us. Introduction Equaris asserts that the proposed specification would be established from a premise that the rainwater harvesting and blackwater and greywater treatment and/or reuse or recycling industries are immature and that regulations may need to be addressed in the future for these technologies to be included in the WaterSense Program. Rainwater harvesting and blackwater and greywater separation practices have been utilized in Water-Efficient Single-Family homes for centuries and long before commingled blackwater and greywater indoor wastewater plumbing was even a concept. ("THE PROCELAIN GOD" by Julie L. Horan, Carol Publishing Group, 1996 and "Goodbye to the Flush Toilet" by Carol Hupping Stoner, Rodale Press, 1977). According to the scope of the specification, it is intended to reduce indoor and outdoor water usage in new residential homes. Equaris is appreciative of the efforts by the EPA to standardize these requirements and in that spirit, offers these comments:</p> <p>General Comments:</p> <p>Generally speaking, Equaris agrees that ALL industries need to have standardized regulations, or at a minimum, regulations that address aspects of those industries for new homes. However, the proposed specifications do not incorporate the proven technologies of rainwater harvesting, blackwater and greywater treatment, reuse and/or recycling, which are in direct contravention of the main goal of the USEPA WaterSense Program: "The main goal of the program is to decrease indoor and outdoor non-agricultural water use through more efficient products, services, and practices and create a program that helps customers differentiate between products in the marketplace, while ensuring product performance and ENCOURAGEING INNOVATION IN MANUFACTURING." http://www.epa.gov/OW-OWM.html/water-efficiency/pubs/questions.htm</p> <p>Specific Comments: The current proposal does not include all water supply and wastewater treatment technologies in that only traditional piped water or drilled water wells and commingled wastewater technologies (septics and sewers) are addressed. Rainwater Harvesting and Blackwater and Greywater Wastewater Separation Technologies are not included. If the specification includes both conventional pipes or wells and commingled wastewater discharging technologies and rainwater harvesting and separation wastewater treatment with greywater treatment and/or reuse or recycling technologies, the realized savings is potentially much more than the 20 percent EPA WaterSense Goal over what can be</p>

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		<p>obtained in standard new home construction. Such technologies are and have been available for decades. Rainwater harvesting companies exist throughout the US as well as countless other countries. With the simple installation of the Equaris Biomatter Resequencing Converter (BMRC) and the SeaLand Ultra-Ultra Low Flushing toilets (0.2 gallons of water per flush) this then eliminates the need for the conventional 1.6 or new 1.28 gallon/flush commingled toilet fixtures in new home construction and produces water savings of at least 26.7 percent. See, EPA-832-F-06-004. Practically, when all of the Equaris Technologies are utilized in a single family home, replacement water usage is reduced by 95 percent - only 5 gallons of water, instead of 100 gallons of water per person per day is needed for makeup water. The commensurate electricity usage and cost by using the Equaris Water Recycling System at \$0.07/kilowatt hour is \$.001 per gallon -- an incredible savings. Further, Equaris asserts that the concept and practice of water recycling is not novel. As an example, Frost & Sullivan commented in the December 2007 Water Technology article "The role of POU/POE in Water Recycling," that "the opportunities for water reuse are tremendous" with classifications and definitions of the various types of recycled water (West Basin Municipal Water District in Southern California). Also, another company, Brac Systems (www.bracsystems.com) provides a reliable means and System for recycling greywater for toilet flushing only. That company's product would also reduce overall water consumption by at least 25%. At the Stakeholder meeting of January 26, 2007, Equaris representatives explained that there are two distinct methodologies in wastewater treatment for black and greywater commingled, and black and greywater separated. Comments made by other WaterSense Stakeholders in the "Summary of Stakeholder Comments on Preliminary Draft Technical Criteria for WaterSense Labeled New Homes" regarding greywater recycling included Mr. Jim Lutz and rainwater harvesting comments were made by Mr. Dave Bracciano, Mr. Larry Acker and Mr. Dan Stubb. Comments regarding separate piping for greywater were made Mr. Gary Klien. Even though both of these non-traditional or unconventional proven water-conserving technologies were acknowledged by those EPA Stakeholders as well as by Equaris, neither rainwater harvesting or blackwater and greywater separation technologies are included in the Preliminary Draft Technical Criteria for WaterSense Labeled New Homes. Even though these Stakeholders as well as Equaris voiced their concerns and recommendations regarding rainwater harvesting, separate piping and greywater systems, the coordinator of the WaterSense Program commented; "There are very strict State and local codes concerning graywater systems because there are not enough staff to inspect all of these systems. The playing field is not level across the nation and the industry is not very mature. This may be something to address in future versions of the specification."</p>

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		<p>We dispute that the industries are immature, noting that there are Water Reuse and related organizations that exist nationally and internationally. According to the Water and Wastes Digest magazine of January 2006, EPA Releases Updated Version of Guidelines for Water Reuse, “Nationally, the USEPA estimates that an average of more than 1.7 billion gallons of wastewater is reused per day.” Also in that same article it states, “Guidelines serve as a tool for comparing the approaches of 34 states with reuse regulations in place.” Conclusion A specification establishing process for new homes that does not include ALL available technologies does a disservice to the USEPA WaterSense Program goals of promoting innovation in product development to use less water. The Rainwater Harvesting and Blackwater and Greywater Treatment and/or Reuse or Recycling Industries thus encourage the USEPA WaterSense Program to incorporate at this opportune moment, ALL the available water-saving technologies in the specification. It is doubly difficult to go back to the process of establishing standards when the readily available technologies are not included at the specification setting opportunity. As a Stakeholder, Equaris is willing to offer more details on this and all other related technologies for these specifications and industries. Again, we applaud the efforts to establish this specification and call for the inclusion of ALL available and proven technologies in a logical and timesaving process. Sincerely, Clint Elston WaterSense Stakeholder</p>
§1.0-c12	James McNew	<p>The Outdoor Power Equipment Institute (OPEI) appreciates the opportunity to submit comments in response to EPA’s draft Water-Efficient Single-Family New Home Specification. OPEI is the international trade association that represents all the major manufacturers of lawn and garden, utility and forestry equipment, including manufacturers of handheld products (like chainsaws) and ground-supported products (such as lawnmowers). These products maintain and nurture green lawns, landscapes and healthy forests, which in turn provide enormous quality of life, health, and environmental benefits, including the sequestration of carbon dioxide and other green house gas emissions, reductions in storm water runoff, and mitigation of the heat island effect plaguing many of our cities and communities. OPEI members produce not only the cleanest engines and equipment, but also new materials, technologies and emission controls that are part of the environmental solutions for today and tomorrow. In addition to the comments document, I am also providing the reference documents contained within. [comments attached as file] Sincerely, James McNew VP, Technical and Marketing Services Outdoor Power Equipment Institute (OPEI) 341 South Patrick Street Alexandria, VA 22314 (703) 549-7600 www.opei.org</p>
§1.0-c13	Peter Kroopnick	<p>Provide direct payment to inspectors. Now it costs more to have inspector certify an energy efficient home than the owner receives in tax credit. Therefore there is little incentive for an individual home</p>

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		owner. Dr. Peter Kroopnick; RG, PH ARCADIS Inc. 8222 S. 48th St., Suite 140 Phoenix, AZ
§2.0-c1	Nate Kredich	<p>As with any new program, market adoption can be an early hurdle. Because the WaterSense program is relatively new, many LEED for Homes projects have found it difficult to locate and install WaterSense approved faucets, toilets, irrigation specialists, etc. Hopefully this early issue will subside as the brand grows, but in the short-term finding a balance between the goal of market transformation and the availability of products and services that are able to meet that end may be a major hurdle for the program. USGBC hopes to play an active role in encouraging the market acceptance of the WaterSense program.</p> <p>The LEED for Homes program does not mandate many of these strategies listed in the WaterSense specifications, but provides a flexible approach whereby the builder is expected to select a handful of strategies that work within the constraints of the project. Using this flexible approach, LEED for Homes has now certified roughly 1,000 homes. In reviewing the data for these homes, we found that only 50 would meet all of the WaterSense criteria. Of these 50, nearly all were high-end custom builders and 30 earned Platinum – the highest achievement in the LEED system. While market transformation relies on early adopters, who are often part of the high-end custom market, we believe it is possible to attain a high level of water efficiency for production built homes and affordable housing projects. However, in order for these sectors of the market to meet water efficiency criteria, they must be allowed some flexibility in how they meet the requirements to allow for budgetary constraints and scalability.</p>
§3.0-c1	Paul Lauenstein	<p>I have not yet read the WaterSense specifications for a water-efficient single family new home, but I hope they will include: High Efficiency Toilets (under 1.28 gpf) Front-load clothes washers (EnergyStar water factor under 6.0) Water-efficient dishwashers (under 4 gallons per cycle) Single head showerheads (not manifold) of 1.75 gpf or less Instant hot water (maximum 10-second lag until water comes hot) Low-flow faucets (1.5 gpf in bathrooms and 2.0 gpf in the kitchen) Water meter with leak detection feature No automatic irrigation of lawn, and at least 6” of at least 5% organic content soil to hold moisture.</p>
§3.0-c2	Michelle Robinson	<p>Dear EPA / WaterSense team, I am very excited to hear you're working on developing a Water-Efficient Single Family New Home Specification. As a sustainability specialist consulting on numerous LEED and other sustainable projects, I am very happy about this advance. Below are my recommendations for improvement on the draft spec. 3.1 - Great! 3.2 - Great! 3.3.1 - I'd love to see more efficient faucets at 1.0 gpm for bathroom hand washing purposes. They can work just fine and people don't even have to notice a difference... More savings would also reduce the payback period to make it more attractive...</p>

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		<p>3.3.2 - It seems like this could be improved. At least limit it to 2.0 gpm max. The 0.2 gpm won't really affect anyone's ability to fill a pot, but will at least encourage the industry to get more creative with kitchen faucets. (In the future, it'd be great to require a 1.5 gpm or 1.0 gpm flow rate default with a 2.0 gpm flow rate achievable upon flipping a switch/pressing a button. An example would be if the pull out faucets that have the regular stream and the spray were to default to a regular stream of 1.0 gpm (or default to a spray of 1.0 gpm) and then only upon pressing the button on top would you get the full 2.0 gpm out of the other option. Of course manufacturers need to start offering this, but... It's amazing how many people leave the water running while they wash dishes. A lower flow default would generally take care of most purposes, and when you need to fill a pot, etc, you could still get the higher flow rate...) 3.4 - I really like the total limit to 2.5 gpm. Hopefully the WaterSense labeled showerheads will be developed ASAP and incorporated soon. (I'd almost encourage you to limit an individual showerhead to max. 2.0 gpm for now so at least it requires an improvement even in the first homes to get labeled.) 3.5 - I appreciate the water savings, but I'm concerned about the energy usage of recirculating systems. Of course since it's a demand-initiated system, it seems better... 3.6 - Great to see this here, too! 3.7 - glad to see min. efficiency for the drinking water treatment systems. Is the wording clear that the efficiency is with regards to water and not to what pollutants they remove from the water? 4.1 - I wish there was a way to address hoses and sprinklers that get manually put out in the yard. I'm glad that the amount of turf is limited to begin with, that will definitely help. Perhaps require an information sheet in the Operating Manual about if hoses are needed for watering what makes them more/less effective (remind people to water in the early morning/late evening, perhaps talk abt. the efficiency of spray sprinklers, how to locate the sprinklers so they're not watering the driveway/sidewalk/etc., how long to water at a time for various items (when sprouting new grass, when watering grass, when watering a new bush, when watering a new tree, when watering the flowers, etc.) 5.0 - See comments on 4.1 above. Also include information sheet about finding and repairing leaks in a house. Maybe also a reminder that saving water also saves energy and money (water doesn't have to be treated in the municipality, but less hot water in the house has to be heated if you're using less, plus the monetary savings for not paying for as much water nor sewer.) Perhaps the information sheets are ones that the EPA/WaterSense team can produce and simply require them to be included in the information packet? Great job! Keep it up!!! Michelle Michelle L. Robinson, LEED® AP Re:Vision Architecture</p>
§3.0-c3	Steven Malloch	Indoor Water Efficiency Criteria, 3.0: All WaterSense certified homes should have individual water meters, no matter the source of water supplies.

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§3.0-c4	Nate Nivens	<p>Dear Sir or Madame, Let me start by saying that this specification is commendable in its effort to improve the efficient use of our water resources. Like the EPA, our company and I personally believe water is a valuable asset and will continue to become more valuable as time passes. While efficient use of water generally implies efficient use of sewer, this is not always the case. Ground and rain water infiltration inflow cause significant peak demand problems for sewer collection and treatment plant systems nationwide. EPA publications and studies by others have shown as much as 80% of all infiltration inflow enters on private property. My comment on this standard: The EPA should consider requiring sewer meters at each residence to ensure the water being sent back to the sewer treatment facilities is from the water utility and not from ground or rain water sources emanating from private property. When water meter data is compared to sewer meter data, infiltration and inflow is easily detected (Sewer Meter Volume > Water Meter Volume = I/I detected). Efficient water usage should include efficient sewer usage for truly sustainable lowest overall cost infrastructure. Read more about sewer service meters at: http://www.city-meter.com Thank you for considering my comments above. Sincerely, Nate Nivens Senior Vice President City Meter, Inc.</p>
§3.0-c5	Kenneth Molli	<p>Since these specifications are designed to provide structural methods for reducing water usage, please consider the following as additional structural ways to increase long-term water efficiency: 1. Service lines to property should be sized properly for the application, with the appropriate sized meter. (Service lines and meters tend to be oversized, resulting in more hydraulic capacity than what is needed to meet the requirements of the application. An oversized meter might also cause the owner to incur higher rates as a number of utilities base certain costs based on meter size. Oversized service lines place a reservation on hydraulic demand that might not be needed and can be used for other purposes or to offset the need for additional sources of supply). 2. If property is equipped with a fire line for fire suppression, either separately or part of the domestic water line, it should be metered. 3. Water line feeding outside water use should have its own meter. (Separately metering for water that can be used outside allows for more accurate registration of water going into the wastewater system and enables utilities to consider a more accurate rate structure for outside water and wastewater usage than a comparison between wet and dry seasons. Inverted rate blocks are designed to discourage or limit outside water use, but are poor proxies for actual measurement of water used. Automated meter reading allows for cost effective reading of any additional meters). 4. Homes should be equipped with a convenient in-home water usage monitoring device. Several devices are available from meter manufacturers through the water utility. Thanks, Ken Kenneth C. Molli, Senior Consultant McDonough</p>

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		Associates Inc.
§3.0-c6	Kent Beck	<p>Thank you for the opportunity to comment on the draft to develop criteria for the WaterSense® Program for Water-Efficient Single-Family New Home Specification to reduce indoor and outdoor water usage in new residential homes and encourage community infrastructure savings.</p> <p>We would like to offer the following comments: One area that has not yet been addressed in the draft specifications for a water efficient new home is the drainage system in the home which provides the backbone infrastructure for waste disposal. Attention to the drainage system becomes increasingly important now that there is a concentrated movement to reduce water flow rates and flow volumes. In addition, reclaiming effluent water for reuse also preserves water resources and reduces unnecessary wastewater infrastructure cost by reducing necessary water consumption in our communities.</p> <p>Water conservation through reduced rates and volumes which result in lower pressure and volumes of water adversely affect the ability of conventional drain systems and piping to effectively manage waste. For example, the piping between the sink or lavatory and the wall typically includes connective piping and a J-Bend (P-trap) to prevent sewer gasses from entering the home. Unfortunately, the P-trap (due to its inherent design) also traps waste debris which can block or slow the drain system. A relatively high flow rate of water is needed to maintain reasonable flow through the trap area to maintain cleaning efficiency. The improved standards to conserve water through the use of high efficiency faucets and the education of the public to reduce water use combine to lower flow rates and pressures further reducing the cleaning efficiency of a typical P-trap drain system.</p> <p>Typical corrective actions include:</p> <ul style="list-style-type: none"> a) Running hot water for long periods to evacuate debris and biofilm buildup b) Filling the sink with water to develop a head of water to flush the drain c) Use of chemicals such as acid or alkali solutions to clean the piping d) Use of mechanical drain openers (plungers, snakes, etc.) e) Removal and replacement of P-Trap <p>Negatives of corrective actions:</p> <ul style="list-style-type: none"> a) Running hot water for long periods – <ul style="list-style-type: none"> i. Waste of prolonged running of water ii. Waste of energy to heat the water b) Filling the sink with water to develop a pressure head to evacuate the drain <ul style="list-style-type: none"> i. Waste of water

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		<p>c) Use of chemicals</p> <ul style="list-style-type: none"> i. Chemicals are poison and create a safety hazard ii. Chemicals are corrosive and can damage piping iii. Chemicals are reactive and can cause burns/injuries iv. Chemicals create fumes that can damage the lungs v. Chemicals contaminate the waste water which contaminates gray water systems and creates water treatment problems. vi. Chemicals can inhibit proper function of the household septic system tank and drain field. <p>d) Mechanical drain cleaners</p> <ul style="list-style-type: none"> i. Increases cost to owner ii. Exposes owner and inhabitants to bacteria, fungi and other materials in the drain. <p>e) Removal and Replacement of P-Trap</p> <ul style="list-style-type: none"> i. Exposes home to sewer gasses during repair ii. Exposes home and repair person to biofilms/bacteria/fungi growth <p>in piping</p> <ul style="list-style-type: none"> iii. Replacement of conventional P-Trap and other accessories made of Polypropylene usually results in these being discarded as trash in landfills which has an impact on the carbon footprint. <p>f. Inconvenience</p> <ul style="list-style-type: none"> i. Many people do not perform their own maintenance. They depend on plumbing service providers to maintain their drain systems. This can cause loss of time and interruption of daily schedules. <p>System attributes that would prevent, reduce or eliminate these issues:</p> <ul style="list-style-type: none"> • Choice of components that reduce blockages even at low flow rates • Choice of components that reduce the need for chemical drain openers • Choice of components that allow easy inspection without need to open the drain system • Choice of components and practices that improve the quality of installation • Choice of components that enhance self maintenance • Choice of components with expected long life and recycle ability • Owner education to support the benefits of water conservation and the prevention of pollution of our water resources and the environment through improved choice of products for the homes. <p>Expected outcome of including this area in the new standards:</p> <ul style="list-style-type: none"> • Quality systems are available to inhabitants that will perform well in light of the drive for water

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		<p>conservation through reduction in flow rates and flow volumes, have a long life, are safe, and provide the opportunity for easy inspection and maintenance with focus on health, safety and environment</p> <ul style="list-style-type: none"> • Builders have guides and an incentive to install quality products and systems • Manufacturers have the guides and incentive to develop new products • Facilitating uncontaminated grey water for immediate use by the homeowner will reduce the strain on municipal treatment and conveyance services in large cities. Smaller and rural towns may not require grey water treatment services, again providing community infrastructure savings. <p>Possible wording: 3.7.4 Sink and lavatory drain systems – The drain system (between the sink and the wall) will be equipped with fixtures that allow:</p> <ol style="list-style-type: none"> a. Efficient drainage at lower flow rates b. Diagnosis and remedial cleaning without the need for removal of the fixture c. Reduce the need to use chemicals to clear the potential build-up in the trap area. <p>In conclusion, there are a number of systems on the market that will enable the home owner to effectively manage their drainage system which can in turn, encourage improved community infrastructure savings. The focus should be on education, diagnostics, prevention, and remediation without external intervention such as chemical treatments or mechanical methods that expose people to harmful chemicals, sewer gases, microbes or fungi.</p> <p>We respectfully submit our comments in support the EPA's water conservation efforts. If you have questions, comments or need further information, please do not hesitate to contact me directly. Sincerely, Kent Beck, President, PF WaterWorks</p>
§3.1-c1	Rodney Huffman	<p>The specification of pressures in "kg/cm2" is nonstandard, at best. The customary unit for pressure in SI is the "pascal". Since numerical values in Pa are often quite large, kilopascals (kPa) or megapascals (MPa) are also used. The U.S. customary "psi" is "pounds-force per square inch". The SI kilogram is a unit of mass, not force. SI force units are "newtons" and it is customary to use Pascals (newtons per square meter) when specifying pressures. 1 psi = 6.895 kPa (approximately). If you want this specification to be usable in both unit systems, use kPa for SI pressures. Rodney L. Huffman, Ph.D., P.E. Biol. & Agr. Engineering Dept., NC State Univ.</p>
§3.1-c2	Bill Christiansen	<p>The pressure of water at a home can greatly influence the amount of water used and wasted. The location where the pressure is measured is important, since it can vary greatly depending on the relative elevations of service connections and home elevations. Static pressure should be measured at the</p>

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		home, at a hose bib or nearest fixture, and not exceed 60 PSI.
§3.1-c3	Kevin McCray	<p>The National Ground Water Association, which represents water well system professionals among its diverse membership, provides the following comments to the proposed WaterSense household water use specification:</p> <p>The proposed upper limit for the water pressure is 60 psig. And that is at the water meter. This means the actual water pressure at the fixtures throughout the home will be less than 60 psig. NGWA suggests that the actual water pressure at each fixture be calculated and the water use of each fixture be calculated at that pressure. All fixtures have a maximum gpm rating. If the total average use falls within the parameters of the total fixture use, then a pressure regulating device is not required even if the incoming water system pressure exceeds 60 psig.</p> <p>For example, a sink or shower in a basement could have a higher flow rate, but the sink or shower on the second floor would have a lower flow. This will probably be perceived as too cumbersome, but a simple spreadsheet with plug-in elevations would provide an acceptable calculation tool.</p> <p>In 1 section there is a rating for a shower head of 2.5 gpm @ 80psig. In the very next paragraph, the limit is 2.5 gpm per 2,500 in2. The rating of 2.5 gpm @ 80 psig should not be referenced and the standard of 2.5 gpm per 2,500 in2 should be the parameter for showers.</p>
§3.1-c4	Kevin Morrow	<p>Section 3.1 requires builders seeking certification to ensure the domestic water delivery system maintains a static service pressure of 60 psi or less with compliance achieved by using a Pressure Regulating Valve (PRV) downstream of the water meter and all fixture connections downstream of the PRV.</p> <p>Comment 1: This requirement presents problems for well-based systems which, by design, have service pressure variances that correlate with usage. According to the National Ground Water Association, over 13 million U.S. homes are served by privately owned individual wells. The static pressure requirement makes obtaining a WaterSense label unduly difficult, expensive and energy-inefficient for this group by requiring the system pump to work unnecessarily in order to maintain a prescribed static pressure (in other words, the pressure in the tank varies by 20psi or more). The language used in this section should distinguish requirements for publicly supplied water against non-publicly supplied water and service pressures should be allowed to vary for well-based systems, provided the variances do not exceed 60psi.</p> <p>Comment 2: The addition of a PRV can impact the design requirements for home fire sprinkler systems. The program criteria and supporting statements should note this important issue so that builders who</p>

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		include fire sprinkler systems and want to follow the WaterSense program can communicate appropriately with their installers and be prepared for potential design alterations and cost increases.
§3.1-c5	Ivy Munion	The design PSI as stated in the Watersense Homes guidelines does not comply with what AWWA states as required for existing/new design PSI minimums. Existing distribution line to site to provide minimum dynamic PSI of 20 minimum per AWWA current guidelines. New installations are only required to have a minimum dynamic PSI of 40. It may behoove the EPA's Watersense program to collaborate with AWWA to rewrite their antiquated guidelines to increase the dynamic PSI required (within the allowable velocity of 10 feet/second) up to 60 static PSI, or 55 dynamic for residential and 65 static, or 60 dynamic for commercial sites. Ivy Munion-ASIC Professional, CLIA, CID, WaterSense Partner ISC Group, Inc.
§3.1-c6	Ajita Rajendra	A.O. Smith supports the proposed requirement (Section 3.1) for a pressure regulating valve to limit the household water pressure to 60 psi. However, pressure-regulating valves act as check-valves and thus make the plumbing in the home a "closed" system. Consequently, when water is heated in a water heater, there is no place to take up the expansion which occurs upon heating water. This can lead to significant pressure increases through-out the entire plumbing system when water is heated. These high pressures put extra stress on the fixtures, resulting in premature seal failure (aka drips). Dripping fixtures are a significant source of water waste. This problem can be easily and cost-effectively eliminated by the addition of an expansion tank to the water distribution system. While most manufacturers of water heaters either recommend or require the use of an expansion tank, it is often not installed. Prudence suggests that if a pressure-regulating valve is installed, an expansion tank should also be installed. A.O Smith believes that when WaterSense requires a pressure-regulating valve, it should also require an appropriately sized and installed expansion tank.
§3.1-c7	Timothy Malooly	Service pressure at 60 psi or less, combined with water volume limitations typical of residential construction may pose certain constraints when designing or operating landscape irrigation systems on larger properties or those dependent upon broadcast irrigation. Although high efficiency irrigation is desired, water supply size and pressure is nevertheless important as relates the ultimate performance of an irrigation system and subsequent programming efficiency. Suggestions: "70 psi or less and not less than..." 1" water service on properties of 32,670 square feet; 1.25" water service on properties of 32,671 through 65,340 square feet; 1.5" water service on properties of 65,341 through 87,120 square feet; 2" water service on properties of 87,121 through 130,680 square feet. The square foot assumptions above include assumption that the building and hard surface footprint will occupy up to 50% of the smaller properties and approximately 25% of the larger properties.

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§3.3-c1	Martha Rose	Here are my comments regarding the Draft of the Water-Wise homes. 3.3.1 Lav faucets: We purchase an adaptor for the existing Moen faucets that we love. It reduces the flow to .5 gpm, but the faucet is technically not water-wise labeled. Please don't mandate the label when there are other ways to achieve this. 3.3.2 By installing a separate 1.0 gpm cold filtered-water faucet at the kitchen sink, much water can be saved, by eliminating the running of the main faucet to draw out suitable drinking water. It also allows an owner to get out of the plastic water bottle habit. Martha Rose, president Martha Rose Construction, Inc.
§3.3-c2	Maribel Balbin	We hope that the specifications for showerheads and kitchen faucets will reflect the latest technology which is 1.5 gpm. To leave these two major water waster fixtures at the current or even the proposed 2.0 gpm being advocated by a minority would not be reflective of the real possible savings associated with these two fixtures. We continue to advocate for these two fixtures to be required at the most efficient flow available. Maribel Balbin Water Use Efficiency Manager Water and Sewer Department
§3.3-c3	Nate Kredich	3.3. It is unclear whether this requirement can be met with the use of aerators. This needs to be clarified, particularly if there are WaterSense aerators. We would recommend that aerators be allowed, since they are a low-cost, flexible solution for many builders. 3.4. Its unclear why low-flow showerheads (<2.0 GPM) are not included here, given that showers make up ~20% of total usage. We look forward to a WaterSense showerhead specification, but in the meantime low-flow showerheads should be allowed.
§3.3-c4	Angelique Bestard	Below are Miami-Dade County's comments for the record regarding EPA WaterSense New Homes Specification. Indoor Plumbing- Kitchen Faucet Miami-Dade County disagrees with Section 3.3.2 on the kitchen faucet requirements of 2.2 gpm. Miami-Dade County is currently proving residents free 1.5 gpm kitchen aerators and will require new construction to have kitchen faucet flow rates of 1.5 gpm effective Jan. 2009. Currently the International Association of Plumbing and Mechanical Officials (IAPMO) has certifies 15 kitchen faucet models as green which use 1.5 gpm. Additionally we do not agree with statement under supporting documents in Section 3 that EPA has decided not to address kitchen faucets because of "time convenience" should be avoided. A set standard needs to be made in order for water conservation programs to have uniformity in order to calculate water savings among older and new homes. Indoor Plumbing- Showerhead Comment Miami-Dade County disagrees with Section 3.4 on the flow rate of showerheads at 2.5 gpm. Effective Jan 2009, Miami-Dade County will be requiring new construction to install showerheads of 1.5 gpm and additionally will be offering \$10 rebate for those customers who purchase and install a 1.5 gpm showerhead. The US Department of Energy, Federal

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		<p>Energy Management Program, Procurement Product Specifications lists 1.5 gpm showerheads as a best available cost effectiveness product, with annual savings of \$675 in both energy and water cost compared to \$200 savings as a result of a 2.2 gpm showerhead. Additionally there are several manufacturers (Delta, American Standard, Niagara Conservation, Jet Stream and Alsons) that are already producing and selling 1.5 gpm showerheads. Local building codes already require new constructions to install compensating valves, limiting thermal shock and scalding. Indoor Appliances. Dishwashers Miami-Dade agrees with Section 3.6.1 but would like to further add "and be 6.5 gallons per cycle" as will be required in 2010 by HR 6 -Energy Independence and Security Act. Indoor Appliance-Clothes Washers Miami-Dade believes that the water factor should be 4.5 or less. Many water conservation programs, including Miami-Dade's, already offer incentives to residences to purchase High Efficiency Clothes Washers using 4.5 gallons or less; these models are readily available in the market place. If you need request further information or comments, please contact, Maribel Balbin, Water-Use Efficiency Manager, Miami-Dade</p>
§3.3-c5	Kurt Bland	<p>Here are a few comments I received from one of the most progressive and quality oriented builders in our RDU triangle market. This builder is an Energy Star partner already and his #1 question was why didn't the EPA think to ask Energy Star builders who are already on top of building high efficiency homes? 1- The indoor residential portion is not complete. 2- The specifications for the sink and shower faucets are not yet defined. 3- I like the focus on minimizing wasted water in the delivery of hot water. 4- I was disappointed to see the exclusion of ornamental water features in landscapes. The sound and view of water are beneficial to homeowners' mental health. 5- Multiple shower heads are prohibited in this proposal. I'm not a proponent of "body car washes." But, we try to build "flexible" and "age in place" homes that allow a home to be quickly converted to full A.D.A. compliance. A second, detachable shower head, on a adjustable bar, is important to comply with A.D.A. 6- I see several high cost items for builders to comply. I have forwarded the draft to our plumbing contractor to determine: 1- Our current level of compliance and 2- A cost estimate of achieving compliance with the current draft proposal. Kurt H. Bland, General Manager Bland Landscaping Company Inc. www.blandlandscaping.com</p>
§3.4-c1	Charles Gross	<p>Dear WaterSense, Thank you for allowing us to comment on the above subject captioned draft. Our comment is in regard to your Section 3.4 paragraph, which excludes many manufacturers of multiple shower heads and body sprays. Please note, that this section conflicts with Energy Policy Act, and hence, we recommend removing this section. Please advise us accordingly, especially should you have comments or questions. Thank you again for allowing us to comment. Please know that we truly desire</p>

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		to serve all your and your office's standards and listing needs. Best Regards, Charles Gross, Director of Product Certification International Association of Plumbing & Mechanical Officials (IAPMO) www.iapmo.com
§3.4-c2	Martha Rose	3.4 There are very good 2.0 gpm shower heads available and I just saw an ad for Danze shower heads that are around 1.75gpm. I disagree with allowing multiple heads for bigger showers. Many luxury homes will just size the shower to meet the size needed for the # of heads that they want. Let's make it a bit of a challenge to get the certification. After all isn't this about changing the way people live, so let's not make the rules to be the way people live now.
§3.4-c3	Roderick Gregory	3.4 Showerheads: "For each increment of 2,500 sq. in. (1.61 sq. m) of floor area thereafter or part thereof, additional showerheads with total allowable flow rate from all flowing devices equal to or less than the allowable flow rate specified above are allowed." I read this to say that each 2500 sq. in of shower space is allowed to use 2.5 gpm of water. In other words, build a "McMansion" with a room-size shower stall and still receive WaterSense certification. Perhaps this should be called the "agricultural extension clause" for those showering their horses!
§3.4-c4	Bill Christiansen	Further review of individual showering space contained in various state and local building codes (1,296 sq inches) suggests a slight adjustment in our initial comment. Where we recommended in comment paragraph B that 2,500 sq. inches be used as a reasonable delineation between an individual shower and a Two-person shower, we now recommend that 2,592 sq. inches of shower floor area be required before a second showerhead can be installed.
§3.5-c1	Bob Hutslav	It appears that this draft only address demand hot water recirculation systems. 3.5.1 Demand-initiated hot water recirculating system - System should optimize both water and energy efficiency and shall be designed such that less than 0.13 gallons (0.49 liters) of water are in the piping between the recirculating loop and any hot water fixture What about timer and temperature controlled systems? On demand systems are very expensive and typically only benefit one fixture unless additional sensors are installed at other fixtures and this will increase the cost significantly. Demand systems also limit the availability of systems from only one manufacturer whereas several manufacturers make temperature and timer controlled systems. A copy of our product literature is attached for your review. I have also included two individual reports on the water and energy saving capabilities of the product. [attached to new homes spec page] Please feel free to contact me if you have any questions Bob Hutslar National Sales Manager Plumbing and Heating Laing Thermotech

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§3.5-c2	Scott Shimer	<p>This is the follow up in writing to my question that I asked on your conference call In reviewing your spec 3.5.1 “Demand-initiated hot water recirculation systems” my question or issue has to do with verbage “Demand.” There are alternative products that use Timer/Temperature Recirc systems that anticipate demand to allow hot water to be re-circulated to eliminate waste and have savings of 8,000 - 20,000 gallons of water per year for a family of 4 and consume less than \$2 in energy per year to run if timered to family usage, ie 6am-8am and 6-8pm. To include this type of product, we would suggest “Demand-initiated or timer-temperature hot water recirculation systems” attached is our website www.lainginc.com, click on AutoCirc1 and see information. I would appreciate your thoughts on this proposed change. Thank you for your consideration Best regards, Scott S. Shimer, President, US Operations Laing Thermotech, Inc.</p>
§3.5-c3	Charlie Wright	<p>To whom this concerns, I am the Conservation Administrator for Orlando Utilities Commission. Related to the specification, as a utility that serves both water and electricity, I have some concerns pertaining to section 3.5 Hot Water Delivery System. The wording relates to volume only. I am concerned that contractors may adjust the diameter of piping to maximize distance to meet volume requirements which may cause in home pressure and point of use delivery problems. The spec should list minimum acceptable diameter piping. Another suggestion would be to have a table that states the allowable distances beginning with the minimum diameter piping acceptable to larger piping sizes. This would be easier to manage from an inspection standpoint. Secondly, contractors may supplement the home with point of use electric tankless water heaters to meet the WaterSense requirements. As a electricity provider, electric tankless water heaters are very harmful in mass to generation planning and ultimately will lead to hire electricity costs. These units require a lot of electricity for short periods of time which will cause higher demand capacity (more power plants) and low cost recovery; hence, higher costs to the overall rate base. For each additional KWH used, additional cooling water evaporation is also required which offsets some of the piping water savings if electric tankless water heaters are used. Gas tankless water heaters do not pose an issue. I would want a statement that does not allow electric tankless water heaters to be used. Lastly, in lieu of a recirculation system, consider higher insulation levels than R4 for piping which is a lower cost alternative when you include maintenance for the recirculation systems. Thanks. Charlie Wright Conservation Administrator OUC - The Reliable One</p>
§3.5-c4	Shaun Martin	<p>PMI Comments on the EPA WaterSense Draft Water-Efficient Single-Family New Home Specification Shawn Martin, Technical Director (smartin@pmihome.org) July 17, 2008 The Plumbing Manufacturers Institute (PMI) is a WaterSense Promotional Partner, and has been heavily involved in the development</p>

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		<p>of the product specifications to date. We are continuing to work collaboratively with EPA through ASME on the development of the WaterSense Urinal and Showerhead specifications. As such, we are please to offer comments on several elements of the Draft Water-Efficient Single-Family New Home Specification dated April 23, 2008. PMI offers the following recommendations for improvements to Sections 3.5.2 and 3.5.3 pertaining to Hot Water Delivery Systems. Both comments are made in the interest of reconciling the provisions with the requirements of the LEED for Homes and NAHB National Green Building Standard (Draft) and appropriate construction practices. Also, revisions to the insulation practices are made in the interest of balancing the cost of insulating pipes and the potential benefit. Lastly, where fixture flowrates permit, the use 3/8" piping should be encouraged over limited run lengths where large pressure drops will not develop. We welcome the opportunity to work further with WaterSense on this important issue.</p> <p>3.5.2 Proposed Language 3.5.2 Central manifold distribution systems: System design must include an R4 insulated hot water trunk line* (maximum of 10 foot length) from the water heater to the central manifold. The maximum branch line from the central manifold to the fixture is 20 feet in one-story and 30 feet in two-story homes. Branch lines run from the manifold to each fixture are to be a maximum of 3/8" nominal for up to a 2.2 gpm fixture flow rate and 1/2" for up to a 4 gpm fixture flow rate. This system shall store no more than 0.60 gallons of water in any piping / manifold between the hot water source and any hot water fixture. Rationale The original WaterSense draft did not sufficiently factor the volume enclosed within the central manifold itself into the maximum value. The effect was to further limit the length of pipe permitted. The proposed maximum system volume per fixture, 0.60 gallons, was developed using the sum of the following component volumes: 10' length Pipe Volume, Water Heater to Central Manifold (3/4" PEX pipe)* 0.18 gal 14 ports Central Manifold Volume (assumes ~ 0.01 gal per port) 0.14 gal 30' length Pipe Volume Manifold to Fixture (1/2" PEX pipe)** 0.28 gal Total 0.60 gal * Note: Insulation is not required for the branch lines, only for the hot water trunk line from the water heater to the central manifold. **Note: 30' x 3/8" PEX (if system design justified flow rate up to 2.2 GPM) would represent almost half of 1/2" PEX volume further reducing actual volume displaced to delivery hot water.</p> <p>3.5.3 Proposed Language 3.5.3 Core/compact design system: System water heater must be centrally located to ensure that the longest water heater to fixture piping is 20 feet in one-story and 30 feet in two-story homes. Branch lines run from a central heater to each fixture are a minimum of 1/2" nominal diameter tubing. This system shall store no more than .68 gallons of water in the piping between the hot water source and any hot water fixture. (reference table x-x) Table X-X: hot water volume table showing comparison of allowable 3/4" trunk line length to remaining 1/2" branch line length meeting the required</p>

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		<p>volume. This would be calculated using total allowable water heater to hot fixture distances noted in Section 3.5.3. Rationale The original WaterSense draft did not provide sufficient length for most common home designs. The proposed values above are more conservative than the 30 or 40 feet total lengths sought in the proposed NAHB National Green Building standard, and 20' branch line length used by the LEED for Homes system. The proposed maximum system volume per fixture, 0.68 gallons, was developed using the sum of the following component volumes: 25' length Pipe Volume Primary Trunk (3/4" Type L Copper) 0.62 gal 5' length Pipe Volume Branch (1/2" Type L Copper) 0.06 gal Total 0.68 gal</p>
§3.5-c5	Shannon Murphy	<p>In section 3.5 Hot Water Delivery System, it is stated: "3.5.1 Demand-initiated hot water recirculating system." Systems should optimize both water and energy efficiency and shall be designed such that less than 0.13 gallons (0.49 liters) of water are in the piping between the recirculation loop and any hot water fixture. Where the 0.13 gallons is adequate for the kitchen or bathroom sinks, there needs to be a comment regarding the shower portion of the plumbing. These systems are designed to have hot water on demand to the taps; however there can be an extended pipe run from the tap to the shower outlet that will hold greater than 0.13 gallons. These hot water pumps are significant water saving devices, however additional parameters needs to be in place to allow a greater volume of water to a shower line.</p>
§3.5-c6	Kevin Morrow	<p>3.5: Hot Water Delivery System Requirement for Indoor Water Efficiency Comment 1: Section 3.5 requires all hot water delivery pipes both above and below ground to be insulated to an R4 minimum. Hot Water Distribution System Research – Phase I, a 2005 Applied Energy Technologies study prepared for the California Energy Commission, acknowledges that the time interval between hot water demand periods is an key variable in the efficacy of pipe insulation, which typically extends the cool down period by only 2-4 times. Unfortunately, there is not sufficient data on actual hot water usage patterns to determine if such an increase in cool-down time translates to enough real-world water and energy savings to justify the increased material and labor cost of insulating all hot water pipes. To illustrate: in a typical 24 hour period, a family may have two main periods of high hot water demand; one in the morning and one in the evening. During these periods, there may be several individual demand sessions that occur sporadically over 1-2 hours. The time interval between these sessions may not be long enough for the in-pipe hot water to have cooled to below a usable temperature, in which case the insulation is not necessary. The same family in the same 24 hour period may also have two very long intervals of little or no hot water demand: one while the family is sleeping and another while the family is going about their</p>

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		<p>daily business outside the home. In this case the duration between demands could be much longer than extended cool-down periods provided by the insulation, thus negating its purpose. While such a usage pattern does not apply to all families and all homes, this model is likely the far more common one. While NAHB acknowledges that insulating hot water supply runs located below-grade, below-slab and in crawlspaces may be cost effective in some climates, the Association cannot support the measure to require insulation on all hot water pipes until sufficient data on hot water usage patterns exists to justify it. In 2002 the National Renewable Energy Laboratory, in conjunction with the NAHB Research Center, conducted a study titled Performance Comparison of Residential Hot Water Systems which found that the use of smaller diameter pipe reduces the wait-time for full temperature water to be delivered to the outlet. Such a reduction can translate to significant savings of water and embodied energy. Section 3.5.3 recognizes the benefit of smaller diameter piping in core plumbing systems as an effective optional measure. NAHB looks forward to working with the Agency to encourage the use of smaller pipe sizes, including any changes to the model plumbing codes where necessary and appropriate.</p> <p>We have one additional concern with the pipe insulation requirement in conditioned space. Seasonally, heat loss from hot water lines contributes to the heating or is detrimental to the cooling of the conditioned area. While we are unaware of any research that has examined this phenomenon, it is reasonable to question how seasonal variations across climate zones impacts the efficacy of requiring ALL hot water lines in the conditioned space to be insulated.</p> <p>Given the unknown level of real-world benefit/detriment offered by pipe insulation in conditioned space, the NAHB suggests the practice be given the same consideration as smaller diameter pipe and be included as option rather than a requirement for WaterSense certification.</p> <p>NAHB anticipates the possibility that the durability of certain pipe insulations may be compromised over time when used in below ground applications. The presence of moisture, naturally occurring acids or other corrosives may degrade the insulation. Accordingly, it would be prudent to describe appropriate materials and constructions for this application and to be sure that the specified materials are in sufficient supply to avoid undue cost increases when the WaterSense New Home program is initiated.</p>
§3.5-c7	Doug Bennett	<p>The AWE makes a recommendation that 0.38 gallons be the maximum amount of water lost before hot water is available from structured plumbing designs. Southern Nevada’s Water Smart Home builders have expressed concern about being able to consistently meet such a standard. SNWA recommends 0.5 gallons. It is a challenging, but achievable standard and it is simpler to promote the standard with builders and home buyers.</p>

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§3.5-c8	Ajita Rajendra	<p>The draft specification (section 3.5) allows 0.38 gallons of water between the fixture and the hot water source for “whole house manifold systems: and “core plumbing systems” but only 0.13 gallons of water between the recirculating loop and the fixture with a demand-initiated water recirculating system. A.O. Smith believes that the amount of water allowed in the pipes between the source of the hot water (which can be the recirculating loop) and the hot water fixture should be the same in all cases. Specifically, we believe that this should be a performance based specification which is independent of how the plumbing achieves it. Hence, the specification should read, “The amount of water in the piping between the hot water fixture and the source of hot water shall not exceed x.xx gallons.”</p> <p>A.O. Smith believes that the specification on the Hot Water Delivery System should be a performance specification which limits the amount of water wasted while waiting for hot water to arrive at a fixture independent of how the house is plumbed.</p> <p>Water Heater. The WaterSense draft specification does not address water heaters and the fact that some water heaters will lead to more water waste than others. This is a serious oversight. As addressed above, the volume of water in the piping between the source of hot water and the hot water fixture should be limited since that volume represents the water wasted while waiting for hot water to arrive at the fixture. Additionally, water heaters which do not store hot water, have a delay from when a hot water draw is initiated to when hot water leaves the water heater itself. This delay represents additional wasted water and additional delay time at the hot water fixture.</p> <p>In laboratory tests, A.O. Smith has measured delays from 10 to 15 seconds before hot water leaves some non-storage type water heaters after a hot water draw is initiated. At a draw of 2.0 gpm, a 10 second delay represents an additional waste of 0.33 gallons per draw. Since this additional waste is approximately the same size as the waste due to pipe volume, we believe WaterSense must address this issue. Furthermore, since it is generally assumed that the average home as between 40 to 60 hot water draws a day, the waste of 0.33 gallons per draw can represent a waste of 20 gallons per day just due to the water heater.</p> <p>Rather than favoring or penalizing a specific water heating technology, A.O. Smith believes that there should be a performance specification on the entire hot water distribution system... not just on either the plumbing or water heater. We believe the specification should limit the maximum amount of water wasted waiting for 110oF water to arrive at any fixture in the house. This specification is easy to measure and would require the hot water distribution designer to combine appropriate elements of the hot water system to achieve the required performance. In fact, the specification would address the hot water</p>

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		<p>system as an entire system and not just as pieces, thereby ensuring that the end result saves both water and energy.</p> <p>A.O. Smith believes that the WaterSense specification must address the water waste performance differences between the various water heating technologies available on the market today. A.O. Smith believe the most direct and objective method for doing this is to develop a hot water system specification which requires hot water to arrive within a specific volume of water at each hot water fixture in the house.</p>
§3.5-c9	Gary Klein	<p>I have several comments on the Draft Specifications. For convenience, they are organized into several sections. The last section contains my suggested revisions to the Draft Specifications, taking into account the concepts in the prior comments. Thank you for considering these ideas.</p> <p>1. Cost Structure for Comparing Hot Water Distribution Systems</p> <p>There appears to be some confusion in the cost structure shown for the three types of hot water distribution system (See Supplement, page 16, Table 3). It appears that the cost comparisons are not based on the providing the plumbing for a house with exactly the same floor plan.</p> <p>Core plumbing has been assumed to be the base, which is reasonable in some parts of the country, but not in others, such as northern California near Sacramento, which switched to whole house manifolds using PEX a few years ago. Core plumbing is based on trunks, branches and twigs (a pipe that serves only one fixture or appliance).</p> <p>Accepting that core plumbing is the base, then there will be a certain number of feet of pipe to meet the standard of 0.38 gallons or roughly 6 cups. There are between 5 and 6.6 feet of ½ inch diameter pipe per cup, depending on whether it is copper, CPVC or PEX, with copper being the low end and PEX being the high end. If the pipe is ¾ inch, the distance equal to 1 cup ranges from 2.5 and 3.3 feet, roughly half the amount in ½ inch pipe. For one inch diameter pipe, the distance is still smaller. (It is possible to use 3/8 inch diameter pipe for some fixtures and in some jurisdictions. Where it is possible, the length would increase to between 8 and 12 feet per cup. See comments in the section on Whole House Manifolds for additional discussion.)</p> <p>Central core plumbing can be made with any type of piping, copper, CPVC or PEX being the types used throughout the US today. It is also possible to use more than one type of pipe in such a system, for example, copper to make the connection to the water heater and PEX to supply the fixtures and appliances.</p>

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		<p>It seems to me that the logical prototype used in the analysis for the central core plumbing system is a long trunk line and small twigs. The logical prototype for the home-run manifold plumbing system is a small trunk line and long twigs. They are really both versions of a central core plumbing system and perhaps should be treated in the specification that way. Remember that there will be both hot and cold water piping in the home. Even though the specification cares primarily about the hot water piping, it is a reasonable assumption that the cold water piping will be installed in a fashion similar to the hot, so keeping the number of feet down saves materials and labor on both sides.</p> <p>The costs for the base case comparisons must be made using the same type of piping. It appears that this has not been the case in Table 3. My reasoning is that the costs for whole house manifold piping went down compared to central core, when in fact, the costs probably should have gone up, since there are generally significantly more feet of pipe in a typical whole house manifold plumbing system. Let's look at the two extremes.</p> <p>There will be some amount of ¾ or 1 inch pipe coming out of the water heater, let's assume it will be 2.5 to 3.3 feet of ¾ inch pipe (1 cup), so that you can connect the twigs (and perhaps some branches) to serve the fixtures and appliances. There are 5 cups left, which in ½ inch pipe is 25 to 33 feet. This means that the maximum length of pipe to any fixture can range from 27.5 to 36.5 feet. Installing a longer trunk line, say 10 to 13.2 feet long, which would roughly bring the pipe up, or down one floor, uses up 4 of the 6 cups available, leaving only 2 cups or 10 to 13.2 feet for the twigs serving each fixture.</p> <p>In the short trunk, long twig case (classic whole house manifold), there will be 2.5 to 3.3 feet of trunk plus 25-33 feet per twig. Assuming a house with 10 fixtures or appliances (kitchen, 2-2.5 bathrooms and a laundry room), there will be up to 250-330 feet of twig lines.</p> <p>In the long trunk, short twig case (classic central core), there will be 10 to 13.2 feet of trunk plus 10 to 13.2 feet per twig. Assuming a house with 10 fixtures or appliances (kitchen, 2-2.5 bathrooms and a laundry room), there will be up to 100 to 132 feet of twig line.</p> <p>Assuming that both systems are plumbed efficiently, meaning without any extraneous piping, the classic central core system uses up to 57 percent less piping than the classic whole house manifold system. There should only be one additional joint per twig, so installation labor costs should be significantly less as well. And, you get the these savings on both the hot and cold sides of the plumbing.</p> <p>One other concern. Does the analysis or the specification take into account that the manifold itself needs to be insulated. The proposed specification says that "All hot water pipes, both above and below ground, shall be insulated to a minimum of R-4." To me, this means the piping needs to be insulated from the</p>

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		<p>water heater to behind the wall on all twigs. This includes any fittings too, and a manifold is certainly a fitting, actually several traditional fittings all in a row. I would observe that some manifolds will be relatively easy to insulate, and others will be much more difficult, but all manifolds installed in accordance with the Water Sense specification should be.</p> <p>2. Relative Performance Core Plumbing Systems and Whole House Manifold Systems Many of my concerns with whole house manifold plumbing were discussed in Section 1. Now I would add that some people will say that smaller diameter pipe, say 3/8 inch, could be used for the twigs serving some fixtures, for example bathroom sinks. In principle this is true and I support it. Two thoughts. First, if smaller diameter twigs could be used for the bathroom sinks in a manifold system, why couldn't they also be used in a central core system? The issues here are flow rate, velocity, noise, potential for internal corrosion and pressure drop. The second thought is that smaller diameter piping is not allowed in many code jurisdictions in the country. I think this Water Sense specification must be shown to be workable given current building and plumbing codes, so it must work with 1/2 inch piping being the smallest diameter piping. In general, whole house manifold plumbing saves energy and water only when there is a long enough time between hot water draws for the pipes to cool down. Research has shown that the temperature of the water in the pipes cools down in roughly 10-15 minutes for uninsulated pipes in air at 65 - 70 F. The water in the pipes cools down much more rapidly in colder air temperatures, such as a basement or crawl space, or when the pipes are installed in, or below, a concrete slab. The water in the pipes cools down more slowly when the surrounding air is hotter, say in an attic in mid summer. (In this case, the cold water pipes would be hot too and it would be necessary to run hot water down the drain in order to get cold water!) Insulating the pipes to at least R-4 doubles the cool down time with 1/2 inch diameter pipe and triples the cool down time with 3/4 inch diameter pipe. Research conducted by Aquacraft, NAHB, NREL, Hiller and others has shown that there are two major clusters of water use in most homes: morning rush hour and the evening plateau. In these periods of time, which occur during the majority of households' weekdays, hot water use is close enough together in time so that insulation on the pipes means that the water isn't likely to cool down to a non-useable temperature between a significant number of hot water draws. In addition to clustered draws among different hot water locations, there are also clustered draws in bathroom groups (for example, shower, sink, shower, sink).</p>

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		<p>In both of these cases (clustered draw schedules among different hot water locations and fixture groups used in sequence), home-run manifold systems waste more water, energy and time than would a central core system for the same floor plan. The reasons for this follow:</p> <p>In a central core system, the volume of water in the pipe to any one fixture in the furthest fixture group, say the bathroom is relatively large (relatively long 3/4 inch trunk line, plus relatively short 1/2 inch twigs). This means that the first draw will waste a relatively large amount of water and take a relatively long amount of time to deliver hot water to the fixture. For the second and subsequent clustered draws in the same group, or in fact anywhere along the same trunk line, the hot water is already in the trunk line and only has to go through the relatively short twigs to get to the fixture. This means that much less water and time are wasted for the second and subsequent clustered draws. Since there are relatively fewer feet of pipe, there is less heat loss during the use phase of the draws. The smaller number of feet translates into less volume of water remaining in the pipes at the end of the clustered draws, so there is also less heat loss when the water in the pipes eventually cools down.</p> <p>In the whole house manifold system, the volume in the pipe to any one fixture in the furthest fixture group, say the bathroom is relatively small (relatively short 3/4 inch trunk line, plus relatively long 1/2 inch twigs). This means that the first draw will waste a relatively small amount of water and take a relatively short amount of time to deliver hot water to the fixture. For the second and subsequent clustered draws, whether in the same fixture group or in fact anywhere off the manifold, the hot water is back at the manifold. To get to a given fixture, the hot water must go through a relatively long twig, wasting a relatively large amount of water and time to get to each subsequent fixture. This means that much more water and time are wasted for the second and subsequent clustered draws. Since there are relatively more feet of pipe, there is more heat loss during the use phase of the draws. The larger number of feet translates into more volume of water remaining in the pipes at the end of the clustered draws, so there is also more heat loss when the water in the pipes eventually cools down.</p> <p>Whole house manifold systems appear to do better (waste less water, energy and time) than central core systems only when the draws are far enough apart in time that the water in the pipes cools down between draws. But clustered draws seem to have been with us for many years in many households and they seem likely to be with us into the future. If I have read the research correctly, clustered draws also make up the bulk of the hot water used daily, even on weekends, when the draw patterns tend to get stretched out.</p> <p>It also turns out to be much easier to improve the performance of a central core plumbing layout at some</p>

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		<p>future date that it is to improve the performance of a whole house manifold plumbing layout. And the future may happen much sooner than we think.</p> <p>Let's assume that people install a central core layout with a long trunk line and short twigs and all of the hot water pipes insulated, all of it in accordance with the proposed Water Sense specification. They are willing to accept the waste getting hot water to the fixtures at current flow rates, but they decide at some point in the future that they are not willing to put up with the time delay after they installed the new, high-efficiency faucets, aerators, and shower heads (we mean of course, lower flow rate devices with good performance characteristics) throughout their house. What they discover when they look into retrofitting their hot water distribution system is that they have a relatively long wait time at the fixture where they first draw hot water, but that for the rest of their clustered draws, it takes much less time for the hot water to arrive. They find out that as long as they are able to get to a sink in the furthest hot water location from the water heater, they will be able to retrofit an on-demand pumping system into their existing plumbing system. Whenever they want hot water, they will activate the pump. It will run for only a few seconds, priming the already short trunk line (and one of the furthest twigs) with hot water. Since the pipes are insulated, they will stay hot a relatively long time between draws, so that wherever they want hot water throughout the house, the hot water only needs to pass through the relatively short twigs to arrive at the fixtures. They are once again satisfied with the performance of their hot water distribution system. By the way, so are the water and energy utilities, because they are now wasting even less water and energy than they were when the home was installed to the original Water Sense specification.</p> <p>Now let's assume that people install a manifold layout with a short trunk line and long twigs and all of the hot water pipes insulated, all of it in accordance with the proposed Water Sense specification. As in the other case, they are willing to accept the waste getting hot water to the fixtures at current flow rates, but they decide at some point in the future that they are not willing to put up with the time delay after they installed the new, high-efficiency faucets, aerators, and shower heads (we mean of course, lower flow rate devices with good performance characteristics) throughout their house. What they discover when they look into retrofitting their hot water distribution system is that they have a relatively long wait at all of their fixtures. The longest wait is at the fixture where they first draw hot water, but that for the rest of their clustered draws, it still takes a relatively long time for the hot water to arrive. It is particularly frustrating in their bathrooms, where they find that if they get hot water to their shower, it still takes a long time to get hot water to the sink. They find out that to retrofit their house they have two strategies: figure out how to prime the trunk line from the water heater through the far end of the manifold or figure out how to get hot</p>

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		<p>water to the end of each twig. They discover that installing an on-demand pumping system to prime the trunk line through the manifold with hot water is the most cost effective and energy efficient of the two strategies, but it by no means optimal as they still have relatively long waits on each of the twigs. The other strategy of trying to improve the performance on each twig turns out to be impractical and still unsatisfactory: while they can easily access the plumbing under the sinks, they will need to open up the walls to get at the plumbing for the showers and tub/shower combinations. Compared to the customers with central core plumbing, even after retrofit, they are still not very happy with the performance of their hot water distribution system. By the way, neither are the water and energy utilities, because they are not saving as much water and energy as they thought they would after supporting the change to the high performance faucets, aerators and showers.</p> <p>Now, which one of these houses would you prefer to live in? To sum up. During the plumbing system's relatively long lifetime, it will be used by many different occupants with many different hot water use patterns, and many different perceptions of acceptable performance. From the beginning, Water Sense needs to incent the installation of hot water distribution systems that will work well with any and all of these hot water use patterns. With this thought in mind, classic central core (long trunk, short twigs) outperforms classic whole house manifold (short trunk, long twigs) in the vast majority of cases, both now and in the future.</p> <p>3. What Should be the Defining Metric for Water Sense Hot Water Distribution Systems. As I understand it, the purpose of the Water Sense program is to save water, while still maintaining or even improving performance. From what I can tell, it wants to do this without adversely impacting energy consumption. That has been my goal for hot water distribution systems for more than 15 years. A few years ago, we found a question that has helped us find possible solutions: If you could do it, how would you deliver hot water to every fixture or appliance wasting no more than 1 cup waiting for the hot water to arrive and do so wasting no more energy than we currently waste running water down the drain? The first part of the answer is that there cannot be more than 1 cup of "not-hot-enough" water in the piping between the source of hot water and any fixture. "Not-hot-enough" water means the water is at a temperature less than that desired by the next user. Sometimes the next use is sink, sometimes a shower, sometimes it is for washing dishes or clothes. Since we don't know what the next use will be,</p>

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		<p>and most people won't get into a shower unless it is hot enough, we will assume that this is the minimum temperature that defines "hot enough", which for our purposes means 105F, as you can always mix down, but you cannot mix up.</p> <p>Okay, the decision to aim for 1 cup was arbitrary. It was chosen because it is a small, well understood amount of water. It was also chosen because we realized that some amount of water would come out of the pipes before hot water arrived and there was no reason to waste more than 1 cup. The period of time waiting for hot water to arrive is delivery phase of a hot water event. Water is "wasted" only during the delivery phase, and is therefore a major concern of the Water Sense program. For a given flow rate, the more volume of water in the pipe that is "not-hot-enough" the greater the waste of water, energy and time. The Water Sense specification currently has two different water waste requirements, 2 cups for the demand-initiated hot water recirculating system, and 6 cups for the whole house manifold and core plumbing systems.</p> <p>Water is "consumed" during the use phase of a hot water event, also a concern of the program, and is being addressed by the specifications for faucets, aerators, showers, washing machines and dishwashers. While lower fixture flow rates reduce consumption during the use phase, they increase the waste and wait during the delivery phase. Whatever specification we choose should avoid unintended consequences, so we must be careful in making our decision.</p> <p>The second part of the answer is that we need to know how much energy is used while water runs down the drain while waiting for the hot water to arrive. This turns out to be somewhat difficult to measure as the waste of both the water and the energy attached to it is a function of both the structure of the plumbing and the behaviors of the people interacting with the plumbing. Because of the way our plumbing systems have been installed, the waste and wait is long in some house and short in others. It is also long at some fixtures and short at others and it may be short or long at the same fixture. In short, the time for the delivery phase appears to be random to the people using the system. Since they have a lot of other things to think about, if they sometimes wait a long time for hot water to arrive, they often turn on the fixture and walk away, coming back when they are good and ready. So that people will eventually learn the performance of their hot water distribution system, whatever specifications we come up with should aim to reduce both the randomness and the delivery time, both when the specification is implemented and during the lifetime of the plumbing system.</p> <p>The waste of water during the delivery phase has been estimated to be between 5 and 20 gallons out of a total of roughly 60 gallons of hot water per household per day, roughly 10 to 33 percent. It is generally</p>

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		<p>bigger in homes, where the plumbing layouts are often spread out, than it is in smaller homes where the plumbing layouts tend to be more compact. The energy associated with the waste is proportional to the water waste. If we assume that the water waste is on the lower end of this range, there is less available energy for an alternative method of delivery to consume than if we assume the water waste is on the upper end of the range. Whatever the waste of energy is, the only way for the alternative method of delivery to meet the goal, is for it to use less energy than would have been used running water down the drain.</p> <p>We have found five possible ways to meet our goal of wasting no more than 1 cup while waiting for hot water to arrive:</p> <ol style="list-style-type: none"> 1. central core (either core plumbing or whole house manifold), assuming that all hot water fixtures are very close to the water heater 2. 2-3 water heaters per house, assuming there are very compact fixture groupings near each water heater 3. one water heater for every hot water fixture (one means of ensuring hot water within a cup) 4. electric heat trace on all hot water distribution piping (Since you can trace all the way from the water heater to behind the wall at every fixture or appliance, you can even waste less than 1 cup. Of course, you also have to expend electric energy to maintain the temperature of the water in the pipe. At this time, it looks like it takes more energy to do this, than is currently associated with running water down the drain.) 5. recirculation systems installed such that the distance from the recirculation trunk line to each fixture is no more than 1 cup. We found that there are six types of recirculation systems: thermosyphon or gravity, continuously pumped, timer controlled pump, temperature controlled pump (aquastat), time and temperature controlled pump and demand-initiated controlled pump. The only one that uses less energy than is wasted running water down the drain is the demand-initiated control strategy, which is why that type was proposed for the Water Sense program. <p>For energy purpose, we also need to understand the energy consumed during the use and cool down phases. It turns out that there is a greater temperature drop over a given distance during the use phase at lower flow rates than there is at higher flow rates, so insulation becomes even more important. It also turns out that regardless of how much insulation we put on the pipes, the temperature will eventually drop to the point where it is “not hot enough” and the energy associated with this temperature drop will be wasted. Assuming that all of the hot water piping is insulated, smaller diameter piping helps solve the</p>

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		<p>problem for both the use phase and the cool down phase. In the use phase, for a given flow rate, the velocity will be higher and therefore the temperature drop over a given distance will be less. The countervailing factors are that smaller pipes have greater pressure drop and the potential for increased noise, erosion and clogging up. In the cool down phase, smaller diameter piping means that there is less mass of water to cool down, so less energy will ultimately be wasted. The countervailing factors here are that smaller pipes cool down more quickly than larger diameter pipes, resulting in a need to increase the thickness of pipe insulation as the diameter decreases. In both cases, we run up against current codes which make it difficult to reduce pipe diameters.</p> <p>4. The Primary Goal Appears to be Saving Water Enough for setting the stage. Water Sense is about saving water first, and doing no harm to energy second. With this in mind, water waste is a function of volume. The less “not-hot-enough” water that is in the pipes between the source of hot water and the fixtures, the less water and the energy associated with it is wasted during the delivery phase. The better insulated the piping, the better the performance will be during the use phase and the less energy will be wasted during both the use and cool down phases. The decisions we make about the hot water distribution system and the water consumption of the fixtures and appliances are interactive and whatever we pick will affect the behavior of the occupants. So, it would appear that volume is the key. Bill Hoover of A.O. Smith made a comment on the teleconference that the water wasted should be equal for all of the hot water distribution patterns identified in Section 3.5 of the Draft Specifications. I agree, but at what level? Having been the originator of the basic distinctions of the three patterns, perhaps I can shed some light on why they were described as they are. The distinctions were originally developed for use in a rating system that gives more credit for higher performance. The demand-initiated hot water recirculating system provides higher performance (less waste of water, energy and time) for a given floor plan than either the whole house manifold or the core plumbing systems. I have already discussed why core plumbing systems out perform whole house manifold plumbing systems, so I would rank the order of performance of demand-initiated 1st, core plumbing 2nd and whole house manifold 3rd. The Water Sense specifications are not a rating system, they treat all three systems as equal choices, even though they are not. Since the demand-initiated hot water recirculating system outperforms the other two choices, significantly so on water use, I would recommend that this be the only hot water distribution pattern acceptable under the Water Sense program, or that all other options be pegged to its</p>

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		<p>level of water waste.</p> <p>As discussed in Section 1, it is already difficult to build a house with a core or whole house manifold system that has as much as the 6 cups allowed between the water heater and all of the hot water fixtures. It will be even more difficult, if not practically impossible to do so if the criteria is reduced to 2 cups, since the distance from the water heater to the fixtures will be cut by two-thirds.</p> <p>It is possible to make either core plumbing or whole house manifold systems meet this criteria, but there will no longer be one hot water distribution system in the house. It will be necessary to install at least two and probably three or more hot water distribution systems, each of which will have its own water heater. This sounds good for the water heater manufacturers, but not for the consumers. They will spend more on bringing the power to the water heaters than they would have spent on the equivalent hot water piping. They will also need to buy and maintain more water heaters, many of which will need to be the same size and capacity as the one they would have used for the whole house. They will need to find space in the house for the additional water heaters and they will spend more energy operating them than they save. All in all, not such a good idea.</p> <p>5. Demand-Initiated Hot Water Recirculation Systems</p> <p>The demand-initiated hot water recirculating system is much more cost effective to install and operate than multiple core plumbing or whole house manifold systems needed to provide the same level of water waste and energy performance. Currently, the analysis shown in Table 3, on page 16 of the Supplement compares hot water distribution systems with different levels of performance in both water and energy. This is in addition to the problems I identified above comparing the core plumbing to the whole house manifold systems which in principle have the same performance, but as discussed, actually don't.</p> <p>While I think that the marginal cost used for the demand-initiated system in the analysis is too high, the costs to install multiple core plumbing or whole house manifold systems with the same level of performance is higher still. In order for the analysis to be accurate, the cost comparisons need to be made assuming the same levels of performance. So, while there will be a real cost to install and operate a demand-initiated recirculation system, it will be less than the costs of installing the two alternatives currently included in the specification.</p> <p>We also need to consider that piping installed this year to the Water Sense specification will be with the building for a very long time, hopefully at least 50 years. Piping tends to get installed in hard to get at locations, such as between floors and in walls, sometimes they are installed in or below floor slabs.</p>

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		<p>Given the difficulty of access once the building is complete, it makes sense to think about changes that are likely to occur in the intervening years and see if it is possible to design and install plumbing systems that will perform well both today and in the future if and when these changes take place.</p> <p>Earlier, I compared the performance of core plumbing to whole house manifold systems at some time in the future when only high performance faucets, aerators and showers, with lower flow rates are available. While it was relatively straightforward to improve the performance of the core plumbing system, it was not possible to do as well with the whole house manifold system at a similar cost. How does the demand-initiated system fare when looking into the future? Such as system installed in accordance with the current Water Sense specification would have short twigs designed with no more than 2 cups of water in each. The trunk line is intended to be primed with hot water shortly before the actual hot water draw, so that the source of hot water is no longer at the water heater, it is now no more than 2 cups from any fixture or appliance. At 2.5 gallons per minute, it takes just under 3 seconds for hot water to travel 2 cups, which is roughly 10 feet when converted to ½ inch diameter piping. (The actual length of pipe between the recirculation trunk line and the fixture has to be less than 2 cups (or between the water heater and the fixtures in core and whole house manifold systems) if you want only 2 cups of “not-hot-enough” water to come out before hot water arrives.) In addition to the time being relatively short, it will be reasonably consistent, ranging from a low of 1 second for hot water flow rates greater than 7 gpm (think master tubs) to a high of 15 seconds for flow rates of 0.5 gpm. I am pretty sure that people will be satisfied, if not extremely pleased with these time frames. I also suspect that they will learn they can expect this level of performance whenever they turn on the tap, so both the structural waste and their behavioral waste will be reduced.</p> <p>6. What if We Used Time Until Hot Water Arrives as the Metric?</p> <p>Although the goal of the Water Sense program is to reduce the waste of water and volume is a direct way of measuring this, what about using time as the program’s metric? This idea, which came up after the teleconference, is currently being discussed by Dave Viola, Shawn Martin, Ed Osann and myself. Recently I had the opportunity to speak with the City of Petaluma and a group of invited builders and plumbers to discuss how to meet and beat a new city ordinance that says hot water needs to be delivered within 15 seconds at all hot water fixtures in all buildings. Petaluma is not the first to consider or adopt such an ordinance, just the most recent I am aware of.</p> <p>As expected, all were a bit skeptical of how this might be achieved. During the 2 hour meeting, we</p>

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		<p>demonstrated how to deliver hot water in much less than 5 seconds, still allowing for design flexibility in floor plans, and for different types of plumbing (copper, CPVC and PEX).</p> <p>If the Water Sense specification allows a 15 second delivery time, the actual volume of wasted water varies depending on the flow rate. For a fixture flow rate of 0.5 gallons per minute, the waste will be 2 cups, while for a flow rate of 5 gallons per minute, the waste will be 1.25 gallons (20 cups). Most of the high flow rate fixtures in homes are tubs or washing machines, both of which are volume events and the actual delivery time matters less than in low flow rate fixtures, which are more often used in applications where water runs down the drain during the use phase of the hot water event.</p> <p>Let's analyze a 15 second rule assuming a flow rate of 2 gpm. At this flow rate, 0.5 gallons will run down the drain until water hot enough to shower in arrives (say 105F). To get the hot water within this amount of time, you need less than this amount of "not-hot-enough" water in the pipe. For a given diameter, the actual length needs to be on the order of 1/2 to 2/3rds of the amount of water you want to come out before hot water arrives. (Based on Hiller's research for the Energy Commission.)</p> <p>The dilemma is that according to an American Society of Plumbing Engineers (ASPE) article published as part of a continuing education series last December, they say that 0-10 seconds is acceptable. According to the same article, time-to-tap® in the range of 11-30 seconds is considered marginal while greater than 30 seconds is considered unacceptable.</p> <p>Since the Water Sense program is about high performance while using fewer resources, the hot water systems built under the program should deliver hot water in the acceptable range. The hot water system includes the water heater, the hot water distribution piping and the fixtures and appliances. They all must work together to achieve the performance goals.</p> <p>During the meeting in Petaluma, we also discussed the fact that currently marketed tankless water heaters will not allow compliance with the 15 second rule. You need some amount of stored hot water before the hot water event starts (either in the water heater or in pre-heated pipes (electric heat trace is what I am thinking of here) to achieve the short timeframes needed to meet customer's expectations and the city's rule. The Water Sense program needs to include something in its specifications to address this issue so that people don't install water heaters that increase the waste and wait, frustrating the goal of the program and the expectations of people living in the homes.</p> <p>If we allow a time delay of 15 seconds today, what will happen in the not too distant future (say 10-20 years) when water and energy utilities have incentive programs that promote lavatory sinks at 0.5 gpm (the hot portion will actually be less, say closer to 0.25 gpm (one-quart per minute) and kitchen sinks and</p>

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		<p>showers at say 1.0-1.5 gpm (again the hot portion will be less). All of this technology is available today, some for commercial use, but applicable to residential buildings nonetheless.</p> <p>If the fixture flow rate drops from 2 gpm to 0.5 gpm, the time until hot water will arrive will go up by more than a factor of 4, making what was already marginally acceptable, thoroughly unacceptable. Going down to 1 gpm will roughly double the time to just within the range of marginal performance. In both cases, less water will be wasted, but the customer will not be satisfied.</p> <p>So, in order to help “future proof” our hot water systems, it looks like we need to aim for a time delay much less than 15 seconds given today's fixture flow rates. I would say that the number needs to be in the range of 2-3 seconds for sinks, showers and tub-shower combinations, the fixtures where people are most aware of the time it takes for hot water to arrive. Sinks and showers that meet current standards have effectively the same flow rates at the same pressure, so the volume of water wasted will be roughly the same. Tub-shower combinations often have higher flow rates, say 4 gpm, when the water is running through the tub spout. If the volume of water between the source and the fixtures is the same as it is for the sinks and the showers, then the same amount of water is wasted and the hot water will arrive in roughly half the time. I think that 1-1.5 seconds is well within the range of acceptable.</p> <p>Dishwashers need to be treated the same as the kitchen sink. We could allow an exception for stand-alone tubs and washing machines because they are volume events, but in the case of a tub, since the flow rate is much higher, if water is run down the drain while waiting to fill the tub, a considerable amount of water would actually flow down the drain.</p> <p>It turns out that we also need to take into account the pressure we do the measurements at, since flow rate is less at lower pressures. The current Water Sense specification says that the pressure at the meter must be no more than 60 psi, but what we really need to know is what the pressure is at each fixture where we do the measurements, or we must adjust the time delay to take this into account.</p> <p>For this analysis, if we assume that the internal pressure at the furthest fixture from the water meter is say 45 psi, it is reasonable to expect the flow rate for faucets and showers to be roughly 2 gpm, tub-shower combinations to be roughly 4 gpm and stand-alone tubes to be 6 gpm or more. To measure the time, we will turn the tap to full hot and see how long it takes for hot water to arrive. Under these conditions, if we want hot water to arrive within 3 seconds, roughly 1.5 cups will come out at 2 gpm, a bit more than 3 cups at 4 gpm and 6 cups or more as flow rates go above 6 gpm. The volume of water wasted varies depending on the flow rate.</p> <p>If we want to waste the same amount of water at each fixture, it means that we need to specify a</p>

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		<p>different amount of time for each fixture type. Keeping the waste equal to that which is observed at 3 seconds and 2 gpm, the time would need to be reduced to 1.5 seconds for tub-shower combinations and to less than 0.5 seconds for fixtures with flow rates 6 gpm or greater. To do this, means that the volume of “not-hot-enough” water between the source and the fixtures needs to be reduced proportionally. From a construction perspective, this means that the distance from the source to the fixture is reduced in the same proportions.</p> <p>7. So How do We Implement Either Metric? So how do we build and later inspect hot water distribution systems that meet either the volume or the time criteria? I am a big fan of post-construction measurement of performance, so I would measure either the volume that comes out, or the time it takes for hot water to arrive. To be consistent for either method, I would require the “inspector” to have a thermometer and say that “hot-enough” water is 105F. To measure volume, we’ll need to have something that fits between the faucet and the sink, and is also big enough to capture the water coming from the shower. I have made the case that the volume wasted should be that specified for the demand-initiated hot water distribution system pattern, which says that less than 2 cups of “not-hot-enough” water can be in the pipes between the source of hot water and the fixtures. If we allow 2 cups in the piping, we probably need to say that no more than 3 cups can come out when we measure it post construction (we might be able to tighten this down to 2.5 cups, but I am not sure). Since our specification says that no more than 3 cups of water can come out before hot water arrives, we don’t need a measure that is any larger than 1 quart. I think we can find these off the shelf. To measure time, we need a watch with a second hand, again something that we can find off the shelf. I have made the case that we should be aiming for hot water delivery in no more than 3 seconds for fixtures that typically operate at 2 gpm. As above, we should also cap the volume in the twigs to 2 cups of “not-hot-enough” water between the source of hot water and the fixtures. When we measure the time for higher flow rate fixtures, it will take less than 3 seconds for hot water to arrive and the waste per event will be the same. We will need to allow an increase in time for lower flow rate fixtures, say less than 15 seconds at 0.5 gpm. Whatever we pick should hold true assuming the pressure at the meter is some low number, say 30 psi. Whenever it is between this low number and 60 psi, the maximum currently allowed in the specifications, actual flow rates will be higher and delivery times will be reduced. Both of these post-construction measurement methods take into account the performance characteristics of the water heater. Only those that start out with hot water will be able to be installed in a Water Sense</p>

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		<p>home. If, as is the case with most currently marketed tankless water heaters, they start out with cold water, then compared to the performance specification, more water than is in the pipes will run down the drain and it will take more time for hot water to arrive, and the system will not pass either way it is measured. It is possible to do this with both tank and tankless water heaters and with boilers, but some manufacturers will have an easier time of meeting this requirement than others.</p> <p>We also need to think about what to do in the event one or more fixtures do not meet the specifications. What happens if all but one fixture passes? What if instead of 2 cups or 3 seconds, it takes 2.5 cups or 4 seconds at several fixtures? Clearly these are pretty darn good levels of performance, but they do not meet the specifications. What if there are several fixtures where the water or time waste is double or triple the specification? When do we fail the house? When do we allow the builder to learn from this and make the next one better? By the way, if we allow a fudge factor, that now becomes the real specification. Would you want to live in a house that did not meet the specs? Who is going to be the water police?</p> <p>Let's step back a bit. If we establish the specifications as described above, we will have very high performance hot water systems that will work quite well today and into the foreseeable future.</p> <p>As currently worded, the specification for the demand-initiated recirculation system says that no more than 2 cups of "not-hot-enough" water can be in the pipes between the recirculation trunk line and the fixtures. I think that this should be the equal volume standard for any hot water distribution system. This type of criteria can be translated into length of pipe for a given diameter, so it is easily measured during construction. Fixing the length of the twigs, effectively limits the volume of water that is wasted, meeting the Water Sense program's goal.</p> <p>So how does 2 cups in the piping do in terms of post-construction measures of volume or time? As discussed above, 2 cups in the piping translates into about 3 cups in post construction measurement for fixtures with flow rates of nominal flow rates of not more than 2.5 gpm (2 gpm in actual practice). Not bad.</p> <p>In term of time, 2 cups in the piping, a 2 gpm flow rate and 3 cups coming out, translates into more than 5 seconds. Still not bad. However, at 0.5 gpm, the time increases to more than 20 seconds, more than halfway through the range of marginally acceptable as defined by ASPE.</p> <p>So if we really want to have high performance hot water systems both at today's flow rates and at the lower flow rates we can expect in the future, we need to change the specification to be less than 2 cups of "not-hot-enough" water in the piping.</p>

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		<p>Now we run into other problems of implementation, primarily that when we plumb a fixture from above, say from between the floors down to a sink, we need to allow 10 feet to get from the recirculation trunk line over and down to the angle stop. This is our 2 cups based on using 1/2 inch copper tubing. The same distance will contain less water if we use 1/2 inch diameter CPVC or PEX, but I think the performance standard needs to be based on copper. The same distance will also contain less water is we use 3/8 inch diameter tubing, but as discussed previously, this is not allowed for all fixtures or in all jurisdictions. Until this change takes place, I think the Water Sense specifications need to work with 1/2 inch diameter piping as the assumed minimum.</p> <p>With 1/2 inch diameter piping, we can usually reach fixtures in about 1 cup when plumbing from below, say between the same floor up to the shower valve. So, for all those houses where we can plumb from below, we can do better than 2 cups. This applies to all houses with crawl spaces or basements, where you can bring piping to first floor fixtures from below. For houses with a slab-on-grade foundation, it is generally better to plumb the first floor from above, thereby keeping the distribution piping out of the slab. Where the house is single story, we should expect to see 2 cups in the piping. When it has more than one story, we should expect to see the piping to the upper stories plumbed from below.</p> <p>8. We Need to Require Pipe Insulation, but at What Level? I agree that all hot water piping must be insulated. I am now in favor of having equal heat loss per foot, which can be achieved by following the rule that the wall thickness of the insulation shall be equal to the nominal pipe diameter. This is a change from my recommendations a year ago, which were used in part to develop the current Water Sense specification.</p> <p>9. Only Allow Demand-Initiated Recirculation Systems. During the teleconference, one person mentioned that they had another type of recirculation system that would work as well as the demand-initiated type currently allowed in the specification. Given the same layout of the recirculation loop and the volume in the twigs serving each fixture, any recirculation system will save, or waste the same amount of water. The difference comes when looking at the energy consequences of the different recirculation system. Those that operate continuously are expensive to operate. The issue is not the running of the pump, if there is one. The issue is that heat is lost as the water goes around the loop and the water heater must run to recover that heat loss. Timer or temperature controls, or a combination of both can reduce the run time and therefore the heat loss that</p>

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		<p>needs to be recovered, but they still take more energy to operate than is currently spent running water down the drain. Of the six types of recirculation systems, only demand-initiated has the ability to save energy compared to running water down the drain. (See Section 3 for additional discussion.) Since the goal of Water Sense is to save water, without adversely impacting energy consumption, only demand-initiated recirculation should be allowed in the specification.</p> <p>10. Recommendations for Revising the Draft Specifications So, here are my recommendations for revising the specifications. They are intended to be clear to the people doing the construction and the normal building inspection and provide the performance desired by the Water Sense program and the people who live in the houses, both under today's flow rates and those we can expect in the near future. These performance characteristics will be measurable after construction with a thermometer, a watch and a 1 quart measure.</p> <ol style="list-style-type: none"> 1. All hot water piping with a nominal diameter larger than ¼ inch shall be insulated. The k-factor of the insulation shall not exceed 0.27 Btu per inch/h*ft²*oF measured radially. The minimum wall thickness of the insulation shall be equal to the nominal diameter of the pipe up to 2 inch nominal pipe diameter. The minimum wall thickness shall be 2 inches for nominal pipe diameters larger than 2 inches. 2. The maximum distance from the source of hot water to each fixture shall not be more than 10 feet, with the following exceptions: island sinks, and where applicable dishwashers; stand-alone tubs; and washing machines. For these exceptions, the maximum distance may be increased to 15 feet. 3. If a recirculation system is installed to meet the requirements of item 2, then it must have demand-initiated controls. Thermosyphon (gravity), continuously pumped, timer controlled pump, temperature controlled (aquastat) pump, time and temperature controlled (aquastat) pump recirculation systems are not allowed. 4. Water heaters must be chosen so that hot water leaves the water heater within 1 second after a hot water draw is initiated. 5. A house may have more than one water heater and associated hot water distribution system. It may also have one water heater and multiple hot water distribution systems. All such systems must comply with the requirements of items 1-4.
§3.6-c1	Hugh Gramling	In addition to being Energy Star labeled, dishwashers should be labeled with a water factor, similar to the clothes washer criteria in this specification.

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§3.6-c2	Andy Sinclair	<p>ANDY SINCLAIR GOVERNMENT RELATIONS: Whirlpool Corporation’s comments on the U. S. Environmental Protection Agency’s draft Water-Efficiency Single-Family New Home Specifications As a leader in crafting appliance efficiency standards and legislation since the 1970s, Whirlpool Corporation supports water efficient new homes. We support the inclusion of ENERGY STAR® qualified clothes washers and dishwashers in the new home program specification. We also support the continued single-agency Department of Energy (DOE) governance of clothes washers and dishwashers, rather than multi-agency governance. Utilization of the current ENERGY STAR qualification level is far superior to creating a unique measure. Educating consumers, the housing industry, and trade partners have been hallmarks at Whirlpool Corporation. As an example, through our Green Appliance Collection on Google SketchUp, Whirlpool Corporation works with architects to design green appliances into American homes. Additionally, in 2007, Whirlpool Corporation provided ENERGY STAR® qualified product training to more than 61,000 sales associates at more than 7,600 retail outlets. ENERGY STAR® is incorporated into all qualified product training, which is then transferred to end-use consumers. To directly educate consumers, Whirlpool Corporation provides a “Use and Care Guide” (owners manual) with every ENERGY STAR® qualified appliance. Through the Guide, consumers learn efficient operation procedures. A listing of Whirlpool Corporation’s branded ENERGY STAR® qualified clothes washers, including Amana®, KitchenAid®, Maytag®, and Whirlpool®, can be found on the web at: http://www.energystar.gov/index.cfm?fuseaction=clotheswash.display_products_html. A listing of Whirlpool Corporation’s branded ENERGY STAR® qualified dishwashers, including Amana®, KitchenAid®, Maytag®, and Whirlpool®, can be found on the web at: http://www.energystar.gov/index.cfm?fuseaction=dishwash.display_products_html. Whirlpool Corporation supports the inclusion of ENERGY STAR® qualified clothes washers and dishwashers in the EPA WaterSense Single-Family New Home Program. Whirlpool Corporation is the world’s leading manufacturer and marketer of major home appliances, with annual sales of approximately \$19 billion, 73,000 employees, and 72 manufacturing and technology research centers around the world. The company markets the Whirlpool, Maytag, KitchenAid, Jenn-Air, and Amana brands throughout the country. Additionally, Whirlpool Corporation has been an ENERGY STAR® partner since 1998, and is a nine-time ENERGY STAR® Appliance Partner of the Year Award winner. For more information about the company please visit http://www.whirlpoolcorp.com. Sincerely, Andy Sinclair</p>
§3.6-c3	Marvin Shaw	Clothes Washers: Clothes washers shall be ENERGY STAR labeled with a water factor of less than or

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		equal to 6.0 gallons of water per cycle per cubic foot capacity. Recommendation: Baseline water factor should be 5.0 or less. Based on numerous high efficiency clothes washers (HECW) rebates processed for varying models, a majority of HECW's currently uses 4.5 gallons of water per cycle or less.
§3.7-c1	Steven Malloch	Indoor Water Efficiency Criteria, 3.7; All of the water using appliances and fixtures commonly or occasionally found in homes should have certification standards. Items missing include, but are not limited to: bathtubs; indoor pools and hot tubs; bidets; and humidifiers.
§3.7-c2	Bill Christiansen	Our previous comments provided clarification of definitions for evaporative air conditioners and evaporative coolers (swamp coolers), and provided recommended criteria for evaporative air conditioners. However, the comments omitted specific criteria for evaporative coolers. We recommend the following for evaporative coolers: <ul style="list-style-type: none"> • Shall have pads / packing of a rigid or semi-rigid engineered type only (i.e. paper packing does not qualify). • Shall have a fan with a minimum of two speeds to reduce evaporation during low use periods. • Once-through or single-pass cooling systems do not qualify, nor does continuous blowdown (continuous bleed-off). • Shall be plumbed such that blowdown or other drained water is discharged in a readily visible site. • Blowdown shall occur not more than once per 10 hours of cooler operation. Each blowdown event shall not discharge more volume of water than 125% of the capacity of the water reservoir in the cooler. In addition, we recommend that the WaterSense program consider the development of product-specific performance criteria for evaporative cooler (relating water consumption and cooling performance) at the earliest opportunity, and, when complete, provide for the incorporation of such criteria by reference into the WaterSense New Homes specification, as we have previously recommended for irrigation controllers and showerheads.
§3.7-c3	Ken Hoffmann	I am amazed that WaterSense supports salt-based water softeners irregardless of the type of system. Water softeners are bad for the environment and human health. Please contact me to consider an alternative, NSF/ANSI-42 certified, eco-friendly system.
§3.7-c4	Roderick F. Gregory	3.7.1 Evaporative air conditioners: "Reservoir discharge outlet should be easily visible so the user can see when refill valve is leaking." Here in Utah, evaporative units are typically set on the roof. This allows the cooled air to be easily blown into the hotter part of the house interior. If the leak is small, the water

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		dripping on the roof is evaporated either 1) before it reaches the roof (cf., virga) or 2) the instance it contacts the roof. No evidence of a leak may be visible from the ground. A more proactive indicator of leakage is suggested.
§3.7-c5	Shannon Murphy	<p>Thank you for the opportunity to comment on the Draft Water-Efficient Single-Family New Home Specification. Watts is a manufacturer of water distribution and treatment systems, from backflow preventers, pressure regulators to commercial and home water treatment devices. As a member of the NSF Industry Forum and participant in the NSF/ANSI Drinking Water Standards, I will be commenting mainly on the water treatment portion of the specification. In section 3.7 subsection 3.7.2 for Water softeners it states: "All devices shall be certified to meet the NSF/ANSI 44 standard. All water softeners shall be demand-initiated regeneration. If the device uses an ion exchange technology, it shall be capable of using potassium rather than sodium salt. Devices that use auto-initiated regeneration (fixed schedule) do not meet this specification. This section should make reference to section 7.1 requirements of NSF/ANSI Standard 44 for efficiency rated water softeners and the efficiency rated water softeners water consumption. Additionally, the final statement " Devices that use auto-initiated regeneration (fixed schedule) do not meet this specification should be updated to state "Devices that use time clock-initiated regeneration (fixed time schedule) do not meet this specification This is due to the fact that demand initiated regeneration water softeners also use auto-initiated regenerations. These auto initiated regenerations are done through a meter on the valve that monitors water usage as opposed to a time only actuation. Subsection 3.7.3 for Drinking water treatment systems states: "Drinking water treatment systems must be certified to meet applicable NSF/ANSI certifications. Such systems shall have an efficiency rate of not less than 85 percent. There are five main NSF/ANSI Standards for water filtration systems. These are: "NSF /ANSI 42 Drinking Water Treatment Units" "Aesthetic Effects" "NSF/ANSI 53 Drinking Water Treatment Units" Health Effects 1725 W. Williams Drive, C-20 Phoenix AZ, 85027 "NSF/ANSI 53 Drinking Water Treatment Unit" Health Effects "NSF/ANSI 55 Ultraviolet Microbiological Water Treatment Systems "NSF/ANSI 58 Reverse Osmosis Drinking Water Treatment Systems "NSF/ANSI 62 Drinking Water Distillation Systems Of the five standards all but one provide 100% efficient water filtration in that all the water that flows in to the filtration system is captured for use. The only system that is rated for recovery and efficiency are reverse osmosis systems, covered under NSF/ANSI Standard 58. Where it is possible to reach 50% efficiency with large commercial reverse osmosis systems that incorporate pretreatment chemicals and recirculation loops, small home reverse osmosis systems that treat only drinking water are less likely to manage this level of efficiency. At this</p>

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		<p>time technology has provided with small home reverse osmosis systems that are capable of obtaining 35% efficiency as evaluated under the requirements of the NSF/ANSI Standard 58. I would like to see for reverse osmosis units that this be the target efficiency rating for small residential RO units covered under NSF/ANSI Standard 58. In section 3.5 Hot Water Delivery System, it is stated: “3.5.1 Demand-initiated hot water recirculating system.” Systems should optimize both water and energy efficiency and shall be designed such that less than 0.13 gallons (0.49 liters) of water are in the piping between the recirculation loop and any hot water fixture. Where the 0.13 gallons is adequate for the kitchen or bathroom sinks, there needs to be a comment regarding the shower portion of the plumbing. These systems are designed to have hot water on demand to the taps; however there can be an extended pipe run from the tap to the shower outlet that will hold greater than 0.13 gallons. These hot water pumps are significant water saving devices, however additional parameters needs to be in place to allow a greater volume of water to a shower line. As an addition to the Water-Efficient Single-Family New Home Specification, there are a number of home flood prevention devices available to the home owner. These systems through various designs stop the flow of water when a catastrophic failure has occurred in the home. I believe that the water efficient home should be equipped with these devices in order to provide a level of safety as well as water conservation when these catastrophic failures occur. Frequently these failures take place while no one is home, only to have the home owner return home to significant water damage repairs due to the significant quantities of water that have leaked out of the plumbing. I hope you will consider these comments regarding the New Home Specification. Please feel free to contact me directly if you have any questions. Sincerely, Shannon Murphy Vice President, Municipal Water Programs Watts Premier</p>
§3.7-c6	Alan Schulman	<p>To Whom It May Concern: Recently I participated in the EPA's development of a Draft Water-Efficient Single-Family New Home Specification conference call on June 18, 2008. I was delighted to hear so many participants striving for the same thing – saving water! Although there was little mention of sump pumps, I do have something that I would like to bring to your attention. It seems that the sump pump is the forgotten appliance, but when needed it can be a powerful tool. With that said, I have attached an article that was published in the PHC News Magazine June 2008 issue. “Conserving water one sump pit at a time.” Also attached is a study we did that demonstrates how much water will be saved when water powered pumps are NOT used. As you will see water powered pumps can waste huge amounts of fresh drinking water when they operate. Battery powered backup pumps use absolutely NO water in their operation. I look forward to discussing this in further detail and will wait to hear from you! Alan Schulman</p>

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§3.7-c7	Peter VanderPlaat	<p>President Glentronics,</p> <p>Dear Sheila, I welcome the vision behind this initiative and applaud the effort that has gone into the document. However, I am equally disappointed to see that furnace-mount (whole home) humidifiers continue to be ignored in the scope of this undertaking. On page 7 of the Supporting Statement document, it states that the “EPA is interested in receiving any data relating to the water use and performance of furnace humidifiers.” This is rather puzzling and I would like to refer you to my presentation made to the EPA in Seattle on this subject during the early consultation rounds in ‘04 leading up to launch of the WaterSense® program. However, time flies and this information is already more than four years old making it perhaps somewhat dated. Therefore, in response to the EPA’s invitation for such data, I would dearly welcome another opportunity to bring up to date information to the group for their consideration into the Water-Efficient Single-Family New Home Specifications. I have been a big supporter of the WaterSense® program with the understanding that “low-hanging fruit” opportunities for water savings relating to nationally used products need to be addressed first, leaving regional products to await their turn. But when I see a highly regional, seasonal and niche product like the evaporative air conditioner included in the Draft Specification document and humidifiers are left out, I question the logic. Admittedly arid climate areas have urgent water conservation needs, but we all know that cities like Seattle and Chicago face similar pressures, despite the presence of water. With a large standing stock of installed units and approximately 500,000 new systems shipped each year with a potential for nearly 4 gallons per hour of water wasted per unit, whole home humidifiers are a 2 million gallon per hour opportunity for savings, in all probability not insignificant when compared to the evaporative air conditioners. Furthermore, growing consumer demand for water saving humidifiers has led to an expansion in the range of such products giving both consumers and home builders a wider choice of water-saving products to use. In addition, new generation water flow meters are now able to detect the low flow rates associated with these appliances, making this not only a conservation issue, but also an economic issue for new home owners. In conclusion, I am very pleased to see the door has opened to include regional and seasonal products in the WaterSense® program. With that perspective in mind, I look forward to presenting my up to date information to the EPA with the hope that the door will be opened a bit wider to include humidifiers in the Specifications when issued. Sincerely, DESERT SPRING PRODUCTS Peter VanderPlaat, CEO</p>
§3.7-c8	Marvin Shaw	Residential Self-Regenerating Water Softeners: All devices should be certified to meet NSF/ANSI 44 standard. All water softeners shall be demand-initiated regeneration. If the device uses an ion exchange

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		<p>technology, it shall be capable of using potassium rather than sodium salt. Devices that use auto-initiated regeneration (fixed schedule) do not meet this specification.</p> <p>Recommendation: Advocate the removal of all residential self-regenerating water softeners that use an ion exchange technology. These devices add total dissolved solids (TDS) to the wastewater stream that reduces the potential use of recycled water for outdoor landscaping and other non-potable water applications as well as require excessive water to recharge the softeners. These devices should be prohibited in groundwater basins with documented salt and TDS problems. EPA should research and develop a list of recommended alternative softeners that do not use ion exchange technology (such as the devices used in Europe).</p>
§3.7-c9	Peter Censky	<p>Water softeners - All devices shall be certified to meet the specification for "efficiency rated softener's water consumption" in the NSF/ANSI 44 standard (i.e., Section 7.1.1.1.3.1 in the 2007 edition of NSF/ANSI 44). Requiring certifications to NSF/ANSI 44 for water softeners in homes eligible for Watersense labeling is a good idea. The water conservation aspect of standard NSF/ANSI 44, Section 7.1.1.1.3.1, should be most important. All water softeners shall be demand- initiated regeneration. This statement about potassium salt is not necessary. All ion exchange water softeners are capable of using either sodium chloride or potassium chloride regenerant. Devices that use time clock-initiated regeneration (fixed time schedule) do not meet this specification.</p> <p>Demand initiated regeneration (DIR) water softeners also use auto-initiated regenerations. The difference is that the automatic regenerations are initiated via a water meter or water hardness sensor with DIR units, whereas regenerations are on a fixed time schedule and occur regardless of the amount of water that has been treated and regardless of the amount of treatment capacity that may be remaining in units with time clock controls.</p> <p>Drinking water treatment systems - Other drinking water treatment systems must be certified by an ANSI-accredited certifier to meet the applicable NSF/ANSI Drinking Water Treatment Unit (DWTU) Standard. All drinking water treatment systems covered by the other NSF/ANSI DWTU standards listed below have water efficiencies of NO%, except for reverse osmosis systems tested and certified per NSF/ANSI 58. That is all the water that comes into the units is treated and becomes product water for use. No water is wasted or discharged to waste. Reverse osmosis systems however do have a reject water stream that is necessary to maintain the membrane from fouling and prematurely plugging. NSF/ANSI 58 contains specifications and a specified test procedure for recovery rating and efficiency rating claims and testing for certified reverse osmosis systems. For efficiency ratings, NSF/ANSI 44</p>

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		<p>requires that reverse osmosis systems be equipped with and automatic shut off device to prevent water wasting.</p> <p>NSF /ANSI 42 Drinking Water Treatment Units - Aesthetic Effects NSFIANSI 53 Drinking Water Treatment Units - Health Effects NSFIANSI 55 Ultraviolet Microbiological Water Treatment Systems NSFIANSI 58 Reverse Osmosis Drinking Water Treatment Systems. Reverse osmosis systems must be certified to meet the recovery rating and efficiency rating testing and claims specified in NSFIANSI 58 (i.e., contained in Section 6.9 of the 2004 edition of NSFIANSI 58), including the standard's requirement that units be equipped with an automatic shut off device to prevent water wasting. NSFIANSI 62 Drinking Water Distillation Systems NSFIANSI 177 Shower Filtration Systems - Aesthetic Effects</p> <p>And the supporting statements: "Water Softeners - This specification establishes that water softeners installed by the homebuilder shall be certified to meet the NSFIANSI 44 standard and have demandinitiated regeneration. Water softeners that use time clock-initiatedregeneration (fixed time schedule) do not meet this specification. Ion exchange water Softeners are capable of using either potassium or sodium chloride to regenerate. The NSFIANSI 44 standard is accredited by the American National Standards Institute (ANSI) and is available for independent third party testing and certification to thereby confirm the performance of water softeners. Products that are certified to conform to the applicable standard are authorized to carry the certification mark of the respective certification body. Independent certification bodies that are also accredited by ANSI to test and certify products to NSFIANSI 44 and to the other Drinking Water Treatment Unit Standards (NSFIANSI 42, 53, 55, 58, 62, and 177) as well include the Water Quality Association (WQA), NSF International (NSF), Underwriters Laboratories Inc. (UL), The International Association of Plumbing and Mechanical Officials (IAPMO), and the Canadian Standards Association (CSA). Demand-initiated systems measure water usage with a water meter and regenerate only when the meter counts down to zero, or they measure with a sensor when water hardness is approaching the exit distributor of the water softener unit. These systems do a better job of providing efficient water and salt usage than time clock initiated systems because they regenerate more closely to the time they need to and do not waste water during unnecessary regenerations. This information seems superfluous in a document dealing with Watersense and water efficiencies. The amount of sodium in water softened with sodium form ion exchange is not significant or unhealthy. Sodium softened water meets all the FDA</p>

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		<p>requirements for "Low Sodium" or "Very Low Sodium" labeling of beverages. Sodium from water softeners does not harm septic tanks or septic tank drain fields. While it is true that plants and grass can use potassium, the diluted sodium in wastewater does not normally harm grass covered drain fields. Drinking Water Treatment Systems - This specification establishes that drinking water treatment systems installed by the homebuilder shall be certified by an ANSI-accredited certifier to meet applicable NSF/ANSI Drinking Water Treatment Unit (DWTU) Standards and in particular to meet the efficiency rating parts of these standards where applicable.</p>
§4.0-c1	Hugh Gramling	<p>Outdoor water use is highly variable across the nation due to differences in climate, landscape palettes and water availability. In Florida alone there are several certification and recognition programs that are currently being used. Perhaps an EPA WaterSense label or recognition of state-administered programs could be considered.</p>
§4.0-c2	David Guth	<p>Dear Gentleperson: Just a few questions: 1) Why no graywater systems? 2) Why no cisterns? 3) Why no systems to capture irrigation water for reuse, or redirection to deeper rooted plantings? (eg, subsurface "moisture barrier" (plastic sheet) beneath planted beds. Irregardless of the surface slope, the barrier is sloped towards deeper rooted plants. The barrier terminates near these deeper rooted plantings such that the excess irrigation water (and precipitation) is delivered to their root zone. Subsurface irrigation is mentioned; it could be combined with this approach. 4) Disclaimer: I sell Stormwater capture systems. Why no mention of stormwater capture for irrigation? The Outdoor Water Efficiency Criteria strongly limited the demand for irrigation water. On a typical home lot, wherein most of the surface is hardscape, storage capacity of a small percentage of the stormwater runoff from the hardscape could provide much of the irrigation water. If graywater is available, no irrigation water should be needed. The combination of subsurface irrigation with graywater (no aerosolization of water of dubious microbiological quality) with surface/vegetable garden irrigation from a stormwater cistern, will definitely eliminate the need for landscape irrigation water. Respectfully, David Guth, Sales Stormwater Solutions</p>
§4.0-c3	Kevin Morrow	<p><u>Storm Water Management</u> As EPA recognizes, it has not yet incorporated any stormwater mitigation and/or remediation strategies into the WaterSense New Home specification. Home builders are currently required by the National Pollution Discharge Elimination System permit program, both on the federal and state levels, to implement various best management practices (BMPs) to control stormwater runoff during construction, but they are quite properly not expected to manage post-construction discharges. Although the WaterSense new homes initiative may be able to provide an incentive to builders to incorporate</p>

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		<p>mitigation strategies into their plans, EPA is cautioned against making any stormwater-related actions mandatory for inclusion in the program due to the significant differences, challenges, and options available to properly manage stormwater on a lot by lot basis.</p> <p><u>Other considerations:</u></p> <p>(1) Low Impact Development (LID) has the ability to reduce outdoor water demand significantly. The LID plan may include directing water to the landscape where it is needed or through collecting and reusing it for irrigation or other uses. Because many of the LID techniques are designed to be part of a system that is typically implemented at the subdivision level, however, care must be taken to ensure that, where possible, options are scalable and workable at a lot level.</p> <p>(2) EPA must also consider the numerous water rights issues that can be raised as a result of diverting or otherwise using storm water runoff. For example, the diversion and use of rainwater is subject to the Constitution of the State of Colorado, state statutes and case law. Geological, geographical, meteorological, and topographical factors also all contribute to the options available for directing and managing storm water flow, thus a one-size-fits-all approach must be avoided.</p> <p>NAHB looks forward to the release of a second draft and the possibilities it may provide to those innovative builders who volunteer the time and resources to ensure the start of a successful program. However, failure to provide flexibility and clear definition on key program specifics will limit participation until such issues are appropriately addressed. NAHB hopes that, once these issues are adequately addressed, many of the Nation’s builders will be inspired to participate in the WaterSense New Homes Specification program.</p>
§4.0-c4	Tom Swihart	<p>We commend EPA on their rapid progress in expanding the WaterSense program, including the issuance of draft “Specifications for New Homes.” There are very substantial opportunities for improved efficiency in water use in new homes. In general, we endorse the recommendations in the August 4, 2008 comments from the Alliance for Water Efficiency but we have additional concerns specific to Florida. We have comments both on the overall programmatic nature of the New Home Specification as well as specific components of the proposed specification.</p> <p>It may be very difficult to write a specification for new homes across the entire United States, particularly if it addresses, as it must, landscapes and residential irrigation. Climate and soils vary so widely that it may not be possible to adopt a uniform specification for all regions. We recommend that EPA consider a process to designate local, regional, or statewide programs as being “WaterSense equivalent.” So long as the other program achieved the same or even more overall water use efficiency, it could be</p>

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		<p>designated, and even co-branded, as a “WaterSense” home. The Florida system of five water management districts covering the entire state could be interested in such an alternative. For example, the “WaterStar” program undertaken by the St. Johns River Water Management District is gaining momentum. Both the South Florida Water Management District and the Southwest Florida Water Management Districts are considering implementing a version of it in their regions. If that occurs, at least eighty percent of the population of Florida would be under the scope of that program. The water management districts, and other entities, would be engaging in a substantial public awareness and marketing campaign to promote the WaterStar program, which would compete for attention with the separate EPA WaterSense specification. That duplication would serve the interests of neither program. In regard to establishing equivalent effectiveness, there appear to be feasible ways to demonstrate this for WaterSense and WaterStar. Other related programs in Florida also promote water use efficiency, such as Florida Yards and Neighborhoods, LEED certification, and Florida Green Building standards. Perhaps the Conserve Florida Clearinghouse at the University of Florida could perform under contract an evaluation of related programs in Florida and prepare recommendations on how WaterSense can be coordinated with them.</p> <p>Our final programmatic comment is that the draft specification does not go nearly far enough in promoting or requiring low impact design practices. Attached for your information is the text of the Florida “Landscape Irrigation and Florida-Friendly Design Standards” which local governments in this state must use when adopting landscape irrigation and Florida-Friendly ordinances. (Available online at: http://www.dep.state.fl.us/water/waterpolicy/land_irr.htm) The concepts in those standards are not unique to Florida and include concepts such as:</p> <ul style="list-style-type: none"> • Low impact site design practices, such as preserving existing native trees and vegetation shall be used if feasible. Where established natural vegetation is incorporated into the landscape design, irrigation of those areas shall not be required. • The plant palette and irrigation system shall be appropriate for site conditions, taking into account that, in some cases, soil improvement can enhance water use efficiency. • Plants shall be grouped by irrigation demand. • Irrigation systems shall be designed to meet the needs of the plants in the landscape (not the other way around).

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		<ul style="list-style-type: none"> • Irrigation systems shall be designed to separately serve turf and non-turf areas. • Irrigation systems shall be designed to use the lowest quality water feasible.
§4.0-c5	Doug Bennett	<p>We are opposed to integrating watershed management requirements, including prohibiting labeling of homes constructed in flood zones, a requirement to retain stormwater onsite and required soil stabilization during construction. These requirements are beyond the scope and intent of the program and would both diminish builder participation and increase the complexity of administering the program.</p> <p><u>Flood zones</u> A prohibition on WaterSense homes in flood zones would not deter development in such areas where it is already permitted, thus WaterSense would be foregoing opportunities to reduce water demand in such homes. Pending federal legislation could radically expand the Federal Emergency Management Agency’s definition of flood zones to include property that is currently protected by a flood protection structure. If WaterSense adopted the AWE’s recommendation and the flood zone definition was broadened, entire communities might become inaccessible to WaterSense.</p> <p>In desert environs, ephemeral washes are classified as flood zones. In some cases, these designations are corridors no wider than 50 feet and may meander for miles. Imagine trying to explain to a participating builder that several homes in a swath through a subdivision cannot be labeled, or that a home does not qualify because a fraction of the lot overlaps a flood zone. Even when the builder complies, there is still a challenge in communication and marketing when non-labeled homes are intermingled with WaterSense Homes.</p> <p><u>Stormwater Detention</u> The AWE encourages a requirement to maintain the first inch of precipitation onsite. This requirement would conflict with some local codes and require special handling in each community. For a typical 5,000 square foot lot, over 3,100 gallons of water would need to be detained. Since each detention basin has unique dimensions, there would be extraordinary complexity in measuring the volume. AWE suggests that detention compliance could include such variables as holding areas, vegetation, and soil conditions. Such a provision would require specialized support in design, construction, compliance inspections and administration. The cost and complexity would deter builder participation.</p> <p>The draft specification (4.1.2) should, however, specify mulching materials must be permeable to both air and water. The use of impermeable weed barriers is detrimental to landscape health, obstructs effective use of rainfall, and aggravates stormwater runoff.</p> <p><u>Soil stabilization</u></p>

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		<p>The SNWA disagrees with a requirement for soil stabilization for several reasons:</p> <ul style="list-style-type: none"> • There is no relationship to water demand; • Dust control, erosion abatement and surface water protection is typically regulated by local, state and federal law; • WaterSense will be unlikely to measure or enforce compliance. <p>In the event the comments collected in this process cause EPA to consider provisions radically different from the draft specification (such as proposed watershed management requirements), the SNWA strongly encourages a second stakeholder process to allow further comment on the new proposals. The SNWA is committed to the success of WaterSense.</p>
§4.0-c6	Ilan Katz	<p>Dear Sir/Ms. Water-Efficient Single-Family home should also regard the option for in house water recycling and rain harvesting. These 2 issue has a high potential for water saving. Greywater recycling for toilet flushing may reduce the water consumption by 30%. The new program Water-Efficient Single-Family New Home is the right place to address this issue on a federal level, and to elevate the awareness to the option of greywater recycling. It shall include the specification of the necessary measures to avoid health risk by using recycled greywater (proper treatment, disinfection, dual plumbing system) Greywater recycling is addressed by regulation of different states and intensively investigated by academy. Sincerely Ilan Katz Water-Arc Selected sources: Larry Roesner, Yaling Qian, Melanie Criswell, Mary Stromberger, Stephen Klein. 2006. Long-Term Effects Of Landscape Irrigation Using Household Graywater Literature Review And Synthesis. WERF & Colorado State University Guidelines for Water Reuse. EPA/625/R-04/108 September 2004 M. Pidou, F. A. Memon, MCIWEM, T. Stephenson, B. Jefferson and P. Jeffrey. 2007 Greywater recycling: treatment options and applications. Engineering Sustainability 160, ES3: 119 131 Regulation: http://www.azsos.gov/public_services/title_18/18-09.pdf http://www.owue.water.ca.gov/docs/Revised_Graywater_Standards.pdf http://legis.state.nm.us/Sessions/03%20Regular/FinalVersions/house/HB0114.pdf http://www.tnrcc.state.tx.us/oprd/rule_lib/adoptions/03056210_ado.pdf http://www.rules.utah.gov/publicat/code/r317/r317-401.htm Ilan Katz Water-technologist, M.Sc, MBA. Water-Arc Haifa Israel www.water-arc.com</p>
§4.0-c7	Mike Baron	<p>CLCA recommends that whenever an irrigation product category has not been vetted for WaterSense product labeling, the WaterSense specifications utilize SWAT (Smart Water Application Technologies)-approved products within that product category. When SWAT-approved products within the product category are not available, then CLCA recommends that the WaterSense specifications use IA Best</p>

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		<p>Management Practices criteria to develop the performance specification for the product category. CLCA, at its own expense and in response to a recommendation made by California's AB 2727 Landscape Task Force, has developed and implemented a Water Management Certification Program that trains, encourages and certifies landscape water managers to establish a water budget for each of their maintained and irrigated sites. Certified water managers are required to report monthly water use. In return, the program generates a monthly report that clearly shows monthly and year-to-date water use against the water budget based on site-specific climate and site-specific plant material. CLCA recommends that the Watersense specifications encourage the use of Certified Water Managers when maintenance contractors are hired by the homeowner, not as a requirement, but simply as a good practice in the quest to improve irrigation efficiency. CLCA is a non-profit trade association of California-licensed landscape and landscape-related contractors. Also included among our approximately 3,200 members are landscape suppliers, landscape architects, public officials, educators, and students.</p>
§4.0-c8	Tom Reynolds	<p>Thank you for your efforts to help homebuilders understand the factors affecting efficient and beneficial use of or water supplies, especially the non-renewable ones. I preface my comments with some acronyms for my comments. NL or C&&&&.Neither logical or complete thinking NC&&&&&.Not complete; expand; be sure to include inorganic mulches. PDSP&&&&.Poorly developed; seek professional input; sorry, but this not this way. Section Comment 4.1.1.1 NL or C 4.1.1.2 The realities of this specification will not be defensible and boggle a thinking person's mind. If I only have a 100 square foot front yard, don't tell me it can't be all turf. 4.1.2 NC 4.1.3 See comment for 4.1.1.1 4.1.4 NL or C 4.2.1.1 NL or C 4.2.1.2 NL or C; PDSP 4.2.1.3 NL or C 4.2.1.4 NL or C; PDSP 4.2.2 Dot 1 NL or C; PDSP 4.2.2 Dot 2 OK 4.2.2 Dot 3 OK 4.2.2 Dot 4 NL or C 4.2.2 Dot 5 OK 4.2.2 Dot 6 OK 4.2.2 Dot 7 OK, but the difference between the two is like the dif. Between oranges and hub caps. 4.2.2 Dot 8 OK 4.2.3 There are at least 6 types of sprinkler heads. Please clarify. 4.2.4 PSSP 4.2.5 OK, but add 4.2.5b, c, and d 4.2.5b Schedules shall include new system operating pressures, the average of 20% of the devices in the zone, scattered along critical paths; take pressures at nearest point below the nozzle or emitter. 4.2.5c Static pressure at point of connection, measured every 6 hours for 24 hours, on one weekday and on Saturday. 4.2.5d Approximate canopy area of plantings at establishment. 4.2.5e Projected canopy area at maturity (or 10 years) using local references e.g university landscape species tables, popular local plant selection books for mature canopy size. 4.2.5f Projected weekly, net water requirement, in gallons, at maturity, by valve zone. Have a nice evening. Tom A. Reynolds Water Balance, LLC Tempe, AZ</p>

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§4.1-c1	Annie Costa	<p>June 18, 2008 WaterSense Staff Thank you for making arrangements for the conference call. It was a valuable use of time and resources and creative way to extend your outreach deep into the country - we applaud your efforts to engage everyone in dialog before you finalize your program specifications. Thank you, as well, for confirming that the EPA and the WaterSense program recognizes artificial grass and synthetic turf solutions as acceptable materials to use in landscape applications in the Watersense program. As to our comments, requested to be submitted in writing: We would like to see you add language that clearly defines "porous landscape elements" separate from "hardscape", which would infer "non-porous" surfaces such as concrete, asphalt and other masonry elements you have already included in the language. Water run-off restrictions and definitions or limitations in the use of "hardscape" elements in landscape, in other programs, local building codes and restrictions, could limit product selections for consumers of artificial grass solutions if not clearly and distinctly called out; installed using industry standard guidelines, artificial grass solutions are highly porous systems. In this definition you could include several items such as: 1. artificial grass & synthetic turf (65mm SF installed for lawns in 2007 in US; over 100mm SF installed as sports fields; growth = 20% a.p.) 2. porous concrete (new products are now available on the market) 3. porous interlocking pavers (790 million SF installed in 2007, 15% a.p.) 4. crushed aggregate walkways, paths, driveways As "turf" alternatives, none "require" water or irrigation and none require the chemicals and equipment to maintain them to keep them healthy and functional. Artificial grass systems are an option that connects many programs and their core objectives; EPA, CWA, NHB Green Bldg Standard, Environmental Health, Recycling, Green Building Council, LEEDs; it's a hub product that reaches across a lot of borders and joins together quite a few conversations; all positive. I've seen estimates that range from 23mm acres to over 90mm acres of "lawn and landscape" turf is maintained in the US today. It is the largest irrigated "crop" in the US and feeds no one. An average homeowner with 1000 SF of lawn is estimated, by the water districts we work with in California, to consume an average of 32,000 to 56,000 gallons of water, per year, if correctly irrigating a healthy, well-cared for lawn, installed on good soil, in a temperate climate. The use of artificial grass solutions for landscape; lawns specifically; can save an astounding amount of fresh and reclaimed water resources that can then be used in other ways. 1000 "average" homeowners adopting to use artificial grass could "give-back" an estimated 32,000,000 gallons of water per year for other local water needs; that is only 1000 homes. Increased awareness of the value of artificial grass solutions to professionals will help the growth and adoption of artificial grass solutions in commercial landscaping increasing water-savings by 10-50 times that of residential use. The products can be installed effectively on slopes, are</p>

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		<p>prized for dust control, grey-water and reclamation management solutions and are easily adaptable to any regional weather or local site conditions. By creating a separate and distinct definition in the terminology for porous, non-irrigated landscape elements, a professional and consumer can both clearly identify what they can choose to use and what impact the element will have on their water-shed, water budget, local codes and restrictions. We look forward to promoting WaterSense in our market and communities across America as part of our own outreach along with continued participation in program development and future dialog. Thank you Annie Annie Costa Exec Dir ASGi Association of Synthetic Grass Installers</p>
§4.1-c2	Greg Touchton	<p>These specifications don't allow for xeroscaping as a landscape option. There are many areas where mulch would not make sense from a design or environmental standpoint. Mulching should depend on local natural landscape condition and should be optional in arid regions. Hardscape does not refer to dry arid soils where a mulch would be inappropriate. Limiting waterbudgets to use rain as only 25 percent available water prevents landscapers from using local native vegetation. Typically, native vegetation would be adapted to using rain or natural precipitation as 100 percent of the water budget. Perhaps the supporting statement should limit outdoor watering to no more than 25 percent of the total water budget with precipitation and grey water allowed to make up the remaining needs. Educational materials should include notes on letting grass go dormant during summer dry spells. Browning of grass during the summer is natural and expected. This does not mean death of the plants. Thank you for your efforts, Greg Touchton</p>
§4.1-c3	Ron Davis	<p>4.1.1 Landscape Design There is not a specification that the landscape design be designed, installed and audited by a WaterSense partner. If the design of the landscape is not in accordance with the specifications of section 4.2, Irrigation System Design, then the irrigation system designer has no control over the selection and / or placement of the plant materials or the size and shape of the landscaped areas. The landscape designer and irrigation system designer must have to follow the same guidelines, and landscape designer must understand the limitations of the irrigation system designer. 4.1.1.2 Option 2 - Develop the landscape design using a water budget approach. This option is confusing to me as written. The evapotranspiration (ET) limit on the landscapable area shall be no more than 60 percent of the reference ET (ET_o) for cool-season grass. How can you limit the ET of a plant to 60% of "normal" and expect it to grow? Is this limited amount of water that can be used for irrigation, calculated on the size of the entire parcel or just the size of the landscapable area? If the limited amount of water available for irrigation is calculated on the size of the entire parcel, what is the minimum or maximum percentage</p>

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		<p>of the size of the entire parcel that can be landscaped? Trees that overhang hardscapes will use water based on their canopy. Therefore the amount of water needed by the landscape can not be calculated strictly on landscapable area but must include room for the tree canopy. For purposes of the ET calculation, the available precipitation shall be no more than 25 percent of the average annual rainfall amount. How do you water a landscape in an area of little or no annual rainfall? Turf shall not be installed on slopes greater than 4:1. Builders keeping a natural landscape that requires no supplemental irrigation would meet the requirements of this option. 4.2.1.2 - Irrigation systems shall be designed to sustain the landscape without creating flow or spray that leaves the property during a minimum continuous operating duration. This will be measured during the irrigation audit and the minimum continuous operating durations shall be 7 minutes for pop-up, fixed-spray sprinklers; 10 minutes for subsurface irrigation; 10 minutes for flood bubblers; 20 minutes for rotor sprinkler heads; and 30 minutes for drip irrigation. In some areas of clay soils, application rates are very slow, less than .10 inch per hour. Pop-up, fixed-spray sprinklers have application rates in excess of 1.5 inches per hour. If Pop-up, fixed-spray sprinklers are used on these soils, the water duration may need to be reduced, and multiple watering times used. I feel that the minimum water duration should be reduced to 5 minutes or less and 3 to 4 start times used per day. 4.2.1.3 - Sprinkler heads shall not be used to water plantings other than maintained turf grass. Some times there is an advantage in using sprinkler heads on certain ground covers and shrubs and in certain climatic conditions. Sprinkler heads can be as water efficient as using micro irrigation. Micro irrigation sprays are not "matched precipitation rate" and therefore can end up over watering some areas and causing run off. The patterns of micro sprinklers and sprinklers of low volume are more susceptible to distortion by wind. Ron Davis Irrigation Design & Consulting</p>
§4.1-c4	Todd Hurt	<p>Hi, First a comment about the 40% turf option. As the gentleman mentioned there are areas of the country that can support turf without irrigation after establishment. Could the option 1 read limit 40% of "irrigated" turf. -- Todd Hurt Training Coordinator UGA Center for Urban Agriculture</p>
§4.1-c5	Karen Watts	<p>I am in opposition to any new government regulation of the size of home lawns and encourage the EPA to extend the deadline for further discussion. Home lawns help reduce greenhouse gasses and encourage the use of the outdoors by children and families. We need to explore other options for water savings. This is not the appropriate role of government as outlined by the Constitution. Blessings for the New Year, Karen C. Watts Turf and Ornamental Manager Western Farm Service</p>
§4.1-c6	Joe Bondra	<p>The proposed guidelines do not adequately consider such factors as differences in soil composition, turf species, new turf varieties and weather conditions. Further, the guidelines are not based on science or</p>

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		real situations and do not consider turf benefits. The government shouldn't be in the business of regulating the size of home lawns, at minimum the decision should be based on science. Joe Bondra General Manager Cygnet Enterprises Inc
§4.1-c7	Christina Loock	I think the idea of a certification for new homes using less water is great. While percentage of turf allowed was specified, I did not see specifications for an amount of impermeable surfaces. As I'm sure you know, water hitting impermeable surfaces runs off very quickly and by definition doesn't permeate into the ground and doesn't replenish aquifers and streams. I think reduction of impermeable surfaces is essential. I would also like to suggest rain barrels to collect roof runoff (a certain number based on size of the roof) be part of the outdoor component. They are not expensive, but make a huge difference. I also didn't see any mechanism in place to create stricter requirements as new standards are put in place (for example for the showerhead) or as technology improves. I think this should be part of the program. Thank you for all the work that went into creating these standards. Sincerely, Christina Loock
§4.1-c8	Randy Kleiner	After reading through the requirements on acceptable groundcover and mulches I noticed the use of synthetic turf as an option. To utilize this option the requirement is permeability of the turf product. Is there a min. flow rate of permeability? Most of the turf products on the market use a urethane backing which is punched in a grid to create the permeability. The spacing of the holes punched can vary, thus what is considered to be permeable by one manufacturer may not meet the intensions of these guidelines. There are products being manufactured which use a "DuraFlo" backing which allows for permeability throughout the entire surface and not just at the punched holes. This can become an issue in regards to runoff in areas which receive more rainfall than others or have trees and plant material within the turf areas which require more air and water flow to the root zones. Synthetic turf is also used for artificial putting greens and are for the most part non-permeable, however the same □DuraFlo□ backing is available for use in these applications and can meet the permeability requirements. The SNWA (Southern Nevada Water Authority) has guidelines set for these issues within their Xeriscape Conversion Program and may be beneficial to browse. Thank You for the opportunity to respond. Sincerely, Randy Kleiner President Southwest Greens NV. Inc. Member ; SNWA Water Smart Contractors SNWA Smart Start Program SNHBA ASLA
§4.1-c9	Mark Storby	To Whom it May Concern: I would like to state my opposition to the government regulation about the size of home lawns and urge the EPA to grant an extension for further discussion. I believe this regulation is based upon emotion and not sound science which shows many benefits to a well maintained lawn. Please grant an extension so that all sides can be heard. Thanks for your time. Mark Storby

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§4.1-c10	Sandra Rode	<p>Dear EPA Water Sense Home Team: Overall the scope and criteria for this program will encourage savings. However, in the arid regions of the country the Landscape Design Options do not prescribe Outdoor Water Efficiency. You may wish to offer a separate outdoor water efficiency Landscape criteria section for areas with annual precipitation less than 13-15 inches since there is such a broad range throughout our 50 states.. For example, the state of Arizona asks that all municipal providers have a guideline regarding maximum turf. However it is 30% of gross property, substantially less than the 40% allowed under option 1. Even that number is well above the recommendations of some municipalities. Regarding Option 2, many cities are actively discouraging any winter overseeding (use of cool-season grasses). Using this grass ET would not be considered water efficient in Arizona. It seems that use of rain water or gray water in lieu of potable water would meet the intent of reducing supplemental irrigation (reducing need of water from off-site sources). If supplemental irrigation is defined to specifically EXCLUDE water from these sources, the current wording could work. (Efficient use of these sources can permit more lush vegetation than runoff would permit in natural environment.) This is a commendable initiative. I look forward to sharing this option with builders and encouraging their participation and marketing of it once specifications are finalized. Sandra Rode Water Conservation Specialist Water Resources Department City of Goodyear, www.goodyearaz.gov "Water is the best of all things." Pindar, Greek</p>
§4.1-c11	Kathleen Kolman	<p>~Landscaping to decrease lawns and increase drought tolerant planting ~Reuse of non-potable gray water ~Development of new aesthetic towards acceptance of native planting and dormant periods are all important concepts to include in new water efficient residential development. Kathleen Kolman ASLA Associate Member</p>
§4.1-c12	John Marshall	<p>I can understand the concern for building water features in home back yards. My bigger concern is that water is wasted to the rain collection sewers that are mostly over loaded and are a cost to city governments to treat and release the water in our already polluted rivers and streams. My wife and I have a catch system that collects about half of the rain waters and condensation waters from our HVAC and use the water for our gardens. The system is about 500 gal. capture system and the excess goes into my vegetable garden via sprayers. I see a large waste of water that could be used to water the golf courses etc instead of burdening the local water suppliers. We then have a hugh amount of gray waters that are biologically fit for use on flower gardens and other yard landscapes that could reduce the use of potable waters. I've worked in the western US where water use is critical and have seen the waste of that resource in those areas. Your efforts to conserve water would be better used if you helped people</p>

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		develop and use method that would conserve our water usage. John A Marshall
§4.1-c13	Melinda Barret	I suggest you consider including the use of native and low-water use plants as well as hydrozoning to your outdoor section
§4.1-c14	Adele Ashkar	Comments on Section 4.0 Outdoor Water-Efficiency Criteria EPA: WaterSense labeled new homes Section 4.1 Landscape I applaud the concept of limiting lawn cover on new residential development. However, it is not a silver bullet as far as water conservation (or any kind of sustainability) is concerned, but rather a great first step towards the reduction of the vast acres of lawns that continue to be a cheap expedient for developers. Requiring bottom-line driven homebuilders and their landscapers to plant 60% of any residential property may very well result in gardens consisting of common ornamental plant material, planted in compacted or minimally improved beds, denuded of native topsoil. This means we will get a lot more of the same kind of sub-standard landscaping that exists today in new developments: water-guzzling alien plant species intermixed with invasives, sparsely planted for economy in sub-optimal conditions - e.g. not a lot of water conservation as compared to the typical lawn. The missing elements in the specification include minimum standards for soil improvement, shade tree protection and the use of native plants, all of which have been shown to improve infiltration and reduce water usage dramatically in residential gardens, and consequently to reduce the need for supplemental irrigation -- a stated goal of the WaterSense program.
§4.1-c15	Doug Karcher	These criteria imply that the use of turfgrass negatively impacts the home's ability to earn Water Sense. However, turfgrasses do not require supplemental irrigation for survival in most areas of the country and can survive under drought conditions for long periods of time in a dormant state. The EPA should not regulate the use of turfgrasses to save water; rather they should focus on the water wasted by homeowners when overwatering their lawns (and other landscape and garden areas). Here are specific concerns with the Water Sense criteria: 1) Planting turf does not imply more water usage; especially in the southeast when turf can easily survive w/o supplemental irrigation, and in most years, stay green throughout much of the growing season w/o supplemental irrigation. If the goal is to save water, criteria should focus on sound irrigation practices or avoiding using plants than cannot survive w/o supplemental irrigation. 2) Turf is an ideal plant choice for slopes. With millions to billions of shoots per acre, what type of plant would be better at stabilizing the soil (preventing soil erosion and associated nutrient transport)? Not only does turf provide excellent soil stabilization, its biomass provides an excellent environment for microbial activity and will filter most pollutants. The EPA makes no suggestion for an alternative to turf on slopes greater than 4:1, which is very curious. 3) There is a potential for homeowners to overwater under

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		<p>Option 2. Particularly during wet seasons such as what has been experienced by much of the mid-south and Midwest thus far in 2008. Option 2 would have allowed homeowners in these areas to apply several inches of irrigation in 2008, when no supplemental irrigation has been needed, in most cases. The overall goal of the Water Sense program is admirable and protecting fresh water resources is extremely important as our population expands. However, Water Sense criteria should be grounded in scientific truth and currently it is not. Respectfully, Doug Karcher Associate Professor of Horticulture University of Arkansas</p>
§4.1-c16	Christy Page	<p>I am writing on behalf of the Georgia Turfgrass Association (GTA), which is a trade group of more than 500 member companies from all across our state. GTA is very concerned about the draft WaterSense for Homes specification released for comment on May 22, 2008. It appears that the landscape section has been developed without relevant stakeholder input and we request that additional time be made available for input by the turfgrass industry and others. The design limitations placed upon the use of turfgrass in landscape design fail to consider the significant positive benefits of turf, including passive cooling, erosion prevention, oxygen production, carbon sequestration and recreational opportunities provided by turfgrass. It also fails to include regional climatic differences as well as species and cultivar selection options. Regarding irrigation, it fails to adequately recognize irrigation alternatives and innovative technologies available. In addition, the omission of ornamental water features fails to capture the importance of these designs to facilitate rain water collection or for storage for reclaimed water to be used for irrigation. The WaterSense program has professed that water efficiency does not have to mean significant lifestyle changes. The new home specifications represent a significant departure from such guidance in that the complexion and functionality of the landscape will no longer be a product of local influence and customer needs or interests. To impose such restraint in the name of water reduction without consideration for air quality, land use, water quality and other environmental impacts is highly irresponsible. EPA's supporting document only seems to reference water use concerns and contains several opinion based statements, rather than scientific facts. The members of GTA support efforts to curtail water waste in the landscape and have been very active at the state level to do just that. Any and all such initiatives must be developed in a transparent process which includes those with expertise regarding products and best practices of affected industries. We feel that by using appropriate cultivars and species, water conservation technology and other methods, landscape water efficiency can be achieved without limiting turf area or eliminating water features. While WaterSense is a voluntary program, we know that such a program can become the local standard, thus encouraging state and local</p>

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		<p>governments to implement requirements for Water Sense compliance in new construction. Again, we agree with the principal goal of WaterSense and understand a community’s need to ensure water efficiency; however, we can demonstrate many water efficient techniques and technologies that are not considered in this document. GTA and other urban agriculture industry associations are very interested in being partners in this initiative and contribute our expertise for water efficiency that has not been incorporated in the current draft language. We are committed to assisting EPA with the development of this program in a collaborative fashion. The effectiveness of WaterSense can only be enhanced by granting our request to suspend the current landscape specification development activity for a period of not less than 90 days in favor of a truly inclusive and scientific process that the marketplace can embrace. Sincerely, Christy Page Georgia Turfgrass Association www.turfgrass.org</p>
§4.1-c17	Frank Gabry	<p>DEAR Watersence-newhomes, urge you to review our new landscape design-use application. Over the years, I've witnessed 99%water run-off from most new homes built in our communities in USofA. Other problem has been mildew on outside & inside of walls on many homes. Even lack of wild life to eat insects SADLY due to loss of natural habitat. Noise levels are getting out of hand in our communities, you can even hear what your neighbor is saying about you. Viewing one house into another, could see into your nieghbors home and into each others yard, fence's limit air flow. Summer hot sun bearing down on yard and reflecting back into the residence. Constant use of power equipement for mowing & trimming, very high energy use. So many more issues not mentioned here. Yet, happily, every issue can be resolved easily & simply, all it takes is adapting a simple policy. 1) First- no more foundation plants-or very limited amount-none under eve's of homes. There is no rain water under the eve's to support plantings & the house cannot breath, from the plant's obstruction of air, the mildew sets in on outside walls, & so makes it inside. I see this all the time, painters especial see this when they cut down over grown plants, then the painters have to clean the mildew with Clorox, yet what about the inside of the walls? Please lets stop people from damaging their health, ruining the environment and wasting water on unnecessary plantings. -To fix this is easy, plant outside of eve's drip line at minimum of 7-8 feet out away from house. 2)Second- when it's raining, water running off the property into the street (picking up oil & brake dust from cars) and flowing down and out the sewers. What a waste, what a shame, how sad! We can easily 'fix' this. All the plants that where destined for 'foundation plantings' can be plant near or on the property line. Just imagine, looking out from one 'row' house to another 'row' house, instead one would be looking at a forest of plants, a buffer between homes, & plants can be planted farther apart, let to grow, less pruning, even less grass to mow! Importantly, we are slowing down water run off, forcing</p>

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		<p>water to 'stay' longer on permeable surface, to percolate into the ground. Less run off, less taxing our sewers, less polluted water entering our rivers, bays, & lakes. These near property line 'plantings' I call it estate style planting, F.B.Gabry's Estate Style Planting, I sell it as! If we take all the developments with homes on it, moved all the foundation plants out, close to property line, we would save water, help wildlife recover lost ground, reduce mowing & lawn area, enhance views of natural settings of plants between homes, slow down water run off! Can you imagine the energy savings, even reduction of noise, plants absorb traffic noise, or even kids playing next door, especially in swimming pools in summer! Think of all the endless possibilities, it is overwhelming to write, yet I can start, Estate style help's cool the ground & surrounding areas, as some plants grow larger into small to large trees, several types of animals will find shelter or cooling shade, many of these animals eat pesty insects! Water conservation, is achieved on many fronts, little or no need to water native plants in native settings, less run off, forced percolation (helps replenish water shed), less mowing w/ reduced lawn area, less pruning, ease of maintaining plants, reduction in noxious noise, pleasant visual, (not looking into another house & personal belongings) privacy. A positive environment for wildlife friends, beneficial cooling effect of trees, cleans air. How much better would our communities would look and be if this is adopted by the EPA! I have tried educating the public, some people are very responsive, & have adapted, FBG's Estate Style Planting, yet some are still reluctant. Most, if not every zoning inspectors believe grass/ lawn's w/ swales on or near the property lines is the only acceptable solution. In many new communities, I am now witnessing, 2 x swales one on either side of the property line, this area is unmowable, yet they still install grass over it, it's the 'ruling by zoning department' I am told! Sadly I am witnessing, Mowing this area on/near the property line, takes a huge amount of negative energy, and is dangerous, yet wouldn't plantings be easier? We are trying our best, more & more people are becoming environmentally conscience, sadly we are finding our own government officials, very reluctant to learn from past mistakes and keep adding band-aids to major sever! Still don't understand why? Haven't we learned? Wouldn't it be easier to paint a green stripe around the house at waist height & call it 'foundation planting' after all that is what it looks like from next door. Please, don't keep for-saking of our environment adopt my landscape policy called FBG's Estate Style , you don't have to mention my name at all, like NIKE say's ' just do it!' Let's work in harmony with nature before it is to late!</p>
§4.1-c18	Peggy Krapf	<p>Gentlemen, As a 15 year professional landscape designer, I take issue to the proposed regulations. No where do I see any responsibility placed on the part of the builder/developer during the clearing, grading, site work stage of construction. This is where being WATER SMART should start!!!! To tell a landscape</p>

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		<p>installer or designer "Turf shall not exceed 40% of landscapable areas" (L.S Design 4.1.1) when the builder has cleared 100% of landscapable areas leaves most homeowners with two choices: UGLY (cover 60% of the yard with mulch) or UNAFFORDABLE (reforest the lot with very expensive trees and shrubs). If builders and developers were REQUIRED to save AND PROPERLY PROTECT the existing trees on building lots then turf and irrigation use could be greatly minimized and attractive landscapes could be affordable. When they clear cut and remove all trees and vegetation, they should share in the cost of replacing what has been destroyed. Peggy Krapf Heart's Ease Landscape & Garden Design</p>
§4.1-c19	JW Hill	<p>Having been involved with new home construction for many years, I am very concerned about the propped regulations you are considering. Every homesite is different with different requirements. Putting such restraints on the landscape design is an infringement of personal desires for thier own home. Many of these features, if not installed by builder, will be done soon afterward. I will agree that water conservation is needed, however do not tell me what I can and cannot do regarding landscape of my own home. Many options are available, such as, rain sensors, moisture sensors, and enforcement of existing codes that will benefit the community and homeowner. Beautiful landscapes will increase oxygen supply, increase property values(and taxes) and give people a feeling of worth about thier property. Agenda 21 is being pushed down people's throats without them knowing it. This type of government is not "of,by, and for the people" Soon you will be telling me what type of shoes I can wear. J. W. Hill</p>
§4.1-c20	Trent Ryan	<p>At the request of Allison Hogge with the EPA WaterSense program, I am providing input per the online solicitation for input: In section 4.1.1 Landscape Design, there are two options provided to home owners. The first option of limiting the turf to less than 40% of landscapable area is a knee-jerk reaction to inefficient turfgrasses. Instead of limiting the lawn area, a recommendation should be made to install water-efficient turf grass& regardless how much area it occupies. Here are just some of the benefits provided by having a nice turfgrass lawn: An average size lawn has the cooling effect of over nine tons of air conditioning. The average home has an air unit with only a 3 to 4 ton capacity. Healthy, dense lawns absorb rainfall six times more effectively than wheat and four times better than hay. Lawns provide wonderful psychological benefits by improving moods and providing feelings of serenity, privacy, thoughtfulness and happiness. This is noted especially in hospitals where recovery rates are often faster among patients who have view of a landscaped area. With up to 90% of the weight of a grass plant in its roots, it makes a very efficient erosion control devise that also removes soil particles from silty water. Turf grasses help purify water entering underground aquifers by their root mass and soil microbes acting</p>

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		<p>as a filter to capture and break down many types of pollutants. Well-maintained landscaping adds 15% to a home's value according to buyers. A Gallup Survey reported that 62% of all US homeowners felt that investment in lawns and landscaping was as good as or better than other home improvement. A turf area just 50 foot square absorbs carbon dioxide, ozone, hydrogen fluoride and perosyacetyte nitrate and releases enough oxygen to meet the needs of a family of four. So considering these benefits, limiting the size of the lawn doesn't make nearly as much sense as simply specifying a water-efficient turf. Option two doesn't make much more sense. Cool season grasses should not be used as a baseline for water usage in any lawn. Warm-season native grasses are far more water efficient. Asking homeowners to calculate the ET rate is not practical. There should be an approved list of water efficient grasses for each growing zone that homeowners simply choose from. In section 4.2.1.3, it recommends only watering turfgrass areas. Once again, this does not make sense compared to using water-efficient landscaping plants and then actually watering them the little bit that they do require so they don't die. Landscape architect Chad Davis with Parkhill, Smith & Cooper in Lubbock, TX waters his lawn and landscaping once per week with 1/2 inch of water during the summer. A photo of his house is attached. As you can see, it is very effective and only consumes half to 1/3 of the water his neighbors use. Just my 2 cents& let me know how else I can help. Best regards, Trent Ryan www.TURFFALO.com</p>
§4.1-c21	Roxanne Blackwell	<p>The American Society of Landscape Architects (ASLA) would like to suggest several improvements to the Environmental Protection Agency's (EPA) WaterSense policy. Many of our 18,000 members are skilled in sustainable land use techniques that help to conserve water and take full advantage of natural precipitation cycles, and they have suggested ways to improve the program's climate, turfgrass, irrigation, and stormwater management components. We appreciate your attention to this matter. As an organization committed to sustainable land use and design, ASLA commends your efforts to develop the WaterSense policy, which has the potential to help reduce water usage in new homes throughout the nation. However, we are concerned that this policy would establish standards that would be applicable to all regions of the country, without acknowledging the United States vast array of climates and plant hardiness zones. ASLA recommends that EPA develop WaterSense guidelines based on regions or zones of the country that take into account temperature, precipitation, and plant hardiness. EPA should further provide general recommendations about regional native, drought-resistant plants. By utilizing guidelines based on region and topography, landscape architects, designers, and home owners are able to make better landscape choices that are site specific, thereby resulting in more sustainable water use practices. Section 4.1.1.1 of the WaterSense policy restricts turf planting to just 40% of landscapeable</p>

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		<p>area. ASLA understands that large, grassy lawns may require frequent watering, especially lawns that are planted with non-native vegetation. However, restricting turfgrass to 40% of a site would remove the myriad of benefits provided by green space. Vegetation, be it grass, shrubs, or other plants has been proven to sequester carbon, reduce stormwater runoff, and remove harmful pollutants from the atmosphere. ASLA recommends that the WaterSense policy be amended to increase the amount of landscapeable area and to encourage the planting of native, drought resistant plant species into a lawn. In establishing a landscaped area, a hierarchy of plant selection strategies should be considered, emphasizing plants native to the region. If native plants cannot be used, regionally adapted non-native plants should be selected. All plants must be non-invasive and appropriate for the site. Plants thrive and resource requirements, including watering, are reduced when sited correctly. In fact, some landscape architects have witnessed that after establishment - often after just one season - native plants typically need no supplemental watering or irrigation. Moreover, ASLA recommends that the WaterSense policy also encourage the use and maintenance of healthy soil. Healthy soils effectively cycle nutrients, minimize runoff and maximize water holding capacity. Specifically, healthy soils maintain a permeable soil structure, which ensures higher water filtration rates that in turn reduce erosion, runoff, flooding potential, and the need for supplemental watering. Soil improvement would provide homeowners with healthier environments while reducing the need for frequent watering. Section 4.1.1.1 could also be improved by encouraging landscape architects, designers, and homeowners to plant native shade trees in new properties. Trees with developed root systems efficiently take in groundwater and resist drought. Additionally, sites with shade tree coverage provide other benefits to homeowners, including reducing energy use for heating and cooling. Section 4.1.4 of the WaterSense policy recommends that builders do not install any ornamental water features on new sites. However, landscape architects and other landscape professionals have found that these devices typically recirculate water and, once filled, require a tiny amount of additional water when their reserves are not refilled by rain. Additionally, these water features provide benefits to the consumer and the environment, including improved aesthetics of the site and providing aural “white noise” that blocks sounds from nearby vehicles and relieves stress. Additionally, landscape architects frequently install water features that could be considered “ornamental,” yet are used for environmentally beneficial purposes, such as creating artificial wetlands and water gardens and reclaiming or harvesting rainwater. ASLA believes that the WaterSense policy could better achieve its goals of reducing water usage by encouraging the use of well-designed ornamental water features that could harvest rainwater. Rainwater harvesting is an important tool that could assist</p>

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		<p>consumers in reducing their water use inside their homes and outdoors. Further, ASLA is concerned that the WaterSense policy, which is also designed to encourage community infrastructure savings, does not include any standards or recommendations to improve stormwater management. Stormwater runoff and Combined Sewer Overflows are severely stressing the nation’s water infrastructure systems. Moreover, runoff from rain and melting snowfall can cause flooding, erosion, and reduced water quality. Contaminated stormwater runoff from developed land is the leading cause of water quality problems. Vegetative surfaces which may include turfgrass, shade trees, shrubs and other plants retain precipitation making them excellent tools for stormwater management. On a well-vegetated site with healthy, open soils rainwater is absorbed and transpired by vegetation, or it slowly trickles down and soaks into the soil thereby reducing stormwater runoff and eliminating the need for supplemental irrigation of the vegetation. Thus, ASLA recommends that the WaterSense policy encourage landscape architects, designers, developers and homeowners to provide increased green spaces which will address stormwater management issues and reduce outdoor water use which are the goals of the WaterSense program. ASLA believes that by incorporating sound landscape design techniques into its WaterSense policy, the EPA has a unique opportunity to educate the public about stormwater management practices and how to best take advantage of natural precipitation while conserving water. ASLA, in conjunction with the Lady Bird Johnson Wildflower Center and the U.S. Botanic Garden, is developing the Sustainable Sites Initiative which will detail national, voluntary standards and guidelines for sustainable land development and management practices. Specifically, the guidelines provide standards for landscapes and other sites that will address water conservation, stormwater management and ecosystem management. ASLA urges that EPA to consult the Sustainable Sites Initiative, as it will be a valuable tool in developing the WaterSense policy and other strategies that address water conservation. ASLA commends the EPA for taking steps to encourage water conservation. However, ASLA strongly recommends incorporating the above suggestions, which will create more sustainable homes and yards and ultimately achieve EPA’s goal of reducing water consumption. ASLA would be pleased to work with the EPA as they continue to construct the WaterSense policy. If you have any questions or would like ASLA’s input on future iterations of the policy, please contact me or Federal Government Affairs Manager Roxanne Blackwell at rblackwell@asla.org. Sincerely, Nancy C. Somerville Executive Vice President/CEO</p>
§4.1-c22	Matthew Latham	Rather than limiting the amount of turfgrass that can be installed in new homes, I would like to see the EPA recommend that new home owners and developers use sustainable techniques when designing

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		<p>new landscapes, including using healthy soil, native plants and shrubs, and shade trees. Landscapes that employ these techniques and practices rarely need supplemental irrigation and provide other environmental benefits. I would also recommend that the EPA continue to allow home owners to install ornamental water features that recirculate water. Thanks, Matthew O. Latham, ASLA Landscape Architect DNK Architects, Inc. www.dnkarchitects.com</p>
§4.1-c23	Jerry Caraviotis	<p>I just received the email concerning the New Homes Program. Congratulations. I would like to put a plug in for another avenue for home water savings: instead of an improved irrigation system, how about a no irrigation system utilizing short stature native grasses and wildflowers to replace a turfgrass lawn? In addition to water savings, there is the additional benefit of reduced fossil fuels usage versus what is needed to continually mow and maintain a typical turf lawn. A radical idea, it may seem so at first glance, but honestly it seems to me to make all the sense in the world if we are really serious about responsible resource useage and global warming. Of course, this is not a new idea, wildflower and native plant societies have been beating this drum for years. I truly believe that nothing will really change with our environment unless we begin to change our behavior.</p>
§4.1-c24	Andy Smith	<p>There are significant voids in the specification in that:</p> <ul style="list-style-type: none"> • Soil composition or grading is not addressed in any fashion. This is a factor which has a pronounced impact on water management strategies specific to any site. • Mulching strategies typically require cyclical replacement to retain overall moisture benefit and can create water quality issues where runoff occurs. • No consideration is made for the wide range of climatic variation and the 20 separate plant hardiness zones in the US. • No consideration is made for the broad range of natural precipitation throughout the US. • The use of reclaimed water is not recognized or promoted in any fashion. • No suggested planting strategies are offered as alternatives to turfgrass on slopes greater than 4:1. • No consideration is given for site impacts such as runoff, erosion, carbon footprint or particulate contribution. <p>The WaterSense program has professed that water efficiency does not have to mean significant lifestyle changes. The new home specifications represent a significant departure from such guidance in that the</p>

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		<p>complexion and functionality of the landscape will no longer be a product of local influence and customer needs. To impose such restraint in the name of water use reduction without consideration for air quality, land use, water quality and other environmental impacts is highly irresponsible. EPA's supporting document only seems to reference water use concerns and contains several opinion based statements, rather than scientific facts. The undersigned parties support efforts to curtail water waste in the landscape. But programs and policies must be developed in a transparent process which includes the knowledge, products and best practices of affected industries. We feel that by using appropriate cultivars and species, water conservation technology and other methods, landscape water efficiency can be achieved without limiting turfgrass area or eliminating water features. In addition, even though WaterSense is a voluntary program, we feel this type of federal label will evolve such that many state and local units of government will implement requirements for Water Sense compliance in new construction. Again, we agree with the principal goal of WaterSense and understand a community's need to ensure water efficiency; however, we can demonstrate many water efficient techniques and technologies that are not considered in this document. The undersigned coalition has much to contribute in the quest for water efficiency that has not been incorporated in the current draft language.</p>
§4.1-c25	Heather Venhaus	<p>I applaud EPA's effort to curve water demand in residential home and other applications. The use of sustainable techniques such as increasing organic matter and using appropriate vegetation can help curve water use but in order for this to be effective at the water saving level needed, the available water budget must be made clear. I believe beautiful, environmentally beneficial landscapes can be maintained with a limited potable water supply. I encourage the advancement of irrigation water from alternative non-potable sources such as rainwater and greywater. Without restrictions on the amount of potable water available for irrigation, we will not made progress utilizing alternative water sources. The limitation of potable water use and need for re-thinking the reuse of water is long overdue. Thank you, Heather Heather L. Venhaus Program Manager of the Sustainable Sites Initiative Lady Bird Johnson Wildflower Center University of Texas at Austin www.wildflower.org www.sustainablesites.org</p>
§4.1-c26	Dan Buntley	<p>I have an input I'd like to make to the "Draft Water-Efficient Single-Family New Home Specification". In the Outdoor Water Efficiency Criteria, there should be a criteria for utilizing rain gardens, rain barrels, or other rain collecting mechanisms for reducing the amount of city/county water used for outdoor watering applications before a new home could be labeled as a WaterSense home. Similar criteria can be found in the "National Green Building Standard" at http://www.nahbr.org/technical/standards/gbseconddraft.aspx .</p>

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		Thank you, Dan Buntley
§4.1-c27	Robert Dolezal	<p><u>Setback Allowances for Landscape Trees</u> Your draft specification makes it clear that, in addition to their wildlife habitat, oxygen-producing, and carbon-sequestration benefits, deciduous landscape trees provide significant passive cooling potential by shading the walls and roofs of residential structures in summer, yet allow sunlight to pass through and warm the home in winter through passive solar heating. What is not so clear is that passive summer cooling is augmented by active cooling through evaporative transpiration, a process which cools the air in and under the tree. Landscape trees planted adjacent to the sun-facing exposures of homes reduce the amount of energy required from electricity, natural gas, or fuel oils to cool and heat the structures. The combination provides a powerful return on water needs through a net reduction in energy use. It is apparent, however, that many modern PUD and subdivision plots are planned and developed with insufficient setback requirements to allow planting of landscape trees on the east, south, and west faces of the residence to permit such beneficial cooling and warming to take place. Further, zero-lot-limit setback requirements threaten the urban forest in new subdivisions, adding to their heat-trapping characteristics. Therefore, CANGC suggests adding to the Green Industry Coalition’s suggested draft a new paragraph 4.1.1.3, to wit: 4.1.1.3 In either option 1 or 2, the regulatory planning authority shall consider as a factor of Outdoor Water Efficiency Criteria that each residential structure’s placement on the lot and its orientation and setbacks to adjacent property boundaries shall be sufficient on the east, south, and west structure facings to permit adequate space for planting water-efficient species of deciduous shade trees with suitable growth characteristics when mature to provide shade during warm-season months on the adjacent walls and roofs of the structure.</p> <p><u>Slope Grading</u> Throughout agriculture, laser-leveled fields save significant amounts of irrigation water by distributing it equally, preventing runoff and erosion, and limiting the discharge of water contaminated by agricultural chemicals into nearby waterways. This same principle should be addressed in residential site planning by establishing criteria for grading the landscaped areas of PUD and subdivision lots to eliminate slopes and level landscape areas of the site, through use of level grading, retaining walls, structural berms, or other hardscape features that create optimal-water-consumption landscape terraces for planting. We recommend inclusion within the Green Industry Coalition’s suggested draft of a paragraph 4.1.7.1, to wit: 4.1.7.1 In residential construction, at least 70% of all home sites not occupied by structures,</p>

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		<p>hardscape, and paving shall be (a) graded level to within 1 inch in 10 feet to minimize irrigation runoff, maximize soil penetration of applied water, and reduce water consumption or (b) otherwise divided with landscape terraces, retaining walls, low structural walls, or berms to create graded turfgrass, groundcover, and landscape planting areas that are equivalent.</p> <p>These additional measures will reduce water use and enhance the environment in all areas, but especially in regions with high numbers of heat days coupled with arid growing conditions and limited landscape watering resources.</p>
§4.1-c28	Robert Dolezal	<p>On August 28, California Association of Nurseries & Garden Centers (CANGC) provided you our comments via email and postal letter supplementing the Green Industry Coalition’s comments and recommendations. We would like to add a third-party endorsement.</p> <p>Members of the Green Industry Coalition were copied on our draft letter advising them of our position; Mr. Severn Doughty, executive secretary of Louisiana Nursery and Landscape Association (LNLA) wrote me to say that they indorse our request to include language in the Specification providing for specific setback requirements for landscape trees to enhance energy conservation and lot leveling specifications to conserve water and prevent off of contaminated runoff into surface water supplies.</p>
§4.1-c29	Mike Barto	<p>According to OPEI.org the following issues should be considered resulting from the limitation of 40% turf for landscape area: Lower carbon sequestration value. (i.e. grass is a net user of carbon, offsetting the carbon emissions output of mowing by a 4:1 ratio according to independent study)</p> <p>Increases storm water run-off and soil erosion. Increases the heat island effect. If OPEI's concerns aren't enough, please consider the fact that it impacts individual freedom. Mike Barto</p>
§4.1-c30	Kevin Morrow	<p>Section 4.1 requires that “the entire yard shall be landscaped to meet the criteria in either option”. The term “entire yard” merits further definition. The WaterSense guidelines should only apply to the portions of the yard that are landscaped by the builder and should not include areas that are either entirely undisturbed or otherwise not within the scope of the builder’s responsibility to landscape.</p> <p>Further, many jurisdictions have landscape requirements that may differ from the EPA’s due to local vegetation or water issues. The WaterSense program should be sufficiently flexible to give consideration to what vegetation a jurisdiction deems appropriate for the community. Moreover, some subdivisions and developments prescribe turf species and other landscape elements by covenant. The WaterSense program should offer exemption to builders who wish to seek certification but have limited control over landscape decisions.</p> <p>4.1.1.1: Option 1</p>

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		<p>Option 1 of the landscape design mandates that turf shall not exceed 40% of the landscapeable area. This requirement presents two main areas of concern.</p> <p>Comment 1: The term “landscapeable area” merits a clear definition similar to those provided for other salient terms. The definition should expressly exclude areas designated as rights –of –way and drainage or utility easements that are commonly required to be turf and are often required to be clear of other landscaping such as trees and shrubs. Care must be taken to make certain the WaterSense program does not conflict with traffic and other engineering standards that provide for/promote public safety. As an example, tree and shrub beds should not interfere with lines-of-sight at intersections.</p> <p>Comment 2: The 40% maximum on turf areas is arbitrary and does not adequately consider differences in development plans or turf water requirements that will logically vary depending on species, soil type, topography and climate. While we agree that the EPA should not mandate the types of grasses and other vegetation that can be installed, we strongly urge the Agency to add some flexibility to these requirements. An example supporting the need for flexibility is presented with a small single-family home with a detached, alley-loaded garage in a high-density Traditional Neighborhood Development (TND): The 32’ x 90’ lot = 2880sqft. The required 10’ front setback includes a 6’ utility easement and there are 4’ side setbacks. A 1000sqft footprint house with a 90sqft porch and a 440sqft detached, alley-accessed garage is constructed. These are served respectively by a service walk and an apron totaling 140sqft. Finally, a 120sqft deck/patio is installed in the rear yard connecting the garage to the house. This leaves an open area on the lot of 923sqft and, at a 40% maximum, a turf area allowance of 369sqft (slightly less than the area between the doubles lines along one side of a standard tennis court.) In this case, the 40% maximum unjustifiably limits inclusion of turf areas for practical functions like play areas in a lot configuration that is often recognized for promoting efficiency in development, efficient use of water, and improved storm water management. (See Exhibit 1 for a graphic representation of this hypothetical lot)</p> <p>The EPA is urged to provide a more scaleable approach that would allow for flexibility in setting turf area limits rather than attempting a “one-size-fits-all” proportional limit that ignores the reality of different development types. Section 403.6 in the consensus-based ICC 700-2008 National Green Building Standard could provide some guidance in this area. The section rewards limiting turf areas on an incremental basis:</p> <ul style="list-style-type: none"> - 0 percent = 4 points - greater than 0 percent to less than 25 percent = 3 points - 25 percent to less than 50 percent = 2 points

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		<p>- 50 percent to 75 percent = 1 point Such an approach is more realistic and achievable which, in turn, may facilitate broader participation.</p>
§4.1-c31	Hugh Gramling	<p><u>4.1.1.1 Option 1</u> Limiting turf to 40% of the landscapable area may not necessarily reduce water use. For this option, the design, or presence for that matter, of the irrigation system is not taken into account. A 40% turf landscape with an inefficient irrigation system could use far more water than a 60% turf landscape, for example, with an efficient irrigation system. Instead of singling out turf; which can be selected, established and maintained in such a way as to be part of a healthy, water-efficient landscape; limit the high water use zones of the landscape. The overall size of the lot should be considered as well.</p> <p><u>4.1.1.2 Option 2</u> Warm-season grasses are used in Florida.</p> <p><u>4.1.2 Mulching</u> Specify that mulch should be kept at least 2-inches away from the base of trees and shrubs. For trees, mulch should be spread out to the drip line, which can extend far beyond the tree's canopy. Do not encourage the use of cypress mulch. Cypress trees provide a tremendous value to the environment in terms of water quality and habitat. The numerous alternatives should be encouraged.</p> <p>As evidenced by our comments, we feel that the outdoor criteria will need to be addressed at a state or regional level. In Florida, we have several existing certification and recognition programs. The Florida Green Building Coalition Green Home Standards, Florida Water Star, Water-Wise Landscape Recognition Program and Florida Yards & Neighborhoods (FYN) Program are just to name a few. Of utmost importance to the District is the recognition and incorporation of the FYN Program's nine principles of Florida-friendly landscaping.</p>
§4.1-c32	Tom Swihart	<p><u>Section 4.0, Outdoor Water Efficiency Criteria</u></p> <p>We concur with the goal, as currently stated, “to reduce or obviate the need for supplemental irrigation.” Where appropriate, new homes should be designed to have attractive landscaping without supplemental irrigation. Not every home, or homeowner, would fit within this description but the specification should guide the homeowner to either option appropriate in individual circumstances.</p>

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		<p>One set of water conservation measures missing from the draft specification is onsite “rain harvesting” such as rain barrels, rain gardens, and cisterns. Like other irrigation technologies, they are not suitable for all homes, but the final specification should address how they can be appropriate in many cases.</p>
§4.1-c33	Steven Malloch	<p>Outdoor Water Efficiency Criteria 4.0, <i>General Comment</i>: Lawn is estimated to cover 163,812 km² (± 35,850 km²) of land in the continental United States, an area three times larger than that of any irrigated crop, and equal to about 2% of the area of the continental US. Watering that area of lawn, taking rainfall and evapotranspiration needs into account, would require 695 to 900 liters (183 to 237 gallons) of water for every US resident person per day. If sensible water use is the WaterSense goal, significantly reducing the amount of lawn and irrigated landscaping is required. With this in mind, NWF’s general comment about the outdoor water efficiency criteria is that it is too lenient, and should encourage much greater reduction in outdoor water use.</p> <p>Outdoor Water Efficiency Criteria 4.1.1.1: A proportionate cap on landscaped area is a simple way of establishing an objective criterion; however, it is not adequate as a stand-alone criterion. Forty percent of an extremely large lot is still an unduly large area of turf. There should be an upper limit on irrigated landscaped area, which should be defined as including turf and all high and medium water use plantings but excluding vegetable gardens. NWF suggests a limit of 2000 square feet for turf and high and medium water use planting, including both front and back yards. The criteria also should include a requirement that turf and high and medium water use plantings be located on soils of adequate depth. Attempting to maintain such plantings on unduly shallow soils will result in a waste of water.</p> <p>Outdoor Water Efficiency Criteria 4.1.1.2: The second option, which involves calculating a water budget, should also be limited to a reasonable area of turf, high and medium water use planting, totaling no more than a specific area; again we recommend 2000 square feet.</p>
§4.1-c34	Doug Bennett	<p>Soil Amendment and Depth (Section 4.1) - The SNWA discourages adoption of requirements to amend the soil and assure a minimum soil depth, solely due to the difficulty of assuring compliance. While these are sound principals of water management, they pose substantial challenges to program administration. There is no way to refute a homebuilder’s claim that they amended the soil. Since not all amendments benefit plant/water relationships, EPA would need to define acceptable amendments, proportions, techniques for integrating the amendments into soil, and verifiable methods for assuring compliance.</p>

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		<p>In some regions, WaterSense runs significant risk of failing homes at final inspection because they do not meet the requirements for minimum soil depth. To be credible, the program must enforce to the letter of the requirement: If a specification calls for a minimum soil depth, anything less must be failed. There may be no reasonable way for failed homes to be brought into compliance once they are completed. Soil depth cannot be increased without affecting the lot grade and drainage. Furthermore, all surface treatments and plantings would have to be removed and reinstalled.</p> <p>Classify and restrict high water use plants - The SNWA strongly supports the proposal to limit irrigated turfgrass and disagrees with provisions that involve complex calculations of estimated water demand.</p> <p>The case for limiting irrigated turfgrass:</p> <ul style="list-style-type: none"> • The proposed limitation provides ample opportunity for residents to have functional turf areas on their property. Turf has not been excluded. • The requirement can be validated during a field inspection and does not require complex and costly pre-construction review of landscape plans. • Limiting turf areas is a broadly-accepted principal of water-efficient landscaping. Studies in various climates have shown a direct relationship between higher percentages of turf in the landscape and increased landscape water use. The nation's largest study on water savings from xeriscape concluded that four times as much water is applied to turf areas than other types of plantings. These results were corroborated by reviewing over 20,000 lawn conversions where the property owners selected plants without restriction and achieved 75 percent water savings. • In arid climates, the carbon footprint of an actively irrigated lawn far exceeds its capacity to sequester atmospheric carbon. Studies conducted by the USDA Agricultural Research Service have shown that lawns have carbon sequestration potential of about 18 lbs per 1,000 square feet per year. In arid environments, however, the energy required to irrigate the same lawn area will discharge up to 120 lbs of carbon per year. Reclaimed water has similar embedded energy. • Turfgrass typically has the highest irrigation frequency and uses high-volume irrigation. These characteristics aggressively inflate peak day water and infrastructure demands. <p>The case against estimated water demand (water budget) approaches and plant classification schemes:</p> <ul style="list-style-type: none"> • Although this principal has been applied in various government jurisdictions, we are not aware of any research that validates that a homeowner's water use will predictably correlate to a calculated estimate of water demand. As such, there is a high risk that WaterSense Homes may under perform. We suggest that such a provision be implemented on a pilot/research basis to compare actual performance prior to

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		<p>considering it as a standard option.</p> <ul style="list-style-type: none"> • There is no scientific assessment of the water needs of all landscape plants. Water use demand coefficients would have to be developed by appointed committees of qualified professionals. Even then, most determinations would be anecdotal. In areas where credible lists already exist (either for regulation or education), EPA would either adopt the existing list, or cope with discrepancies. Where discrepancies existed, builders might leverage agencies against each other. • There are thousands of plant varieties commercially available. Among varieties of the same species, there may be measurably-different water requirements. Plant breeders would lobby to have their patented variety listed to their advantage (and often present vast amounts of data in doing so). WaterSense lacks the resources to manage such a complex program. • Plants could be listed as high use in one region and moderate use in another. Depending upon “region” boundaries, a plant encouraged in one town could be restricted just miles away. • No matter how comprehensive the list, there will be unlisted plants. There may be confusion about variations of common names and changes to scientific nomenclature. • Compliance would be complicated. Suppliers, designers, installers and inspectors would have to be capable of identifying every type of plant and possibly even distinguishing between varieties.
§4.1-c25	Nate Kredich	<p>4.1.1. These two options are not comparable. In LEED for Homes, we find that most homes meet the turf requirement. However, very few homes are willing to spend the money to have a landscape professional calculate the estimated water budget.</p> <p>4.1.1.2. LEED for Homes previously granted credit for having a landscape that “requires no supplemental irrigation”, but removed it because it is impossible to verify.</p> <p>4.1.1.2. Based on the experience of the LEED for Homes program, even after preparing a detailed explanation of how to do the equivalent calculation in LEED for Homes, most project teams still had questions about how to properly calculate a water budget. Consequently, we are preparing further guidance. We welcome the opportunity to work with EPA, as well as regional programs, to refine the water budget approach and help to develop an industry standard for this calculation.</p> <p>4.1.1.2. The specification refers to the ASCE Standardized Reference Evapotranspiration Equation. This document focuses on how to calculate ET₀, not ETL. The landscape evapotranspiration rate is the more complicated number to calculate, as ET₀ can often be found from local agricultural extensions or departments of agriculture.</p>
§4.1-c36	Nancy	Section 4.1.1.1 of the WaterSense policy restricts turf planting to just 40% of the landscapeable area of a

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	Somerville	<p>new single-family home. ASLA understands that large, grass lawns may require frequent watering, especially lawns that are planted with non-native vegetation. However, restricting turfgrass to 40% of a site would remove the myriad of benefits provided by green space. The use of appropriate, native vegetation, such as native grass, shrubs, swales, and green roofs has been proven to sequester carbon, reduce stormwater runoff, and remove harmful pollutants from the atmosphere. Furthermore, the use of vegetation surrounding buildings reduces energy consumption associated with indoor climate control and reduces urban heat island effect. ASLA recommends that the WaterSense policy be amended to increase the amount of landscapeable area and to encourage the planting of native, drought resistant plant species into a lawn.</p> <p>In establishing a landscaped area, a hierarchy of plant selection strategies should be considered, emphasizing native, non-invasive plants to the region. If native plants cannot be used, regionally adapted non-native plants should be selected. All plants must be non-invasive and appropriate for the site. The use of native and non-native plants adapted to site conditions, climate and design intent not only supports biodiversity, it reduces pesticide use and water conservation as well. Once established, native and non-native plants can save time and money by reducing maintenance and resource requirements, including minimal to no irrigation.</p> <p>Moreover, ASLA recommends that the WaterSense policy also encourage the use and maintenance of healthy soil. Healthy soils effectively cycle nutrients, store carbon, absorb excess nutrients and pollutants, minimize runoff and maximize water holding capacity. Specifically, healthy soils maintain a permeable soil structure, which ensures higher water filtration rates that in turn reduce erosion, runoff, flooding potential, and the need for supplemental watering.</p> <p>Section 4.1.1.1 could also be improved by encouraging landscape architects, designers, and homeowners to plant native shade trees on new properties. Trees with developed root systems efficiently take in groundwater and resist drought. Additionally, sites with shade tree coverage provide other benefits to homeowners, including reducing energy use for heating and cooling homes and buildings.</p> <p>ASLA, in conjunction with the Lady Bird Johnson Wildflower Center and the U.S. Botanic Garden, is developing the Sustainable Sites Initiative which will detail national, voluntary standards and guidelines for sustainable land development and management practices. Specifically, the guidelines provide standards for landscapes and other sites that will address water conservation, stormwater management and ecosystem management. ASLA urges EPA to consult the Sustainable Sites Initiative, as it will be a</p>

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		<p>valuable tool in developing the WaterSense policy and other strategies that address water conservation. ASLA commends the EPA for taking steps to encourage water conservation. However, ASLA strongly recommends incorporating the above suggestions, which will create more sustainable homes and yards and ultimately achieve EPA’s goal of reducing water consumption. ASLA would be pleased to work with the EPA as they continue to construct the WaterSense policy.</p>
§4.1-c37	Mike Richardson	<p>I am writing this letter to make your program aware of a new initiative, called WaterStar Qualified, that I believe ties nicely to the objectives of your Water Sense program. Specifically, the WaterStar program also shares your objective to “reduce indoor and outdoor water usage in new residential homes”.</p> <p>The WaterStar program was initially developed by turfgrass researchers, breeders, and seed companies to identify turfgrass cultivars that have superior drought tolerance characteristics. In that process, we have developed and published several papers describing quantitative methods to assess drought tolerance and identify those superior cultivars. Although this program is currently only reviewing turfgrass cultivars at present, it is our desire to ultimately include other live goods in the program.</p> <p>While we support the WaterSense program’s desire to reduce water use in landscapes, we also believe that more detailed guidelines regarding the types of plant material used will have a bigger impact on that goal rather than just saying “no more than 40% turf in the landscape”. If 40% of the landscape is planted to a turfgrass species or cultivar that has a high water use requirement, then I am not sure we have really encouraged water savings.</p> <p>I have attached a condensed copy of the protocol that we are currently using in our program and would also encourage you to visit our website (http://www.waterstarqualified.com/). Our program is being developed as a not-for-profit and we already have representation from academia, seed companies, and professional societies. We would also be interested in partnering with your agency to ultimately reduce water usage in landscapes.</p>
§4.1-c38	Tom Swihart	<p><u>Section 4.1.1.1</u> We recommending changing this to read: “Spray irrigated turf shall not exceed 40% of the landscapable area.” Turf can use very large amounts of water, but the demand is not from the grass itself but from its over-irrigation. Non-irrigated turf should not be limited like irrigated turf. In any event, the focus should be on limiting high water use zones of all types and not just turf.</p> <p><u>Section 4.1.1.2</u> Before moving forward with this national specification referring to “cool-season grass,” EPA should work</p>

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		<p>with different regions to develop and publish the research on appropriate plants that meet the requirements set out here.</p> <p><u>Section 4.1.2</u> We recommend changing the recommended 2 to 3 inches of mulch to read “2 to 4 inches.”</p> <p><u>Section 4.2.1.3</u> We recommend changing this to read: “Sprinkler heads, except microspray heads, shall not be used to water plantings other than maintained turf grass.” Microspray heads are appropriate for non-turf applications.</p>
§4.1-c39	Jeanne Kentch	<p>In response to "Draft Water-Efficient Single-Family New Home Specification" My comments are in regards to section 4.1.3 Pools/Spa's: "If installed prior to owner occupancy, the water surface area shall be deducted from the turf allowance under Landscape Design Option 1 and included as landscapable area under Landscape Design Option 2. " In addition to this requirement, I stress the requirement of reusing the water from the swimming pool that would normally be drained to waste every 1-4 years. Normal practice for swimming pool maintenance is to drain the high TDS (Total Dissolved Solids) swimming pool water and replace with low TDS water (fresh water). This is normally achieved by draining all or a portion of the swimming pool water to waste. A swimming pool owner can manually reuse the swimming pool water or install an automatic device, but they SHOULD NOT WASTE ALL THAT WATER! The accepted practice of draining a swimming pool to waste misuses billions of gallons of water a day in the southwestern United States. This practice should be eliminated from the acceptable practices associated with your Water Sense program. Swimming pool owners should not be allowed to throw away this drain water. Most drains are over 15,000 gallons of water. The hotter and dryer the region the more frequent a swimming pool needs draining. Some areas require draining every year; the national average is 2 years for proper maintenance. Swimming pool water is perfectly acceptable, providing they do not use a saline sanitizing system, to use on all irrigation needs. This water has been filtered, sanitized and ph balanced. This water is acceptable to drink.....it is definitely acceptable to use on plants. Due to the inability to reuse salt water on irrigation, salt/saline sanitizing systems should not be allowed on a Water Sense swimming pool. I urge you to include swimming pool water reuse as a stipulation for water sense certification for all swimming pools in your program Jeanne Kentch D&J's Pool and Spa-owner Mohave County Watershed Steward Crystal Beach Water Conservation District-President</p>
§4.1-c40	Hugh	It is assumed that the concern over pools is that of water lost to evaporation. Consider an allowance

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	Gramling	for rainfall or pool covers. Consider an allowance for pool filter backwash reduction. A pool owner can reduce the water loss (and energy use) associated with such filtration by reducing the frequency, especially if the pool is in a screen enclosure.
§4.1-c41	Jim Kirchner	<p>The following letter was written and approved by the Board of Directors of the Minnesota Water Garden Society. Representing 569 members of our non-profit organization, we have the following response to the Draft Water-Efficient Single-Family New Home Specification first published on May 22, 2008: Our comments are limited to section 4.1.1 Outdoor Water Efficiency Criteria, Landscape Design. Given “the goal of the water-efficient landscape criteria is to reduce or obviate the need for supplemental irrigation”, we find that the specific criteria regulates areas of Landscape Design that has very little impact to the goal, yet completely ignores other areas that have far greater impact. It is estimated that the amount of water use for turf irrigation can be as high as 50% of city water supplies during the summer months (1). The two single-most important criteria to obviate the need for supplemental irrigation is to conserve rainwater, and utilize native plantings that survive with deep rooted plants suited for the natural environment. Yet there is no mention of the following: Use of devices to capture and reuse rainwater, such as rain barrels. For every inch of rainwater that falls on a 1,000 square foot impermeable surface, 600 gallons of water can be captured & conserved (2&7). In Minneapolis, the average precipitation for the months of April - November is 23.6 inches (3). For a 2,000 square foot footprint of impermeable surface (house foundation size plus driveway, garage and sidewalks), which results in over 28,000 gallons of wasted water that could be utilized elsewhere in the home or landscape. Recognizing the installation of landscape techniques that utilizes natural rainwater, such as the installation of rain gardens, utilization of permeable or semi-permeable hardscape materials for sidewalks and driveways, or the construction of green roofs. The city of Burnsville, MN conducted a controlled study of the effectiveness of raingardens on reducing rainwater run-off into the sewer system. This study was started in 2003, and data was obtained through 2006. In the first year that the raingardens were installed, 83% of rainwater run-off was avoided (vs. the control area). This increased to 90% in the second year, and 93% in the third year. (4) Utilizing materials & construction techniques that decrease run-off and increase infiltration such as using permeable material for roads, sidewalks and driveways, flat roofs, and terraced yards that minimize sloped surfaces. While measuring Evapo-transpiration, Run-off and Infiltration is highly variable depending upon condition of materials, type and saturation of soil and slope of roofs and yards, certain materials and structures can significantly increase infiltration and reduce run-off of precipitation events.</p>

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§4.1-c42	Josef Newman	<p>To Whom It May Concern: My name is Josef Newman. I am a modular home builder focusing on eco-friendly, sustainable building. I am very interested in participating in the Watersense program, but find that much of the requirements are site related, not home related. Our current homes are extremely water efficient, recycling greywater and allowing for rainwater harvesting. However, we have no control over landscaping and sitework that is done once our home is shipped. I was wondering how it might be possible for us to work with Watersense, and if you had plans for a "home only" version of the program. Thank you in advance for your time. Sincerely, Josef Newman Urban Core International, S.A. Envision Prefab, LLC</p>
§4.1-c43	Beth Galante	<p>To Whom It May Concern:</p> <p>Thank you for the opportunity to comment on updates to EPA’s WaterSense program (request for public comments at http://www.epa.gov/owm/water-efficiency/specs/homes.htm). Here at Global Green, a leading environmental non-profit, we welcome the strengthened guidelines for water-efficient new homes, we urge you to include standards for the use of grey-water and rainwater catchment systems as well. These systems provide several financial and environmental benefits, and we believe the EPA could play a valuable role in encouraging their use.</p> <p>Water catchment systems offer a cost-effective, environmentally-friendly approach for various residential water needs, particularly if designed into newly-built homes. A wide variety of water catchment systems, from salvaged 55-gallon barrels to 10,000 gallon tanks, are now available to fit most budgets and water needs. Well-designed water systems can reduce home water bills AND reduce storm-water runoff. Depending on the desires of the consumers and local regulations, collected rainwater can fulfill household needs as basic as irrigation and as advanced as drinking water. Both rainwater and greywater can be used for intermediate needs such as toilet flushing.</p> <p>Global Green is not alone in supporting the wider use of rainwater and greywater reuse. Communities worldwide have implemented successful water reuse systems. Portland, Oregon and Austin, Texas incentivize these systems. Germany, Spain, and Japan offer financial incentives to install water cisterns, and the US Virgin Islands mandates their use. The US Green Building Council’s Leadership in Energy and Environmental Design (LEED) program and other green building programs give points for water catchment systems. The American Rainwater Catchment Systems Association, which exists solely to support rainwater reuse, compiles data on best practices.</p> <p>Global Green New Orleans has installed a 1,000-gallon cistern and a 55-gallon rain barrel in its first model green home in the city’s Lower Ninth Ward, as well as a 1500 gallon cistern at the International</p>

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		<p>School of Louisiana, where the organization is completing energy and water saving retrofits. Unfortunately, Louisiana’s regulations regarding the use of rainwater and greywater have not been updated to allow the use of reused water for toilet flushing, which is what Global Green had planned at its model home. It was mentioned by the state’s Department of Health and Hospitals that EPA’s leadership and guidance on this matter would be valued.</p> <p>We appreciate EPA’s leadership in promoting the construction of water-efficient, new homes, and with this letter we urge you to include greywater reuse and rainwater catchment systems as important methods of water conservation and stormwater management. EPA can benefit citizens across the nation, and make great strides in protecting one of our greatest resources by providing information on greywater recycling and rainwater harvesting systems in the new WaterSense guidelines . Clearly, reusing water must be done with care, and who, if not EPA, can provide the standard for safe and effective water reuse?</p> <p>Thank you for your consideration. Please do not hesitate to contact me with any questions. Sincerely, Beth Galante Executive Director, Global Green New Orleans</p>
§4.1-c44	Thomas Patton	<p>Depending on the area of the country, outdoor water usage often exceeds internal usage for residences. Outdoor usage occurs in more arid climates where irrigation is most prevalent. Small percentage reductions in water usage in those areas translate into large absolute gallonage savings. The comments in this letter address other possible options not considered in the Draft Specification that can further reduce outdoor water usage. Our proposed solutions collaterally address other pressing EPA concerns concerning NPSP (non-point source pollution) from application of fertilizers and as such indirectly address the future of our nation’s water supply. As you are fully aware, one of the largest contributors to NPSP are fertilizers that find their way into waterways (streams, rivers, lakes and oceans) or through leaching of fertilizer nutrients into the water table that serves as the source for much of this nation’s drinking water. Although it would be easy to ignore the link between irrigation and fertilization, they are inextricably linked. The link between the two suggests that homeowners focus much of their fertilizer attention on areas that are irrigated. If the section of their property is of high perceived value (turfgrass for recreation or visual highlighting of the house or manicured flower or shrub beds) these sections of the landscape tend to receive more water and fertilizer than ones left in their natural state or if they are xeriscaped. Recognizing that homeowners want attractive outdoor landscapes, the WaterSense Program Specification should recognize that property owners can make a significant impact on water usage</p>

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		<p>through improved fertilizer practices combined with higher efficiency watering options as further discussed below. Fertilizer is most often applied to landscape plants using sporadic or periodic (batch) methods using granular fertilizers. These fertilizers release their nutrients as water is applied. In drier climates fertilizers are "watered-in" while natural rainfall does the work in other areas. Some granular fertilizers are manufactured to be "slow release." These tend to have chemical coatings to slow the dissolving rate into the soil profile. Most however are uncoated, "fast release" fertilizers. In the case of granular fertilizers, especially "fast release" versions, nutrients are presented to the plant in excessive quantities. Plants react to this onslaught by attempting to absorb as much of the nutrients as quickly as possible. This reaction drives a tremendous surge of top growth, especially in the chlorophyll producing parts of the plant located above the surface of the soil. That same rate of top growth is not as evidenced in the roots or subsurface sections of the plant. Once these nutrients are absorbed or leach past the root zone, the plant's top growth gives way to a period of "famine" that extends until the cycle starts again at the next feeding. The famine phase of this cycle leaves the plant with overdeveloped above-surface growth that is not supported by root structures of commensurate size or capability. This imbalance leaves the plants with weak root structures that are less efficient in trapping and holding water. Because of this condition turf that is subject to batch fertilization requires more water. Contrast this batch method of fertilizing to a constant feeding of nutrients through the irrigation water. Constant feeding allows for a reduction in parts per million applied for every gallon of water. This method called "micro-dosing" is simply the application of minute doses of plant nutrients through the irrigation water. Another term for this process is called "micro-dose fertigation." The significance of constant micro-dose fertigation to the plant's root system should not be underestimated in its role to reduce irrigation water needed. Micro-dose fertigation has been documented in many studies to reduce water usage by enhancing the development of plant root mass. Plants that are fed in this manner require less water since they develop an increased network of root filaments that process and hold water more efficiently. The significance of these findings suggest that 10-20% additional water savings can be readily achieved (over and above other water savings techniques such as ET controllers and high efficiency delivery devices) by adapting irrigation systems to include micro-dose fertigation dispensing units that encourage water savings through healthy root development. Section 4.1.1.1 Under Section 4.1.1 of the Draft Specification, two options are presented. Option 4.1.1.1 is simply a bright line, blunt force policy recommendation that reduces the allowable square footage allocated to turf to 40%. Although this recommendation is easy to grasp by nonlandscape professionals, builders and developers and provides an easy check-off for Water</p>

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		<p>Sense qualification, this standard is based on a number of broad-based, underlying assumptions about the presumed role of turfgrasses on water usage. Embedded in the Option 4.1.1.1 percentage test are the following biased assumptions: 1. All turfgrasses use equivalent amounts of water. This is not true. There are a number of new hybrids or regionally adapted turfgrasses that have significantly reduced water needs, (e.g. buffalo grass) No consideration in Option 4.1.1.1 is given to the lower water requirement of these species. 2. All irrigation end-devices (sprays, rotors, subsurface) are equally efficient. End devices to water turfgrass are given equal weighting under this standard even though certain end devices are significantly more water-gobbling than other alternatives. Even the most efficient irrigation spray heads pale in comparison to subsurface applicators when it comes to water efficiency. Some subsurface applicators have a 75% better ET factor than spray heads since evaporation is virtually eliminated when using this type of delivery device as compared to spray or rotor applicators which by their nature lose more water to evaporation. The selection of a 40% standard shows a bias toward these less water efficient delivery options rather than addressing the water waste problem head-on from inefficient delivery devices. 3. Turfgrass is not an eco-friendly landscape plant. Turfgrass has two advantages over other plantings and reducing turfgrass as a percentage of the landscape can cause undesirable environmental effects. One is the reduction in heat (heat island effect) due to turf's ability to lower temperatures in the surrounding area. The other concerns turfgrass's role in carbon sequestration. Properly maintained turfgrasses can sequester more carbon than other types of landscape plantings including some trees and shrubs. Neither the heat island effect or carbon sequestration is addressed in this standard. Option 4.1.1.1 on the surface appears to be the setting of a "gold standard" that ignores these other realities. If this standard is retained, we would therefore suggest that the 40% limitation contained in Option 4.1.1.1 be amended to allow for an increase in allowable turf percentage assuming that fertigation, drought-tolerant turfgrass and/or subsurface application techniques are used. Suggested wording that we could recommend: 4.1.1.1 Turf shall not exceed 40% of the landscape area. This percentage can be increased by 10% if micro-dose fertigation is used and another 10% if droughtresistant turfgrasses are used in lieu of cool or warm season turfgrasses. Should subsurface irrigation be used, this percentage rate can be increased to 100% regardless of whether fertigation or drought-tolerant grasses are used. Turf shall not be installed on slopes greater than 4:1 Section 4.1.1.2 We agree with the EPA that the Option 4.1.1.2 is more scientifically sound that will presumably allow for increased turfgrass areas should property owners use a combination of the strategies listed above and should the ET standard as articulated be used as the benchmark. This allows for all available water-</p>

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		<p>savings strategies to be used including sub-surface irrigation, fertigation, drought tolerant turfgrasses or other strategies that limit water to the ET budget water standard as stated. Other Environmental Considerations Although water savings is the focus of the Water Sense Program, the law of unintended consequences can easily take root when proposed Program solutions are made in a vacuum without considering other issues that can also be addressed in the Proposed Specification. Since the EPA is charged with broader mandates beyond water savings (among them greenhouse gas minimization, fertilizer runoff reduction and energy savings) we thought the following environmental considerations also deserved consideration since they address relevant issues in the overall decision making scheme when establishing policy. They are: " Carbon sequestration capacity of turfgrass " Fertilizer runoff as a result of batch fertilizing practices " Heat island effect from removing turfgrasses Carbon sequestration by turfgrass has been the subject of recent studies. This research indicates that properly maintained turfgrasses have the ability to sequester more carbon than most other plant types including the carbon cost of maintaining those properties. Reduction of turfgrass given this field data would normally be contrary to public policy given the research results. We do understand that overly maintained turfgrasses can encourage higher water or fertilizer usage because of poor horticultural understandings. However the ability of turf to sequester significant carbon deserves more debate and research before coming to a blanket policy recommendation about the need to reduce turfgrass simply because it has the potential to use more water. Fertilizer runoff mentioned before is another significant problem with so single set of solutions. It can occur because of stormwater runoff but also because of poor irrigation practices. Neither really matters since nitrogen and phosphate pollutants are finding their way into potable water sources. It is much easier for the EPA to develop specific standards that can be enforced by tracking back the source of pollution to a specific polluter. It is a much harder problem to solve when it can't be tracked back to a single source but rather it is a consequence of incomplete policy regulation. Fertilizer runoff is a large contributor to NPSP; with landscape fertilizers (as compared to agricultural fertilizers) as a significant portion of the fertilizer component. Technologies and approaches such as micro-dose fertigation help to address the issue of fertilizer runoff while adding to the country's capacity to save irrigation water. Micro-dose fertigation addresses not one, but two significant concerns, and should be given additional consideration and weight because of these attributes even though it could still be judged beneficial solely in the narrow confines of saving water. Finally what is termed the "heat island effect" is the result of removing turfgrass from landscapes and replacing it with artificial turf, xeriscape and paved surfaces. All three of these replacements reflect more heat into the surrounding buildings and community</p>

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		<p>which drives up the cost of cooling. Once again, turfgrass has a positive role in this debate despite the risk of somewhat higher water use that could be mitigated by using extremely efficient water delivery methods. We respectfully request that this letter and supporting documentation be appended to the EPA's published decision making records and we hereby give permission for reproduction of some, if not all of the material hereby submitted. Should the EPA wish to contact me to address these matters in further detail, I am available by phone at (412) 996-2161 or in writing at the address above. Sincerely, Thomas E. Patton President and CEO EZ-FLO Injection Systems, Inc.</p>
§4.1-c45	Jenny Hoffner	<p>Suggested change:</p> <p>1. Landscape design (section 4.1.1): We understand that EPA had been considering an absolute cap of 2000 square feet of the total area that can be planted in turf. We urge the agency to restore this requirement. In addition, we believe that it is appropriate to require both Option 1 (turf limit) and Option 2 (water budget). Rather than making them either-or choices. Rationale: The intent of strengthening this section is to decrease the amount of potable water used in the landscape which fits with the WaterSense objective. A yard that has less than 2000 square feet of turf, but is otherwise water-inefficient because of other landscaping choices, should not be rewarded with the WaterSense label. Likewise, a super-sized lawn that could live within its budget by having some drought-tolerant plants should not qualify either. Note: While we strongly prefer requiring both elements, at a bare minimum, we suggest that only the water budget approach be included as it will generally be the most conservation oriented. Having a water budget will help limit turf use, but a turf limit alone still allows a water-intensive landscape and does not meet the intent of an exemplary low-use home.</p> <p>Suggested change:</p> <p>2. Surface Water Management (Section 4.1.5) We suggest adding two provisions to the draft specification, as follows: 4.1.5.1 Permanent Erosion Controls. Design and install one of the following permanent erosion control measures: (a) If portions of the lot are located on a steep slope, reduce long-term runoff effects through use of terracing and retaining walls: OR (b) Plant one tree, four 5-gallon shrubs, or 50 sq. ft. of native groundcover per 500 sq. ft. of disturbed lot</p>

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		<p>area (including area under roof).</p> <p>4.1.5.2 Maintain Natural Hydrology. Retain onsite, via infiltration, evapotranspiration, or reuse, the volume of stormwater associated with the 90th percentile rain storm event. Techniques to accomplish this requirement include:</p> <ul style="list-style-type: none"> (a) Vegetative landscape; (b) Permeable paving installed by an experienced professional; (c) Impermeable surfaces that are designed to direct runoff toward an appropriate permanent infiltration feature (e.g., vegetated swale, on-site rain garden, or rainwater cistern); and (d) Vegetated roof. <p>Rationale: We strongly believe that a credible WaterSense program must address stormwater reuse. Preserving natural hydrology lessens the pollutants that the stormwater carries directly, reduces the need for irrigation with potable water, infiltrates and recharges groundwater and baseflows, and lessens the heat island effect. But most importantly of all, onsite infiltration helps maintain the existing balance of water in the region: water supplies are more sustainable when development ensures that the water continues to infiltrate where it did before the development occurred. Infiltrating water on site promotes groundwater recharge, base flows in streams, and therefore the long-term vitality of the area's water resources. Developing homes in such a way that the water is infiltrated on site can help to relieve the water infrastructure of maintenance and capital costs. These are valuable additional benefits of including strong stormwater management requirements in the Water Sense New Homes specification</p> <p>Supporting documentation: We copied the provision above concerning erosion controls from the recently-issued (Jan 2008) <i>LEED for Homes</i>: indeed, this section is repeated verbatim from the LEED standard (p. 40).</p> <p>The provision regarding on-site retention aims to reflect achievable limits on stormwater runoff. Pre-development runoff is typically very low.' Accordingly, what our proposed approach would do is to promote retention similar to pre-development hydrology. Requirements adopted for Philadelphia generally provide for the infiltration of one inch of stormwater at sites which involve 15,000 square feet of earth disturbance or more, and provisions governing development in the Anacostia Waterfront in Washington, D.C. specify that certain projects are to ensure the capture of stormwater generated by the</p>

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		<p>1- inch-in-24-hours storm. We understand these requirements will address rainfall that is close to the 90th percentile storm in those areas. We understand further that New Jersey has also adopted stormwater requirements that aim at promoting approaches that resemble pre-development hydrology of sites where new construction occurs. We used a percentage approach because it helps account for regional variations in precipitation.</p>
§4.1-c46	Mary Kelly	<p>Significant reduction in landscaping irrigation is critical to the success of any residential water efficiency program. Outdoor watering comprises 50% of residential water use nationwide and up to 80% in some regions, particularly during peak season when water savings is most critical. We applaud EPA's efforts to not only include these voluntary initiatives, but also to provide various options to obtain water saving goals. As a voluntary program, WaterSense strives to set a high standard. It also allows states to make regional adjustments where necessary based on local climate considerations.</p> <p>4.1.1.1 Option 1 : 40% Turf Limitation</p> <p>EDF strongly supports this option, even though, as noted above, some localities may have more flexibility with respect to the implications of higher turf grass coverage for water use. We believe it is important for a voluntary program such as WaterSense to set a strong standard, since WaterSense certification could provide significant marketing advantages to those choosing to meet its criteria. Although turf may have some environmental benefit in some locations, in general, the detriments far outweigh the benefits. In addition to the quantity of water required to maintain turf, any carbon sequestration benefits are very likely to be overcome by the amount of energy used to supply, treat, and transport the water required to maintain the lawn. Selecting drought resistant landscaping can achieve equal carbon benefits with much lower water use. Other environmental co-benefits that can be achieved through turf reduction, such as reduced pesticide use, also support this standard. Concerns regarding turf reduction, such as runoff and erosion, can be remedied by water saving landscaping. In fact, turf lawns often lead to overwatering, which actually increases runoff.</p> <p>4.1.1.2 Option 2</p> <p>This option, which includes no landscape restriction, provides an alternative to Option 1 in regions where turf reduction is less of a priority. By linking the alternative to the evapo-transpiration rate, homeowners have a range of planting choices.</p> <p>Sincerely, Mary Kelly, Interim Vice President, Rivers and Deltas, Environmental Defense Fund</p>
§4.1-c47	Marvin Shaw	<p>Builders keeping a natural landscape that requires no supplemental irrigation would meet the</p>

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		<p>requirements of this option. Recommendation: Clarify the definition of “natural landscape” (Is this native vegetation? Plants that are adapted to the local climate? Low water-using plants?). Recommendation: Include variable microclimates (i.e., exposure, such as full sun versus part shade to full shade) and hydrozoning (plants should be grouped by water needs) within the landscaped site as part of the design criteria. Suggestions for comprehensive stormwater management criteria: On-site stormwater management has been integrated into many cities’ planning and development codes. Some excellent examples of this include Portland’s Green Streets; San Diego County’s Low Impact Development manual; and Ventura County and the City of Santa Monica’s stormwater requirements. Recommended criteria should include: Directing parking lot/driveway drainage into landscape strips Channeling downspouts into dry wells, landscaped areas, or rain barrels Incorporating rain gardens and bioswales into landscaping Utilizing permeable paving such as un-grouted pavers and permeable concrete in street gutters, alley swales, driveways, walkways Including the use of berms and retention grading in landscape areas</p>
§4.1-c48	Barbara Fair	<p>I am writing on behalf of the working group "Sustainable Water Management in North Carolina Landscapes" at North Carolina State University to express our concern over the WaterSense Draft Water-Efficient Single Family New Home Specifications released for comment on May 22, 2008. We certainly agree with the basic premise of the WaterSense program and applaud the EPA's work on water conservation. Never-the-less, it is our consensus that the landscape section, in particular, was developed without broad involvement of academia to ensure a science-based, regional approach that addresses the local climate and plant communities. Moreover, we feel that the outdoor efficiency requirements are not comprehensive and do not allow for regional conditions. Lastly, there needs to be a survey of the green industry concerning the overall acceptance and effectiveness of the program. Here are some critical areas that need to be addressed during our collaboration: Although an outright reduction in turf areas may be appropriate in western areas of the United States, a well-maintained, turf does not necessarily require substantial inputs to remain healthy and tolerant of stress here in the southeast. We would agree with the installation of "practical" turf areas, based on the needs of the home or business owner. Turf provides significant positive benefits, including erosion</p>

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		<p>prevention, run-off reduction and biofiltration, oxygen production, carbon sequestration, passive cooling and recreation opportunities. To reduce irrigation demand, selected drought tolerant turfgrass species and/or cultivars, appropriate to local soil and climatic conditions can be used, rather than instituting arbitrary area reductions impractical across the country. One size does not fit all. The use of proper plant selection, water conservation technology and other methods will result in water-use efficiency in the landscapes without limiting turfgrass area or prohibiting water features.</p> <p>Would it not be more appropriate to develop a water budget specific for each landscape to maintain plants in a healthy condition, rather than offering limited options that may only work in certain regions of the country?</p> <p>Irrigation specifications and recommendations do not offer a comprehensive approach, yet are too specific in some cases. Mandate the specific outcome rather than controlling the particular technology or equipment. Use the "Turf and Landscape Irrigation Best Management Practices" developed by the Irrigation Association, April 2005 as required guidelines for irrigation design, installation and maintenance.</p> <p>Omission of ornamental water features neglects the potential benefits of such installations. Wildlife species find refuge in habitat created by water features, otherwise displaced by residential development. Many water features do not require a substantial amount of water, and often recycle water. These features may facilitate rain water collection or storage of reclaimed water to be used for irrigation.</p> <p>There is no mention of the importance of protecting the soil system during construction. There should be a dedicated focus on maintaining the integrity of the soil by minimizing disturbance to the soil profile (horizons), maintaining organic matter and ensuring that sufficient topsoil is maintained to support healthy landscapes. Proper plant selection, suitable to the soil and the site, is important to the sustainability of a landscape. Soil composition and grading impacts should be addressed in the specifications as they are critical to understanding the rate of water infiltration and conductivity through the soil system, as well as the volume of water needed to maintain a high level of plant health. This factor has a marked impact on water management strategies specific to a site. We agree that mulching is critical to retaining soil moisture; however, additional information beyond applying 2-3" is necessary to ensure proper application and product use.</p> <p>There is no mention of plant selection and design criteria, which are critical to water efficient, sustainable landscapes. There is no discussion of climatic variation and plant provenance. No consideration is made for the extreme range of natural precipitation throughout the US. There is no mention of a period during</p>

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		<p>which sufficient plant establishment I supported through efficient irrigation. No suggested planting or maintenance strategies are offered as an alternative turfgrass on slopes greater than 4:1. The specifications should encourage the proper maintenance of plant materials to ensure efficient water use and long-term health.</p> <p>The use of reclaimed water should be promoted, along with the necessary installation of the infrastructure to provide such alternative supplies for irrigation water.</p> <p>The WaterSense program is supported by EPA documentation that only references water use, contains several opinion based statements rather than scientific facts and does not approach water conservation from a much more holistic perspective. As an academic affiliate, we support the reduction of water waste in the landscape, but government programs should be implemented that follow research-based "Best Management Practices" on a regional basis, supported by industry. The "Sustainable Water Management in North Carolina Landscapes" task force is committed to assisting the EPA in the development of the WaterSense program and look forward to collaboration. Please contact me directly with questions or comments. Thank you for the opportunity to share our concerns.</p> <p>Respectfully, Dr. Barbara Fair, Landscape Extension Specialist and Chair of "Sustainable Water Management in North Carolina Landscapes" Task Force, NC State University- Department of Horticultural Science</p>
§4.1-c49	P. Jeff Knopp	<p>Option 1: This is an unrealistic standard. Maybe 3:1 will work.</p> <p>Option 2: This needs much more explanation. Does ETo = ET_o or ET_t? Is ETo an annual or maximum rate? How do we convert ETo to ET_t? Provide values for all of these.</p> <p>Does "Builders keeping a natural landscape that requires no supplemental irrigation..." mean that any landscape not requiring irrigation meets this requirement?</p>
§4.1-c50	Timothy Malooly	<p>I respectfully suggest that the use of the term "obviate" is unnecessary and offensive to those who strive to deliver efficiently designed and properly operated landscape irrigation systems. Please remove the language "...or obviate..." . Simply rewarding the removal of irrigation does not address root causes of water waste. Additionally, it is proven that residential habits via "hose watering" or other non-irrigation system related watering is more wasteful of water and supplemental nutrients than properly designed and operated landscape irrigation systems. Cultivating a healthy landscape necessarily requires care, including supplemental water from time to time. A properly designed, installed, maintained and scheduled irrigation system should be incentivized before the dramatic approach to eliminate irrigation. See my comments herein.</p>

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		<p>Option 1 & Option 2 comment: I respectfully suggest (as part of this program) that builders be directed to hire qualified personnel to design and oversee installation of low impact landscapes and separately, qualified personnel be hired to design and oversee installation of high efficiency irrigation systems to meet the goals of this program.</p> <p>I also suggest that landscape and irrigation “contracts” be kept separate as part of this program to help ensure that those who specialize in low impact landscapes and those who specialize in high efficiency landscape irrigation may have equal opportunity to contribute in the open market. A tendency by builders and others is to “combine” contracts with the goal of making paperwork easier. The result is often negative and manifests itself in the outcome of landscape irrigation performance. A landscape professional does not “organically” have expertise in landscape irrigation and vice versa merely because he/she makes a living in the Green Industry. Ideally and practically, these are separate specialties employing separate skills and education. EPA has already recognized the validity of IA CIC, CLIA and CID. Here is an excellent opportunity to drive home, the point. Don’t encourage negative outcomes by ignoring this opportunity. (I recognize EPA is not necessarily concerned with market conditions but when agencies such as EPA ignore market conditions, negative and unintended consequences often follow and undermine the spirit of intent of an otherwise workable program.)</p> <p>4.1.1.2 – Water Budget. CS turf ET limit at 60% of ETo for is aggressive, arbitrary and is non-defensible. What science exists to demonstrate that 60% of ETo is practical? Current defensible assumption is 80%. Besides, only a small percentage of installed irrigation systems are actually programmed by users to operate at 80% ETo and thus, EPA and the Green Industry have not realized the actual water savings available of compelling all irrigation systems to operate at the accepted, defensible standard of 80% ETo. The concept of Management Allowed Depletion (MAD) approach to watering (vs. regular replenishment) is gaining acceptance in the Green Industry especially as applied to non-turf applications. Science is under way to document the effects of the MAD approach on turf and non-turf applications. The MAD approach may prove equal or better than ET operation in the long run since it expands upon the ET approach to measure actual soil moisture, not simply assume soil moisture holding capacity (as does the ET approach). WaterSense does not address the MAD approach in its recommendation and I suggest MAD be included as part of Option 2 to enable the use of MAD-based products and scheduling to qualify under this program. “...Available precipitation shall be no more than 25 percent of the average annual rainfall amount...” Again, what science exists to support this requirement? How does one then adjust for a particularly hot, dry weather? I suggest instead that EPA continue to encourage weather-based, soil</p>

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		<p>based design, installation, programming, maintenance and audit of landscape irrigation and remove the “25% of rainfall” water budget.</p> <p>Suggestion summary: Remove the term “obviate”; Direct builders to hire qualified professionals to design and oversee installation of qualifying landscapes and irrigation systems to qualify for this program; Help reduce negative unintended consequences and call for the separation of landscape and irrigation contracts (design and installation); Call for enforcement of 80% ETo . This will have a significant impact toward EPA goals of water conservation and is defensible. Include the concept of MAD approach to design, product specification, maintenance and operation of landscape irrigation. Remove the call-out for 25% of average annual rainfall as a water budget and instead concentrate on efficient irrigation design, installation, programming, maintenance and audit.</p> <p>4.1.2 – Mulching material. WaterSense did not call-out the type of mulching material and if not addressed, may have unintended negative consequences. For example, what if someone installed 2-3 inches of crushed rock as “mulch”? Desert areas notwithstanding, the use of rock mulch will do nothing to support the intent of this section. In many parts of the country, “mulch” is a term used interchangeably between many types of landscape bed “toppings”.</p> <p>Suggestion: Research the language of this topic more thoroughly and employ verbiage suggestions from qualified professionals in the landscape industry to help WaterSense better call-out this specification.</p>
§4.1.4-c1	Zsofia Pasztor	<p>Hello! I just read the proposed water wise requirements for certification by EPA of new homes. I love it with the exception of water features. These structures are circulating water without using new water regularly. Some can be solar or low voltage and even though some of them are not very well designed and loose water, most of them do not waste water. If pools and spas are allowed, well designed water features should be also. I can see this as a big block getting support from the professionals. Indoor and outdoor water features are generated large amounts of income to installers and if they are well done they are no more wasteful tan irrigation for instance. Please allow water features in the criteria if they are designed well. They are not only aesthetic but provide habitat for lots of birds and insects by providing them with bathing and drinking water. If water features are not allowed, than TVs should be out as well.</p>

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		Thank you! Zsofia Pasztor Certified Arborist, Horticulturist, CHP Landscape Designer and Construction Specialist Frog On A Log Parks LLC www.frogonalogparks.com
§4.1.4-c2	John Gordon	<p>Dear EPA staff: First, The reality of landscape design today is that many new owners of "McMansions" typically cannot afford to add wonderful landscaping with multiple layers of trees, shrubs, and perennials in various garden "rooms" that might be created on their large sites. As long as jurisdictions issue permits for 2-acre (and larger) building sites, suburban sprawl in many metropolitan areas will consist primarily of lawn with a large percentage of rain-water runoff and all the pesticide-leaching, gasoline-powered mowing, and irrigation that these high-end lawns require. Put an end to senseless suburban automobile-based subdivisions with large acreages per homesite and you'll find that more homeowners will become "greener" citizens. A second point here is that, under Option 1, if house-builders are required to create and plant at least 60% of the landscapable area of a new home with shrubs and perennials, the quality of the soil preparation and plant-selection for those areas will be minimal as the builder will engage the lowest bidder to design and create the plantings. The resultant cheapest possible mish-mash of plants will be required to stay green until the property is sold and neither the builder nor the landscape contractor will care what happens after the sale. Furthermore, there is no generic planting design that will suit any homebuyers. Homebuyers have preferences and prejudices in the kinds of plants they want for their gardens and they certainly don't want 60% of their landscape to resemble the nearly identical McMansions on both sides of their property! Suggestion: Consider incentives for new home-owners to engage the designer of their choice and have the design installed, perhaps within 24 months of occupancy. Don't force builders to go beyond the "shrubbing up" of the foundation that they now do. Much of what builders leave new home-owners now is replaced either due to the homeowners preference or simply that the plantings don't survive because the planting soil was not amended appropriately or that the plants weren't selected appropriately for the site. Water use restrictions, alone, is not the only key to the reduction of water for irrigation. Yes, the reduction of lawn areas is critical, but encouraging the greater use of native plants in all landscapes is a more important in the longer view. After establishment, often after just one season, native plants typically need no supplemental watering. Second, Why the proscription against water features in Paragraph 4.1.4? For many landscape designers for clients with more sensibly-sized lots, requirements for modifying "what the builder left us," or "what we've lived with until the children were grown," includes a water-feature. Worldwide, water features have always been an important element in gardens. Americans, in ever-increasing numbers want a fountain or pond of some kind as a focal point in their gardens. There are three primary reasons: 1) Water creates a</p>

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		<p>refreshing visual focal point in the design; 2) Splashing water, even a small trickle, becomes an aural focal point that helps to "block" the sounds of vehicles nearby and aircraft overhead; 3) Water-features are typically water gardens, and many homeowners want to grow water plants as well as terrestrial plants. EPA should consider that water features recirculate water and, once filled, only use additional water to replace evaporation not replaced by rain. Most are not on irrigation systems for the automatic addition of water and those that are only actually use water as necessitated by evaporation. A further consideration is that ponds and some other water features with fish and plants assist in sensitizing younger generations to the delicate balance of ecology. If EPA's term "builder" includes landscape design and build firms as well as house-builders, any ban on the design and installation of water-features will be essentially laughed at. Landscape designers and contractors are not going to stop adding water-features to residential gardens any more than landscape architects and their clients will stop installing impressive water fountains in urban plazas (where evaporative water loss is often very great!). The environmental education of children is the focus of H.R. 3036, the No Child Left Inside Act. The bill will very soon be debated on the floor of the House of Representatives. We need to be supporting and encouraging all aspects of environmental education, both in our educational systems and at home! Final suggestion: Invite comments on your draft regulations from the membership of the Association of Professional Landscape Designers (admin@apld.org) as well as the American Society of Landscape Architects Sincerely, John Gordon Belvedere Landscape Design, LLC Ashton, Maryland www.Belvedere-Landscape.com</p>
§4.1.4-c3	D Reeves	<p>Several thoughts concerning the proposed criteria. Residential Ornamental Water Features DO serve a functional and practical purpose and should not be considered a water waster. A small Residential Ornamental Water Feature could be recharged weekly by the condensate from HVAC system.</p>
§4.1.4-c4	Carl Weeks	<p>I have just heard of this proposal to prohibit water features on private property, supposedly to show that the Fed Government is taking some action, although it is not statistically indicated that it is necessary. This is exactly why the EPA is losing the respect of the American people, your employers. It is exactly who animosity grows every day toward the federal bureaucracy and specifically toward the EPA. The rules and regulations that are being developed especially by the EPA who was originally established to uphold existing laws, not create their own laws, are fast taking the American people up to the brink of revolt. This ruling will take the public one step closer to reaching the end of their tether, and could well lead to an outcry to abolish the EPA, or at the very least put a strong leash on them. And, don't think, for one minute that it couldn't happen. Such an action would put you out of a job, just as this ruling, this</p>

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		regulation, could well put literally thousands of people out of work throughout the country. This is a very large industry, involving people at all levels. Sales, internet, laborers, contractors, materials suppliers, etc. I don't urge you to reconsider this regulation, because urge sounds too much like begging, and citizens in a free country don't beg or urge. They demand action from their employees, which you and all members of your bureaucracy certainly are. Therefore, I demand that this regulation be removed from further consideration. Carl L. Weeks www.koidaddy.com
§4.1.4-c5	Steve Hedberg	John, It has been brought to our attention that the EPA is proposing that Ornamental Water Features not be installed by builders in your Water-sense Program because they serve no functional or practical purpose and you believe they are a consumer of water more so then other alternative or better understood water consumers. I'm sorry but I need to strongly disagree with you. The use of man made water features along with natural occurring water bodies through the creation of filtration through bogs, gravel streams, waterfalls, & aeration promotes a healthy ecosystem in to an otherwise stagnant environment. In addition a closed ecosystem ornamental water feature in addition to being aesthetically appealing attracts, provides a life environment for many forms of wild life, and enhances human experience through providing the tranquil sound of running water which has a calming effect on the human nerves and in a urban setting can drown out or mitigate automobile, rail, & airplane noise. These are just a few of the many reasons Ornamental Water Features are an important benefit to nature as well as the human experience. It would be my suggestion your document still should be modified in ways that don't outright ban it but include water features or additions to natural features that don't require more water then a lawn. Their use could also reduce turf area just as the inclusion of swimming pools would. Ornamental water features are less water users then swimming pools of comparable size & actually take less water to maintain then an area of turf the same size. Also you have yet to draw any distinction between Ornamental Water features which are stand alone and those which are used in combination with a natural occurring pond to help improve water clarity and create a healthier eco system. There are also Ornamental Water Features that are being created to harvest rain water off of gutters & down spouts and capturing that water to use for a water feature and watering your garden or lawn. That type of system currently being tested would be a Green advantage but not even considered under your current draft. It would be a tragedy to restrict something which positively touches so many people and is beginning to have positive environmental benefits. I appreciate your serious consideration of this issue. Sincerely, Steve Hedberg Monticello, MN.
§4.1.4-c6	Cheryl Gross	I am surprised by the criterion opposing the construction or "ornamental" water features as "they serve

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		<p>no functional or practical purpose" in the draft specification for the WaterSense New Homes program, a voluntary water efficiency program... I've had a 10 by 5 foot pond with a small waterfall in my yard for several years. It not only serves to cover the noise of traffic from a nearby busy road and provide me and my guests with a relaxing environment, but attracts suburban Florida wildlife. Birds, possums, raccoons, turtles, frogs and snakes all use the pond as a place to swim, drink, reproduce and sometimes dine on the carp. Even the neighborhood dogs and cats stop in for a drink. My neighborhood was constructed on a filled-in marsh back in the 50's and 60's; as an environmental scientist, I like to think my small pond makes some small amends for that destruction. A small amount of ground water is pumped during the non-rainy season to maintain the pond's water level; however far, far more is pumped out to support unrestricted growth in this state and water lawns that "serve no functional or practical purpose". I urge you to reconsider the position on water features and to instead focus on requiring that they be suitable to the natural environment, be constructed "greenly" and operate with energy efficiency, preferably using solar. Sincerely, Cheryl A. Gross</p>
§4.1.4-c7	John Olson	<p>To whom it may concern, It was recently brought to my attention that you issued the following proposal: Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. I am so glad that we saw this in time to keep your organization from making a foolish mistake and costing millions of gallons in wasted water. You see backyard ponds and water gardens not only use 15%-50% less water on an annual basis than the same square footage of lawn they also provide valuable micro habitats to fish, plants, frogs, and local wildlife. Of course these water features are a life saving stress reducer to hundreds of thousands of pond owners as well. Please reconsider the error of including that section in your proposed guidelines. Certainly your organization would want to investigate the possibility of completely reversing its position and encouraging the inclusion of backyard ponds and water gardens to not only conserve water but help the reduction of global warming, the promotion of healthy eco systems and the medical benefits that pond ownership allows. Since you are working towards public benefit with your guidelines one can only hope you would not wish to enact guidelines that would have the opposite effect as you were hoping for while ruining the livelihoods of tens of thousands of pond professionals thru out the United States. Best wishes on your project and with a little more research and careful planning I am sure your guidelines will be a</p>

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		benefit to society over the current flawed version. Thank you for your time John Olson Chief Executive Officer Graystone Industries, Inc.
§4.1.4-c8	Jason Harlow	<p>Gentlemen, My name is Jason Harlow and I am the CEO of Tropical Waterscapes, a company which I founded over two short years ago. I have noticed in your proposed draft of water efficient single family new home specifications that you state "Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features." I am absolutely appalled that an environmental protection organization such as yours would even propose such a ludicrous standard. Does the EPA not realize and agree that the amount of aquatic and wetland habitat in this nation has declined or become so polluted that many species of animals that once thrived in our wetlands, now face extinction? Does the EPA not realize that the addition of a residential water feature provides a clean habitat for turtles, frogs, toads, and beneficial insects? Does the EPA not realize the habitats we create provide a source of clean drinking water for all species of animals? Does the EPA realize that companies like ours were truly the first to "go green" by encouraging the creation of backyard habitats? Does the EPA not understand that we offer a rainwater harvest system that can capture thousands of gallons of runoff from a roof, store it underground, and use it to not only provide water for the water feature (thus keeping the rainwater in pristine quality), but to also provide a source of water for irrigation? I sincerely believe you should educate yourselves on the water feature industry, and the benefits we provide to the environment before making a rule such as this. Your organization's mission is not all that far removed from our mission. Together we can make a difference, but if we are "outlawed" then we will simply be working against each other and be unable to achieve the goal of environmental stewardship. Jason Harlow "The Waterfall Guy" TM Chief Executive Officer Tropical Waterscapes www.tropicalwaterscapes.net</p>
§4.1.4-c9	Adam Wylie	<p>I have a comment concerning the following item in the draft specification: 4.1.4 Ornamental water feature. Builders shall not install or facilitate the installation of ornamental water features. Some types of water features can provide habitat for a wide variety of plants and animals whose natural habitats are being depleted, among other (ie aesthetic) benefits. Using tap water to fill a water feature is wasteful and should be discouraged, but there are many options available to homeowners that should be promoted. Water features can utilize rain or sump water instead of tap water, which provides the storm water runoff control benefits promoted by the EPA. In addition, the draft specification does not address rain gardens or other forms of rain water capture (ie rain barrels or cisterns), which can greatly reduce dependence on tap water (for lawn/garden irrigation) while providing the same storm water benefit mentioned above.</p>

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		With a limit on the amount of turf on the property, homeowners will undoubtedly need water for landscape plants. In that regard, the specification should clearly state that pavement or other impermeable surfaces are not suggested for the non-turf areas of the property. Thank you for your consideration, Adam Wylie
§4.1.4-c10	Cameron McConnell	New ornamental water features that our company manufactures and markets are actually functional and attractive rain water harvesting tools that also support irrigation around the yard. We would like to see water sense criteria changed to allow water features that operate on rain water. It would also be wise to include dedicated rainwater harvesting products in some way in the program. Under proposed guidelines, a consumer could have a swimming pool, a hot tub, irrigate, and still qualify, but if they xeriscaped their property and utilized a rain water harvesting / water feature, and used no tap water for landscaping, they would not. Not only do our new water features harvest water, but they are the best storm water solution available for the North American market for a residential situation. In Australia, water features advertise they operate on reclaimed water / rain / storm water and project conservation rather than waste as your draft suggests. The size and customization of our harvesting systems allow the home owner much more opportunity to reduce overall water consumption. Other departments of the EPA are funding grants for rainwater systems, while this proposed program discourages their use. There is an opportunity here to harmonize these programs as well as habitat programs within the EPA. Would it be possible to speak with someone at the EPA regarding these issues please? Kind Regards Cam McConnell Vice President, Aquascape Inc.
§4.1.4-c11	Joe Barson	To Whom It May Concern: I have assisted parents of handicapped children in the past to install water features whether they were water gardens or water falls to give the kids some entertainment in the otherwise boring day. There is an autistic school with a water feather in it and the autistic kids calm down when their near the feature. We use efficiencnt pumps and maximize the use of all features. Therefore, to say that water gardening and ponding is not an efficient use of water, I think is an incorrect statement. Ask any parent of a handicap child with a water feature or an autistic child and listen to what they have to say. Like Gardening, Water gardening is one of the most therapeutic hobbies in the country. Joe Barson Barson's Greenhouse
§4.1.4-c12	Peter Gonzales	I recently came across this latest of proposals from the EPA or as they put it WaterSense New Homes: Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for

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		<p>aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. I am completely skeptical as to where exactly the EPA got its facts in regards to water features and its conclusion that this type of beautification is considered a waste of water. First of all water features are not solely for the purpose of aesthetics. They attract an abundance of wildlife that has been displaced by rampant development all over our country over the last century. It is also known that the movement of water causes air purification by creating negative ionization. Furthermore, like a swimming pool which does not seem to be included in the EPA's definition of a water feature, people use fountains and ponds to relieve stress from the day to day grind of life. I also want to bring up the fact that for every square foot you see a water feature is one square foot less in having to waste water by irrigating a lawn or landscaping that does demand water on a constant basis. A pond holds water not drains it into the ground. We will not even get into detail with the fact that with all the water wasted on a lawn, it must also come with a mixture of pesticides and fertilizers which ultimately find its way to our ground water and oceans. I find it completely amazing that the EPA is really planning this crusade against an industry that has nothing to do with wasting water, and yet seems to turn a blind eye at the industries that have blatant disregard for the environment when it comes to water conservation. One shining example are all the golf courses that have sprung up across our country over the last 2 decades. I used to work in one and it was daily we would go out before opening to pick up all the dead birds from the ground because they have been feeding on the pristine grass that has been treated by a ridiculous amount chemicals that is mixed with the irrigation water to keep the non native look that is a golf course all so that a few drunk people can go smack a little ball into a little hole. This is also irrigation that is distributed by diesel powered pump that was housed in a room bigger then an average size living room, because the size of these properties require that kind of water pumping and distribution. This water is drawn from the ground or nearby lakes where as a fountain is using the same water over and over again much of it fed by the rain. Is this lack of priority simply because the EPA will find it easier to do away with just a few in one industry rather then fighting the PGA? All the while the EPA can tell the mostly uneducated public that you guys are doing something to fight waste. Someone is not doing their homework here and it is disturbing to know that our government is prepared to put hundreds of thousands of people out of work over a false perception and not actual facts. I urge you to consider the real facts and consequences that come from such a poorly thought out idea. Peter J. Gonzalez The Asla Group, Inc. www.relaxingdecor.com</p>
§4.1.4-	Carolyn	Dear Sirs, I'd like to be kept informed as to any discussions, input or pending regulations regarding

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c13	Weise	<p>ornamental water features. In light of that proposal 4.1.4 I have written you of my concerns to society as a whole. Whereas drought is only in isolated areas, certainly not nationwide, and the pond owners/hobbyists have been educated in water conservation and responsible pond management, this is more an issue for public education rather than legislation. In my humble opinion! Most fish pond owners recycle the pond water (if they do water changes at all!) onto gardens that would otherwise not receive water. Some gardens are the old familiar WWII Victory Gardens, now called simply "vegetable gardens". Everybody is organics and conservation-minded these days. On my job, as customer relations specialist to pond owners, everyday consumers are instructed on the proper use of biological products in order to prevent unnecessary waste of water by doing water changes. I mentioned in my previous letter how the economy will be negatively affected by such regulation or prohibition, but do you know how far-reaching the pond and fish industries have become, and how this would impact our country's unemployment statistics, homelessness, and general poverty in a time of troubled financial future? Would you like me to do a more in depth review on this? I recycle every scrap of paper, plastic and glass. I pick up trash alongside the local streets. I assure you that I am not a radical and I am very concerned about the state of natural resources in our nation. I want to be kept informed. Regards, Carolyn J. Weise [second e-mail]</p> <p>The statements made in this draft are absurd. I sincerely hope that by the time we have the meeting and any further drafts are drawn, the offensive phrasing can be stricken from the record. Stating that ponds, streams, fountains are nothing more than aesthetic is purely illogical, considering the beneficial effects of ponds on people, their mental state, soothing and healing properties of being near water, watching indigenous wildlife flourish, in part, due to the increase of ponds available (as native wetlands are developed). Beautification purposes? Again, water is very attractive to practically everyone. I have never seen a home that had a water feature where the water feature was not the center of attention. It draws people together, gives them a sense of belonging to the earth. It may be the only "park" some children ever get to visit, and that is indeed very sad. Waterfalls are quite refreshing, allowing me to carry on in my daily chores, working with the public, in a renewed sense of fairness and tolerance. A pond uses less water than a lawn because the water is contained and renewed by high-tech filtration. A lot of ponds contain more potable water than found in the faucet. Where I live in Cape Coral, Florida, we have a fire protection system that is forced to utilize canals and certain water features to draw life- and property-saving water in case of a fire. Do not tell me that these water features SERVE NO FUNCTIONAL OR PRACTICAL PURPOSE! "Ornamental Water Features" This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are</p>

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		defined as fountains, ponds, waterfalls, man-made streams and other decorative water-related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. " Regards, Carolyn Weise, Consumer Relations- Pond
§4.1.4-c14	Chris Thompson	Are you aware that a properly installed water garden uses less water than turf? Did you know that my suburban water garden is a home for frogs, toads, dragonflies, birds, and so much more? These critters rely on my water garden as a water source. Did you know that you can collect rainwater and use it for a water garden? Did you also know that you could collect this rainwater and use it to water landscape plantings and sod as well as use is for outdoor watering projects (washing your car, ect.)? This while proving a habitat for "nature's critters". Are you familiar with AquaScape Inc. new Rainwater Harvesting System? We, the pond building community, are doing are part in the green movement. Read the following link for more information: http://www.bignews.biz/?id=2212&keys=Water-gardens-ponds Thank you for your time, Chris Thompson www.justaddwaterscapes.com Certified Aquascape Contractor
§4.1.4-c15	William Murphy	My nephew, Rob William Murphy, of Wisconsin Dells asked me to write you regarding the proposed new rule (Ornamental Water Features 4.1.4) of the EPA's Water Sense Committee. I do often write my Representatives and members of Congress on a wide range of environmental concerns, but in this case my desire to ask your committee to amend the proposed rule is based on a sense of fair play, as well as aesthetics. I will also offer a suggestion that could actually make the rule beneficial to both the people you serve and the environment. In terms of fair play, the rule as stated offers no leeway for the people who work in the Waterscapes industry. Rob Murphy initially learned his trade from his mother who built a living pond environment behind their home, and later began offering her services to friends and business owners in the Wisconsin Dells and Lake Delton area of Wisconsin. Rob is a hard working and conscientious young man and his waterfalls, ponds, and streams are environmentally friendly, use minimal recycling water, and are also truly aesthetically beautiful. This is hard but honest work that many home and business owners seek and enjoy. One of my churches built a waterfall and pond environment on the side of the church building! My second point is that your rule speaks of such features as not being "efficient." First of all, it is questionable whether any aesthetic endeavor should be judged by the concept of efficiency. This is art, not rocket science. Further, if the installation of a water feature produces man-made "natural beauty" and even provides water and habitat for local birds and animals, these are tangible benefits, contrary to the wording of the proposed rule. The final benefit is, of course, the peace of mind for the human beings that benefit from water features, as well! Finally, a suggestion for your

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		committee to make this or a better rule actually beneficial for the environment: Since good quality potable water is a real treasure wherever it is available, your rule could encourage and even offer incentives to builders to include rain water cisterns fed by rain gutters of adjacent buildings (to water features) to provide ample water for such installations. This and the use of other non-potable water could help conserve this precious resource, and not in any way adversely effect the environment nor the hard working citizens you serve. I hope you are open to the input you are receiving before the rule in its present form is enacted. I have sent a copy of this letter to my Representatives and members of Congress, as well. Respectfully, Rev. William Murphy, pastor Glenwood City, Wilson, and Hammond, Wisconsin
§4.1.4-c16	Lynn Ward	A water feature can be a stormwater management technique that happens to be a visual amenity. I don't think it would be wise to disallow ornamental water features or any recirculating water system. There's nothing in the draft that addresses capturing stormwater in rain barrels or cisterns for use in landscape irrigation or even toilets
§4.1.4-c17	Kathy Jentz	I object to the NO FUNCTIONAL PURPOSE portion of this statement - I do not know of any installed pond that doesn't effortlessly supports life - both plants and fish -- and promotes visits by other wildlife. I can see a case against swimming pools and jacuzzi for water waste - but not ponds. >>Proposed EPA guidelines pan water features U.S. EPA is working on guidelines new homes must comply with to receive the organization's "Water Sense" designation. The draft states that "builders shall not install or facilitate the installation of ornamental water features & Because these water features serve no functional or practical purpose, their water use is not considered efficient." (Section 4.1.4) Members of the Int'l. Professional Pond Contractors Assoc. are asking for revisions that would exempt water features that incorporate a closed recirculation system, use a naturally occurring water source, sustain aquatic life, support wildlife or use reclaimed water. EPA is accepting public comments on the proposed guidelines until July 21.<< Sincerely, Kathy Jentz Editor/Publisher Washington Gardener Magazine
§4.1.4-c18	Robert Murphy	As a conscientious developer of both commercial and residential properties, I am offended by the language in the proposed amendment suggesting that there is no aesthetic or intrinsic value to the use of ponds, waterfalls and other water features to enhance the beauty of our surroundings. I have utilized water features in nearly all of my projects including the Tamarack Resort Development in Wisconsin Dells, Wi. (pond and waterfall), The Hilton Garden Inn Hotel in Lake Delton, Wi. ("water wall" in lobby designed by Frank Lloyd Wright architect James Dresser) as well as a waterfall at my own residence in Wisconsin Dells. These water features are a significant addition to the aesthetics of the buildings and

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		<p>projects which they grace and add not only beauty but also a soothing and relaxing presence provided by the sounds and hydration of the water itself. I cannot imagine what these locations would be like without their water features and find it incomprehensible that such a restriction would even be proposed. Are the waterparks in Wisconsin Dells next on the "hit-list?" As a concerned citizen and taxpayer, I would urge the EPA to abandon any plans to seek to destroy the use of water features to enhance the beauty of our surroundings. Thank-you, Sincerely, Robert F. Murphy CFO - Neo-Dynamics, LLC Partner - Murphy Wisconsin Builders</p>
§4.1.4-c19	Susan Suddjian	<p>To: EPA Water Sense New Homes Program Head and Committee: We have read the draft specification 4.1.4 for water efficient new single-family homes and would like to offer our professional opinion on this proposal. We are a landscape architect doing primarily residential design, and a wildlife biologist specializing in bird populations in the Santa Cruz area of central California. In our area of California, water use and conservation is of primary concern, and we are very aware of the need for water efficiency in the developed landscape. However, we believe that the draft statement that ornamental water features should be prohibited from new construction and have "no functional value" is not accurate and can have negative consequences upon the environment. While it is true that these features are often planned and installed for aesthetic reasons, the benefits of man-made residential water features to wildlife and the environment are well documented and significant. Recent scientific research finds that ponds around the globe could absorb as much carbon as the world's oceans (Landscape Architect Magazine, June 2008). Created water features, particularly ponds, whether in suburban backyards, rural or urban landscapes, contribute significantly to the support of wildlife. They are of great importance to migratory birds which use them for bathing, food sources and drinking, as well as amphibians, mammals and insects. In that last few decades, California amphibian populations have suffered huge losses from loss of habitat due to urban encroachment, as well as home and commercial pesticide use and fungal disease (PBS special on KQED: California Amphibians, July 7, 2008). Backyard ponds provide isolated pockets of habitat for frogs and other amphibians, allowing populations to grow and thrive independently from the problems associated with larger natural systems. These created habitats contribute significantly to the survival of California amphibians which are currently experiencing a rapid decline and face an uncertain future. Lastly, but equally important, is the educational value and wonder that created ponds contribute to the quality of life of their owners. As the parents of three boys, ages 7, 10 and 15, we are currently creating a pond in our backyard which will undoubtedly provide countless hours of imaginative play and discovery as well as aesthetic benefit for our family. As children growing up in California several decades ago, we</p>

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		<p>fondly remember catching frogs and polliwogs in local streams, but our children have seldom had this experience because children no longer have the freedom to explore as we did. And unfortunately, frogs and tadpoles no longer exist in many of the local native water bodies. As the popularity of created water features grows in urban areas, people's awareness of natural processes and wildlife will lead to increased understanding, appreciation and active preservation of natural systems. While we agree that water efficiency should be everyone's concern, and as a landscape architect and environmental scientist, we are dedicated to this principle, we strongly disagree that created water features should be banned from development. The evoporative losses are minimal with a well designed recirculating pond, and in our opinion, are an extremely wise use of water - for the benefit of the environment, wildlife and humans. Thank you for your consideration, Susan Suddjian, Landscape Architect David Suddjian, Wildlife Biologist Susan Suddjian, RLA Caeli Landscape Architecture</p>
§4.1.4-c20	Dean Hill	<p>After reviewing the Draft Statement, I would like to provide a few comments. As a landscape designer with 18 years of experience in single family residential design, I would advocate for the re-wording or removal of the following criteria: Outdoor Water Efficiency Criteria Ornamental Water Features. This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water-related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. Water features have been and continue to be one of the strongest trends in residential landscape architecture. Well designed water features are typically designed to be of a re-circulating nature and require little or no additional water usage especially when compared with swimming pools and spas. In fact, ornamental water features designed by landscape architects and landscape designers can incorporate the additional benefits of stormwater run-off storage, wetland and bog areas, greywater treatment, rainwater harvesting and can help to reduce turf areas. There are many examples of well designed, maintained water features that can be functional, practical and most importantly, ornamental. I find it hard to imagine that the abolishment of 20 gallon fountains or other ornamental water features will provide significant outdoor water usage savings. A suggestion would be to advocate for the ornamental water feature to be under a specific water requirment such as 10,000 gallons and not require additional filling over that amount within a one year period. Schedules: This specification establishes that two seasonal water schedules be posted at the controller. One schedule shall be designed to address the initial grow-in phase of the landscape and the second schedule shall be designed to address an</p>

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		<p>established landscape. Regularly changing the irrigation schedule is an important component of a water-efficient landscape. This criteria is critical. I have witnessed many instances of the "set it and forget it" mentality of homeowners in regard to their irrigation controller schedules. I would even advocate for the requirement to have these schedules certified or signed off by a WaterSense Irrigation Professional on an annual basis and especially if the residence has new ownership. This can be performed in conjunction with the annual Backflow Certification. The use of best management practices to manage stormwater runoff from single-family homes. The objective of stormwater management is to maintain the quality and quantity of stormwater runoff to pre-development levels using structural or non-structural devices to temporarily store or treat stormwater runoff. My greatest concern or comment is that there is no credit or even recognition of rainwater harvesting technology. Having installed a rainwater harvesting system at my personal residence, I am well aware of the incredible reduction in outdoor water usage by incorporating this technology. At minimum, it should be a requirement to install a system that collects and stores 90 gallons. Additional credit should be given to systems that can collect larger volumes of rainwater to be used in conjunction with drip or sub-surface irrigation and treat greywater for re-use in the landscape.. Thank you for the opportunity, Dean Hill, ASLA, CGP www.greendeantv.com</p>
§4.1.4-21	Mac McClune	<p>Dear Madam/Sir: Your Water Sense program regarding the so-called "ornamental water features" is seriously flawed and, once again, demonstrates the government's lack of ability to legislate in a manner as to serve the private sector. Your "voluntary" idea suggests you believe that most of us are ignorant enough to buy off on this and that we are not bright enough to know the government equation of Voluntary + Low Participation = Mandatory. I am an aquatic biologist and have been maintaining private lakes and ponds for over 25 years. A large part of our work is to perform water quality analyses and monitor water use and loss. Although I have not seen nor heard of any scientific data supporting your program, I can safely say you have none. As I understand from IPPCA, the EPA is concerned over public perception that water features "waste" a lot of water. I too have heard those ill-perceived concerns. However, here's a free tip - education. Instead of the knee-jerk reaction of bowing to these concerns, why can't the EPA educate these people? Could it be the lack of credibility? That no matter what the EPA tries, the complainers won't believe it. Here's a second free tip - partnership. If you feel that know matter what you try, you will strike out, then why not ask for help from credible sources within the private sector? Lord knows there's plenty of scientific data available. Or you can continue being part of the "Change for America". Still haven't heard what that will be but I'm sure it will be great! Please reconsider this baseless part of your program. There are many "productive" members of society that this could</p>

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		negatively impact. Thank you. Mac McCune, President Lake Management Services, L.P. www.lmslp.com
§4.1.4-c22	Kristin Knox	<p>As a company that manufactures environmentally responsible pesticides, BioSafe Systems LLC applauds the strides that EPA has made in the last several years, and we encourage the development of programs that promote conservation. We are, however, very concerned with a portion of the draft specifications for the WaterSense Program. We agree with the certification of high efficiency, low flush toilets, faucets, and showerheads with “WaterSense” label, and that such products should be required for WaterSense-approved single-family new homes. We also agree that appliances should be required to have the ENERGY STAR label and that conservation efforts need to be taken for the outdoor landscape. The draft specifications include some very good ideas on ways to increase water efficiency in the landscape, BUT we respectfully disagree with the Agency's proposal to forbid the installation of water gardens as part of the WaterSense Program. Please understand that any time the EPA or any other US Government agency forbids something, there is a stigma attached to it. It would only be a matter of time until a municipality adopts these guidelines, and suddenly government is in our backyards telling us what we can and cannot have. We understand that water bans are very necessary at certain times, and that xeriscaping is encouraged in many communities, but we feel very strongly about anything being banned or forbidden. We also take serious issue with the statement "Because water features serve no functional or practical purpose their water use is not considered efficient." In areas of the country that experience extreme heat, swimming pools serve a very functional and practical purpose. However, in many areas, swimming pools are unused, and are installed solely for the luxury or prestige of having a swimming pool in the landscape. Surely, there is nothing practical or functional about such a swimming pool, and yet, swimming pools are allowed as part of the proposed WaterSense Requirements. Water gardens use far less water than a swimming pool; water gardens generally experience less evapotranspiration, due to the smaller surface area; and water gardens do serve functional and/or practical purposes. If placed at the appropriate spot in the landscape, water gardens can help with water retention from run-off, they cool outside areas without installing a large pool, they provide water and habitat for wildlife, and they use far less water than irrigated lawns and gardens. If water gardens do not serve a functional or practical purpose, then what does that say about the reflecting pool at the National Mall? Or any water feature/fountain in front of City Hall in Anytown, USA? Instead of precluding any part of the landscape features, we would like to suggest that water gardens be taken into account as surface area, and be considered as part of the turf allowance, just as pools and spas are allowed. Furthermore, we would be much more pleased to see that the installation of rain barrels has been added to the requirements for a</p>

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		water-efficient, sustainable landscape. While we appreciate the Agency's attention to the issue of water conservation, we would strongly urge you to reconsider the banning of water gardens as part of the criteria for WaterSense. The negative connotation attached to this action will cause an unimaginable ripple effect. Thanks you for your consideration. Best regards, Robert A Larose BioSafe Systems, LLC President
§4.1.4-c23	Jim Stripe	I'm not familiar with all the other Watersense programs and certifications currently, but believe this article is really banning water features. There is no clear statement as to the specification being for indoor, outdoor or both. The word "sense" in the program's title suggests reasonable, sensible, conservative and the matching of water use to the local environment. Builders, developers and home owners should be rewarded for certification by using/developing creative ways to integrate water features in the landscape or home such as storing rain water with cisterns or plantings which will use water. Certification should be awarded for innovative design to conserve and use water efficiently and not for eliminating is use completely. Developing lots graded to contain irrigation runoff or designing irrigation systems with no runoff will conserve a greater percentage of water than rewarding properties for not constructing water features. The United States has many climatic environments in which at least four microclimates exist on every property with a structure (four sides with their own solar exposure). The northwest is normally wet and the southwest is usually dry. One way to categorize certification would be by the amount of annual rainfall with a further breakdown of grading similar to LEED's program. Maybe the Watersense Program should begin to evolve and become a supplement to LEED or a part of the water savings category. The total amount of water used relative to the aesthetic creativeness and design of the home and surrounding yard will be better in the long run than having generic, bland, cookie-cutter residential properties having no unique and desirable amenities most potential home owners desire. Water features can provide more benefits than only aesthetics and beautification. Combined with plants, the use of water in the landscape can reduce the heat, drown out urban noise and be therapeutic indirectly as well as directly. When Xeriscape came along in the '80s, it took time for people to understand this new form of landscaping. Many thought it meant the elimination of all plants and landscape irrigation. I see this one specification, as stated, as a negative toward the use of water within the residential environment. Rewarding those who improve how water is used versus the use of no water will continue to spawn innovation and design of better conservation and water efficient techniques and methods. Respectfully, Jim Stripe Landscape Architect, RLA-3588, CA
§4.1.4-	Vicki	And how is a big backyard pool any different than a water feature. How about the green grass on a golf

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c24	Rethemeyer	course? Are we now going to deny indoor water features, also? How about those 1000 gallon fish tanks? Instead of doing away with water features, why not create standards for efficient products, installation and operation. A fountain can use reclaimed water. (Or salt water?) People will find a way to have the water features, so help create a way for them to be safe and efficient. Target the true waste of water& overspray and over use of irrigation, waste by manufacturing and agriculture. Begin to really look into alternative ways of creating potable water from available sources. Reclaim of grey water, saltwater, etc. Educate and provide new resources to the public. Don't deny them. They will just see it as "Big Government" getting in their business yet again!!!! Vicki Rethemeyer
§4.1.4-c25	John Russell	My name is John Russell, CEO of Russell Watergardens in Redmond, Washington. Our company specializes in innovative pond and water feature filtration systems that drastically reduce water usage compared to all other filtration systems on the market. We have also developed a water recycling system entitled "HydroCology" that captures pond filtration backwash water, as well as pond overflow water - and can also capture rain water for irrigation use. A benefit of capturing and re-using pond filter backwash water for irrigation is that the backwash water is naturally high in organics. It is full of fish waste and nitrate - a natural byproduct of the nitrification cycle the biofilter performs on garden ponds. The result is less water usage and purely organic fertilizers used in the landscape. HydroCology captures and recycles water for irrigation and eliminates the need for chemical fertilizers that harm our environment and threaten our natural habitat. Please take a moment to review a page on our web site that shows how the HydroCology system works. When you have a moment, please click on this link to our see our water recycling system: http://www.russellwatergardens.com/Filters/hydrocology.php Please feel free to call me anytime with questions you may have. Water recycling is very important to Russell Watergardens, and I think we can help you in your endeavors to minimize water usage. Sincerely, John Russell Russell Watergardens www.russellwatergardens.com
§4.1.4-c26	Gerald Brown	I am not sure how this effect existing lakes & ponds. Only in the urban area or ranch and farm country? What about the Refection Pond in front of Sam Houston Statue (Houston Herman Park). I am sure I would have a lot of question if we knew the complete wording. The subsidence rules for Fort Bend County ,TX are a good example of what happens when government create rules without a lot of input from the citizens. Jerry Brown
§4.1.4-c27	William Watchulonis	Please do not allow the Outdoor Water Efficiency Criteria with the sub section "Ornamental Water Features" of the Draft Water Efficient Single Family New Home Specification pass without thorough investigation. My understanding of this great country's origin was freedom from oppression and freedom

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		<p>of expression. Now I will not travel down the more liberal road of interpretations of those freedoms since I believe many times the envelope has been stretched beyond recognition. I will however offer my view and experience of enjoying a “water feature” at my personal residence for over two years. That’s not to mention the three swimming pools at the multiple residences we have lived over the past 12 years and the enjoyment we experienced. We reside in the Northeast and our property backs up against a typically swampy area and adjacent to two rain runoff retention ponds in a newer subdivision. The mosquito population present on our property was overwhelming the first six months of residing at our new home until we installed a professionally designed water feature. Since the water feature utilizes moving water, native plants and several dozen decorative fish, not to mention the multitude of guest frogs, toads, dragonflies, snakes and occasional snapping turtle we don’t have any mosquito problems. Our biggest problem is keeping snapping turtles, great blue herons and mallard ducks out of our yard. To experience the beauty of God’s great creation watching toads laying eggs in spring, dragonfly nymphs crawling on top of a lily pad to spread its newly formed wings for the first time, snakes keeping the frog and toad population under control is truly amazing. Our neighbors have expressed their gratitude from our water feature increasing the value of their homes because of its picturesque pristine beauty. Its a slice of heaven. Today with more people relying on medication to decrease their tension and anxiety from the ever increasing workload and face time required by employers, water features are just what the doctor ordered to ease tension and pardon the pun, wash away the stress. Please resist from trying to protect us by creating more rules telling us what’s better for us as you see it. Remember why we ran from so many other countries and flocked to create the greatest country this world has ever known. Protect our rights because this great frontier was conquered by men and women who believed in freedom, not more rules. Feel free to contact me with any questions. Thank you for your time and attention to this matter. William Watchulonis</p>
§4.1.4-c28	Tim Boettcher	<p>To Whom It May Concern: I just recently became aware of the proposed specifications for water-efficient new homes. I strongly object to the wording in the section about Ornamental Water Features. My company is a retail and wholesale distributor of water garden products in Denver, CO and I have been involved in this industry for the past 14 years. Being from Denver, I am very sensitive to water related issues after enduring some serious drought years. Many of the points I’d like to make I also made to the Denver Water Board in 2003 when they were considering a ban on water features (due to public support and the green industry’s education efforts this ban was removed from the restrictions). I do believe that water features need to be constructed to be as efficient as possible. But I would totally disagree with the</p>

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		<p>statement in the specifications, "Because these water features serve no functional or practical purpose their water use is not considered efficient." One of the main benefits of a water feature is its relaxing effect, this may not be functional or practical but it is reality. But besides the aesthetic enhancement to the landscape there are factual reasons to have a water feature: Water features have a cooling effect on their environment and reduce surrounding temperatures. Water features and their additional landscaping are a source of habitat and drinking water for many types of wildlife in a world where wildlife habitat is disappearing at an alarming rate. In fact, a source of water is a required part of the National Wildlife Federation's Certified Wildlife Habitat Program. The type of ponds we recommend are actually life sustaining ecosystems for fish, plants, etc. The majority of water features being installed are actually water gardens, will there also be a ban on flower gardens, etc. since they have no practical purpose? Water features and their surrounding landscaping require less water to maintain than the same area planted in turf. Pools and spas are allowed, yet the average pool is 15,000 gallons while the average water feature is less than 1,000 gallons. Pools and spas in the regulations are assumed to take the same amount of water as turf; please see #5 above. I would propose that a water garden has more practical purpose than a swimming pool, it mimics nature and nature's filtration methods while a swimming pool or hot tub is a chemically dependent system. I believe these specifications need to be totally rewritten to allow for properly constructed water features to be a part of a Water-Efficient new home. Sincerely, Tim Boettcher, President True Pump & Equipment, Inc.</p>
§4.1.4-c29	Dale Bukowski	<p>To Whom it May Concern: Gentlemen, Please read this Draft Spec at the link enclosed. http://www.epa.gov/watersense/specs/homes.htm I am writing in response to the new proposed Water Sense Draft Spec. Given that the very life blood of our company and many others that I know, rely on the construction and maintenance of ornamental water features and swimming pool environments, this draft will have serious adverse effects on our company and its existence. I believe that 2% or less of the "other" water consumption that is listed in homeowner use, as a direct result of pools/spas and ornamental water features, is definitely not a reason to get rid of them all together. This draft could put many companies out of business and be detrimental to many others in the industry. Govt. regulations are becoming a stranglehold on America's free enterprise and business owners. It has got to stop. If an irrigation company can be a "certified" water sense installer, than so can an ornamental water feature builder or pool builder. Let us help in writing those parameters to weed out all the builders that are not complying to good work ethics or who cannot pass a design/build course. If these features are built and designed in the proper manner, they should not leak or consume much water. Who says we are running</p>

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		<p>out of water anyway? Did God not see all of us beforehand and know that 6 billion people were going to consume and use water? He is much bigger than our thoughts. We recycle storm and sewer water, collect run off for irrigation, evaporation goes into the air and returns as rain, irrigating is consumed by the grass and residual goes back to the water table for re use, how is our water disappearing? If there is manufacturing changes that can be made to in home products, to use less water than I am all for it. That does not eliminate workers or jobs or businesses. It creates them. It also accounts for 60+% of the consumption. Do not put small business out of business with ridiculous claims and controls to conserve a natural resource that covers over 60% of the earth's surface. Dale L. Bukowski Oper. Manager / Principal Aquatic Rock Formations www.AquaticRock.com</p>
§4.1.4-c30	Scott Larsen	<p>If anything, the EPA should consider making properly installed (without leaks or over sized waterfalls) water gardens mandatory for new homes trying to meet the Water Sense specs. Not to over simplify my point but a pondless waterfall or water garden, over the long run, will require less water than perennial garden or patch of grass of equal size, because they are recirculating systems that requires only a little replenishing of water due to evaporation. The other options will demand regular and sometimes heavy watering, unless the EPA is going to make rock gardens a criterion. Thanks for listening, Scott Larsen Aquatics Department Manager Lurvey Landscape Supply Des Plaines, IL</p>
§4.1.4-c31	Jared Jones	<p>Rather quickly I think we should consider the idea of the therapeutic effects water has on people. Systems can be implemented to use rainwater harvested from the individual's home through rainwater catchment to supply the water source for these features upon which I wouldn't consider it a waste at all. Jared M. Jones, ASLA, RLA Angelo's Lawn-Scape of Louisiana, Inc.</p>
§4.1.4-c32	Steve Knapp	<p>To whom this may concern...my name is Steve Knapp,I sell pond and water garden products and have over 30 years experience working in the landscape and pond industry....This proposal of the new homes watersense deal,is not well thought out or researched...The resposible parties who put this together sure didn't do much research putting this together....1st...I would like to point out what many have pointed out already...a water feature or pond that has been done properly will use less water than most lawns ,especially lawns like the st.augustine and floritan varieties that are favored in the Florida area....these grasses need an incredible amount of water to stay healthy besides the pesticides and fertilizers that these grasses constantly need....If researched you will find ,lawns with watergardens [fish ponds]typically don't require the fertilizer that a home without a watergarden[fishpond] does.....most all of the people I know with watergardens ,use the water from their ponds to water their lawns and plants with....this water is rich with nutrients and one gallon of pond water used for watering plants easliy is equal to 3 gallons of</p>

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		<p>sterile city water that has chlorines or chloramines in it....So when people do weekly water changes on their ponds in a responsible way ,they can reduce the actual water needs of their lanscapes by 50% or better and almost eliminate the use fertilizers....now that is water sense.....2nd..if people really want to conserve water ,the use of inground storage tanks can be used to collect rain water and even run an over flow from thier ponds or water feature to these storage tanks . I have seen this done in many applications and right sized storage tanks can almost eliminate the use of water from city or well source.....now that's even more water sense.....3rd.....water features offer refuge to wildlife...the university of Florida extension service offers classes on these facts and workshopsmy yard is filled with birds ,squirrels ,rabbits,turltes,bees,frogs and several other great creaturesmy yard is lush and green and the only times I run my sprinklers is to flush them out a couple minutes a monthmy neighbor runs his sprinklers all the time ,their yard is always suffering from one thing or the other,,,,they couldn't pay a critter to visit their yard...even when they throw bread out for the birds ,the ants get to it faster then the birds.,,their yard is awful....my yard is twice as large as theirs ,I have a bermuda putting green in the back yard and several ponds and I use half the water than they do and I use no fertilizers at all.....now that's water sense.....So I'm simply getting to a point and I hope most see this as I do...there is water sense on paper and there is well thought out water sense that actually works for the enviroment.....what good is a low flow shower head ,when you have to stand in the shower for twice the amount of time to rinse the soap off? What good is a low flow toilet ,when you have to flush it 3 times to get rid everthing in the bowl?...What good is it to plant a turf that is not drought resistant and needs an extreme amount of chemials and water to keep it healthy?here in Florida these three things above would be used in new homes construction and would fall in to the water sense deal....and not one of those actually save any water ,do they?.....Thank you for your time.....steve</p>
§4.1.4-c33	Adele Ashkar	<p>Section 4.1.4 Ornamental water feature The exclusion of ornamental water features is a drastic measure that should be revisited. It is clear that these specifications are directed at homebuilders offering newly constructed homes; it follows that few would install expensive ornamental water features to enhance the sales appeal of the home. The specification should not prohibit an enlightened developer from creating artificial wetlands, rain gardens or other water-based garden features, ornamental or otherwise, that are tied to ground water-conserving measures, whether on specific home sites or in communal spaces. In fact, it should encourage such features that promote community infrastructure savings arising from sound storm water management, which will help to protect the future of the nation's water supply another</p>

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		<p>stated goal of the WaterSense program. Section 5.0 Homeowner education: Operating Manual Educating the consumer on the benefits of well-designed water and landscape features that conserve water, attract wildlife and play a role in stormwater control is an important effort to maintain the scope of the WaterSense label beyond initial occupancy of new homes. It would be responsible to include an extra chapter in the Operating Manual for further ideas on outdoor water conservation, to promote the continued use of water-efficient products and services. This chapter could include links and references for further options that residential property owners could consider after occupancy, such as methods of adding their own water-conserving garden features, responsible ways to design water features and landscaping for energy and soil conservation. Respectfully submitted, Adele N. Ashkar, ASLA Associate Professor Director, Landscape Design and Sustainable Landscapes Programs The George Washington University Washington D.C.</p>
§4.1.4-c34	Pamela Stevens	<p>Hello, Thank you for providing this information for us. I would love to know where this organization found their information to come to these conclusions? Not only do water gardens make positive impacts to the environment by promoting environmental issues, but our customers conserve and reuse most of their water. Swimming pools in this climate are drained every winter and re-filled every spring. An average swimming pool holds between 20,000 to 60,000 gallons of water. The average residential water garden is between 100- 3,000 gallons of water that is retained all year. Many conservation organizations are promoting backyard water features to provide habitat to indigenous wildlife and birds. I have taught many courses for Brandywine River Museum, Longwood Gardens and at the Philadelphia Flower show. My courses are always filled and the attendees are passionate about their aquatic gardens and the creatures that utilize them. What else can we do to get this very one sided review recognized as a basis opinion and not the entire truth? Please let me know what I can do? This industry is not just the way I make a living; it is my passion and my life. Our family business has thrived because of our dedication for over 40 years. I can't imagine that all spoiled or ended because of one consultant's opinion! Thank you, Pamela J. Stephens Schlett Stephens Aquatic Services, Inc.</p>
§4.1.4-c35	Mike Leman	<p>To Whom it may concern: I am appalled at the lack of understanding demonstrated by the proposed voluntary specification in making the declaration that, "water features serve no functional or practical purpose." In reality, water features calm the spirit, delight the senses, and keep us in touch with the natural world. There is abundant scientific research that clearly demonstrates the soothing effect of moving water. It seems very practical and efficient to reduce stress, and as a result reduce the costs to society of stress-related crime, divorce, child abuse, disease, etc. I'm not suggesting that water features</p>

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		<p>are a cure-all, but if they even slightly moderate the effects of the stresses of life, they can be an efficient and wise use of water. If there are any doubts, I invite a visit to the lobby of St. Joseph Hospital in Denver, CO. Ask any family member of a patient at St. Joseph whether or not they have experienced the calming effect of this water feature. I believe it will be unanimously clear that the healing process is augmented by the sounds and sight of moving water. I urge the EPA WaterSense regulators to reconsider this suggested ruling and acknowledge the beneficial effects of water features in the built environment - understanding that in spite of being a voluntary program, many municipalities will enact WaterSense standards as a part of their local building code. Please reconsider the essence of the regulation as well as the unintended consequences. Respectfully, Mike Lemman, CLP v President v Singing Hills Landscape, Inc.</p>
§4.1.4-c36	Scott Hammond	<p>To those concerned with the wise use of water resources: I hold a bachelor's degree in Environmental Studies with a limnology and botany base from Central Washington University. It was earned as an interdepartmental major comprising 125 credits most of which were upper level classes. I have 30 years past experience as a Paramedic and ten years current experience as an "aquascaper". Naturalistic, ecologically friendly Aquascapes (water features) diversify habitat, moderate microclimates, and provide a place of respite, refreshment, rest and restoration in current day stress filled world. Well designed and built constructed wetlands (which might be construed as another form of water feature) diversify habitat and improve water quality of both standing water and water returning to natural stream courses benefitting the environment for lacustrine, downstream riparian, and upland ecology. Properly designed and installed detention and retention ponds - required by the EPA and local authorities for storm water control - can be constructed in a manner that aesthetically enhances the setting as well as diversifies local and regional habitat. (too many retention or "wet ponds" are mosquito breeding sludge pits even though they meet the requirements of local and federal authority for stormwater control) Rainwater harvesting systems that employ active filtration through a constructed wetland + stream + pond arrangement can also serve to diversify the local and regional habitat, enhance aesthetics, improve water quality, and provide irrigation for the surrounding landscape saving valuable potable water resources. Even a simple ornamental water feature like a bird bath or fountain can positively impact habitat for our winged friends. A backyard pond and water fall arrangement uses less water than the required irrigation for the turf it usually replaces. For the sake of our environment, our water quality, and our quality of life; please reconsider any sanction on the installation of eco friendly water features as you revise the language in the EPA Water Sense New Homes document section 4.1.4. I will be happy to</p>

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		provide additional information or testimony if you so desire. Scott Hammond, Blue Creek Landscape, inc Certified Aquascape Contractor
§4.1.4-c37	Kelly Billing	EPA - Water Efficient Single Family New Homes 4.1.4 I find it ironic that lawns and swimming pools, which are notorious chemical sink holes, have more precedence than water features. Neither lawns nor pools have much, if anything, to offer the environment; that which the EPA is governed to protect. Most ornamental water features are a magnet for ecological diversity. Build it and they will come; birds, insects, amphibians, reptiles, fish, beneficial organisms, etc. to support an entire ecosystem. There is also data that indicates water features use less water than lawns. I sincerely hope you revisit this section. Kelly Billing Maryland Aquatic Nurseries, Inc. www.MarylandAquatic.com www.FloatingWetlands.com
§4.1.4-c38	Chris Clevers	I am writing to you today regarding some recent language coming out of EPA that is a bit troublesome. The language is as follows: Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. A number of studies have been done on the water usage of a pond versus that of a similar square foot area of grass area and it has been found that the pond actually uses about 1/3 of the water as the grass area. This would seem to more than meet your intended savings of 20% or more of typical water use to meet the green home criteria. Couple this with the benefits of pond ownership namely; real and ongoing stress reduction, property enhancement and beautification, providing a natural habitat for native creatures, interaction with nature in your own yard, availability of highly nutritious water for watering of flowerbeds and finally the ability to take a vacation in your own yard and avoid freeway travel and the gas and greenhouse gases that travel would create. We respectfully request that EPA carefully review their wording to avoid laying the groundwork to preclude a beneficial and potentially integral part of making a property truly green. In our opinion a pond could not only do this but significantly improve the true “green” nature of a property over time. Respectfully, Chris Clevers President Hikari Sales USA, Inc. www.hikariusa.com
§4.1.4-c39	Scott Johnson	July 9, 2008 Earth Transformations / Scott Johnson 2523 Vine Place Boulder CO 80304 RE: EPA Water Sense New Homes Specification 4.1.4. I wish to add my comments with regard to the suggested changes that indicate water features serve no functional or practical purpose. Water features may be utilized for practical and functional purposes by the typical single family homeowner in the following

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		ways, listed in no particular order: As a water catchment to store excess water prior to runoff. As a source of reflected light into the house. To moderate climate. For aquaculture to cultivate water plants, fish, or water purification. As a source of white noise in areas needing noise abatement. As a potential resource in case of fire. As an environmental refuge for wildlife such as bees, birds, small mammals & reptiles. As an additional source for irrigation. There are far more efficient ways to control water use. One such example - regulate the irrigation practices for ornamental grasses by municipalities and industries such as golf courses. Thank you for considering my comments. Sincerely, Scott Johnson
§4.1.4-c40	Gail Hermann	I sure hope that hobbyist and business people keep responding to you to prevent this law from being past. I would like to tell you about how we have touched so many families who had medical crisis and we helped to eliminate some of their pain even if it was only temporary. Water Gardens have indeed and will always make life's better and healthier. So perhaps you need to look at our industry in another light such as it is related to medically healing. I can attest to this as we have been in this industry for 25 years. We have brought such happiness into the life's of so many cancer victims with our water gardens and water features. I also have witnessed when a person was sick and had home care how their beds had been moved to be in front of windows so they could lie and watch the fish for hours. In fact we have even donated our gardens to the "RI Ronald MacDonald House" and the waiting room for chemo treatment at the RI Hospital's Oncology Department. Visiting family members and friends need a place to go so they can release their stress and that is what water gardens does. It allows people to enjoy a moment of tranquility and beauty that one receives while sitting in the water gardens settings. We have also been invited to the Oncology Convention in Boston to help eliminate the high stress to our dedicated professionals that help us heal. These people also need to release their own stress levels and water gardens and fish ponds do take stress away. Somehow there must be another source of savings that you can find to save the planet. But due to the life's that we have made happy during the 25 years in business I have to say "Don't take ours away". You will hurt more than you will save. Sincerely, Gail L. Hermann
§4.1.4-c41	Frank Gabry	Dear John, your saying, chlorinated swimming pools are OK for wildlife? Wildlife can die from drinking that chemically treated water! As a FNGLA certified Design-build contractor, water features use less water than:1) Swimming Pools that are polluted w/chemicals 2) exotic planted landscapes 3) road surfaces that pollute our water from oil-brake dust run off etc. 4) leaky toilets or any toilets that use water! I can go on, the biggest waste of water comes from- huge industries use water to clean & process material & the waste water is sometimes/usually untreatable. Why don't we do something about that?

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		<p>MAN has/is destroying the natural environment, we have changed the earth, in Florida, I've seen small lakes dry up,& where do these local birds, local wildlife, go to get water from, now ? My stream, or my ponds, I see it all the time, every day. Why should we deprive them of clean fresh running water, yet your proposing to let wildlife drink from stagnate dried up mud holes? I just don't get it, a properly designed & installed water feature uses less water than you use every day to do your chores. It's ok for you to use as much water as you want to wash your clothes, take a shower, flush toilet & go swim in your pool! Yet, it's not ok for me to provide fresh water (the reason it's fresh is we circulate the water causing it to oxygenate). To deprive the natural wildlife of fresh water would wrong, couldn't do that, sure bird's can drink from stale bird baths, what about other four footed animals? I guess it's ok for human's to have chlorinated pools in your back, but nature doesn't have a chance with chlorinated concrete jungle pools. SAD to think my government has come to this, let's just cement it over, that's very sad, very sad indeed! Frank B Gabry [second comment] Please help us preserve natural wildlife & help create places for them to obtain water from, since we helped destroy natural water features, by thinking we are improving them for human's usage! IPPCA, www.info@ippca.com , has helped to create great guidelines & has been promoting professional standards for the water industry. They have been striving to improve communication between organizations. They are small, yet growing rapidly & sadly have little or no lobbying powers in government! The GREAT BIG EPA is ready to shut down a complete industry, the water feature industry, since it seems without research, they feel water features are not needed & have little use or is the fact's more obviose, the EPA has run out of things to do? This is what IPPCA proposes for 4.1.4 section as follow's; Ornamental Water Features 4.1.4 Ornamental Water Features shall meet one or more of the following specifications. 1) Incorporate a closed re-circulation system; 2) Utilize a naturally occurring water source, (i.e.; spring or stream); 3) Sustain aquatic life; 4) Support wildlife; 5) Utilize reclaimed water. Supporting statement: The above specifications were drafted to insure that an ornamental water feature would be functional and serve a positive purpose. Ornamental water features in regards these specifications are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided to serve a beneficial function and purpose in the landscape, environment and overall scope of real value on a piece of property. As these ornamental water features serve an actual functional and practical purpose their water use is considered efficient. YOUR CURRENT LANGUAGE is so wrong that nothing could be farther from the truth! It saddens all nature loves see bird's & wild life deprived even farther. Why does man destroy natural habitat & then when she/he has the chance to help, we are shot down. So, our wonderful members from EPA feel,</p>

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		<p>depriving nature of water is in good practice, and in keeping with the standards of MANKIND, destroying any positive benefits to wild life, IS WELCOME! Hence is what is proposed by EPA; CURRENT LANGUAGE Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. This states animals, wild life, birds, butterflies, insects have no use for water features. That these water features are a waste, and we should use tax payers money to enforce & empower the EPA, to take down/remove any existing, & to stop any construction & planning of water features. It seems the EPA has run out of things to do? Now it's time to go after the home owner, and next water feature's to go are bathtubs & taking showers! It scares me to think about it, what do we do with all the existing fish & plants, do we flush them? I'm really getting scared, in Chicago, there is a great fountain, it's copied after Buckingham's Palace's fountain yet much bigger, it supports no wild life other than tax payers! IS the EPA going to bulldoze & level that water feature? It really seems, the EPA has too much free time on their hands, don't understand why with global warming, large corporations & cities dumping sewage into water ways, that the EPA could afford the time to cement in every stream, every pond, every bird bath, to kill all the animals it supports and destroy/ruin the soothing sounds, the refreshing feel, the over all enjoyment of flowing water brings us! Just don't understand & now we all know they will be knocking at my door and locking me up, without water! [third comment] EPA still doesn't understand why would YOU & the EPA, want to ban water features. I keep thinking, of my childhood in Chicago, those very hot, steamy, summer days & nights! We would all go down to Grant Park, to see a wonderful cooling water, spectator, called Buckingham's fountain! (Buckingham's fountain is a larger copy of one of the world's greatest fountain at Buckingham Palace, England). The various colored lights dancing, to the arithmetic seamless dancing upward shooting waters, multi individual jets from various sized orifices. The colored lights could be seen from far away with the rise & fall of towers of water, one's pace would pick up, soon people would be running to see the show. And what a show, I'm 50 yrs old now & still I can remember the cooling mist of over spray, coming from the fountain's many jets. We would intentionally get as close as we could, to get wet & gambling to get even wetter from the grandest rise, the biggest wall of water, betting it's even higher than the tallest building in the great Chicago skyline. Yet, the EPA, feels this is environmentally wrong? That such water features are incorrect! Has the EPA, completed any of their expansive studies to determine</p>

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		<p>this? Have they ever done a study on how much water is ,eh, wasted? We've seen NO report, & I'm shocked, there's no report! So how is it determined, if any water features are incorrect? If no new or old report or studies, has been issued? This would like to know how the EPA, determined water features, should & need to be eliminated! This new ruling from the EPA, will ban all water features, include, the systems we've design-built to remove & store rain water, for later usage! We don't understand, how the EPA came to this sad conclusion, searching history does not provide any negative information about water features. Didn't the people of Crete & in many other parts of the old world, channel rain water from the roofs & streets to be stored for later use? These civilization have been doing this for hundreds, if not thousands of yrs! Yet the EPA, feels that's wrong! The great civilizations from the past have a proven track record, collecting & storing rain water. I even saw a documentary, of the people that live/ lived in the high Indies' mountains of Peru. They built channels, thru the mountains, to carry rain water to & from remote location's, & SOME STILL WORKING to this day, yet the EPA suggests this is wrong. We generally think otherwise, when it comes to ancient people, like even the Rome's water features, some still working, 2000 yrs later. After all the Romans took baths every day, had running water, also fountains for enjoyment. The really strange thing is they had to work real hard to get water supplies to the people, yet against all odd's they did. Rome, Crete, Peru, all in different parts of the world, great Civilizations, some dry areas, yet they all supplied water to the masses & had fountains! All great civilizations seems to have water channeled form one place to another. Granted, there are improperly designed & installed water features that wasted water! We've seen & repaired many of them, however most water features are securely & soundly built by professionals. We have the knowledge to design & build systems to collect water, and/or not to waste water uselessly! And have personally designed/built several successful waters systems, that collect water from roofs and store water. Even simple water features like containers, or more complex pools w/ connecting streams that do not require constant refilling, These features give soothing enjoyment for whom ever witness it. We witness all kinds of birds getting their daily supply of fresh water, other kinds of wildlife additionally come & visit water features. Sometimes, I feel chlorinated water features & swimming pools are useless, since the water is polutated by chlorination, which only Gator's in Florida seem to enjoy. Yet, the EPA, feels these chlorinated concrete ponds are correct, humm! Maybe, EPA directors enjoy using their swimming pools! By the way, we know many people that enjoy swimming in their ponds w/the fish & aquatic plants. Have a handicaped client, who does not have a swimming pool, choose to have a natural type water feature he can swim in! He swims with his fish, even feeds them while swimming, how cool is that. Wouldn't it be beneficial for the</p>

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		<p>EPA, to contact; info@IPPCA.com, & info@IWGS.com in addition to www.WaterGardenNews.com to review the information available. The professional pond industry has perfected ways not to waste water! Proper designs, proper installations combined with proper maintained, water features are beneficial to the environment! Additionally, just watching the History channel, Discovery Channel, and even the Science Channel, have features about past& present civilizations and mankind's close ties to use of water! Water & water features have a place in history, lets not stop creating/developing new and improved water features, after all can you imagine a world without fountains? What's next, no more planting of trees since trees use water? Scary world we are creating, please EPA, listen to the pros.</p>
§4.1.4-c42	Rosemarie Danner	<p>Dear Ms. Frace, I was dismayed to see the proposal to limit the use of water gardens under the water sense proposal regarding energy efficient homes. Although it is true that water gardens use energy and water they also enhance the lifestyle of Americans in each and every state. The water used in a water garden, especially a pondless feature, can be and usually does use less water than a lawn or plant garden irrigation system. Flower gardens, vegetable gardens and lawns would not be efficient either, yet it seems water gardens are being singled out under the proposed guidelines. Water gardens can also help by being designed to catch rain water runoff, cool outside areas and provide water for wildlife. Finally, everyone complains that there are no more American manufacturers. Our company has been manufacturing in American for 75 years and we have 35 employees. Although these are only proposed guidelines, they will have a negative impact on our industry and hurt out company. I respectfully ask you to please reconsider these guidelines. Thank you for your time. Rosemarie Danner Chief Executive Officer E. G. Danner Manufacturing, Inc.</p>
§4.1.4-c43	Ryan Russel	<p>My first thought is this for REAL but then with the Govt. any restriction is possible. To ban water features is absurd most use a small amount of water and use it over and over probably one of the most efficient uses of water. What's next an aroma meter and until you reach a nasty stench one is not allowed to flush or bath. This whole Al Gore / Chicken Little thing is going just Too Far besides most claims by these groups are false or inflated reports. Most people see the benefits of being a conservationist in their lives and the resources they use. Why don't we just work towards solving problems and making things more efficient?</p>
§4.1.4-c44	Janice Kaiser	<p>Ornamental Water Features are an asset to the environment as they promote and support many different types of wildlife. Just one example is the wild bird population at my home, which has doubled, maybe even tripled, because of the advantage of flowing water all winter long, not to mention the additional food source the ponds produce. And the life cycles of plants, insects, larvae, frogs, birds, bats, fish, etc.. that</p>

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		<p>exist because of the ponds and pondless features can only be a benefit to our environment and contribute to the life cycle of our planet. With regard to the "inefficient use of water", filtration makes the use of water extremely efficient when you consider the amount of life it produces in exchange. Please STOP the BAN on Ornamental Water Features. Sincerely, Janice & Bruce Kaiser</p>
§4.1.4-c45	Susan Sanders	<p>To Whom It May Concern: In response to the drafted proposal for Water-Efficient Single-Family New Home Specifications, I have attached an article recently published by TetraPond, a part of United Pet Group. This article highlights how ornamental ponds and watergardens can play a positive role in water conservation and have other "green" benefits with respect to landscaping and the environment. I would like to highlight that after the initial fill of a watergarden or ornamental pond, rain helps naturally replenish any lost water, and pond water can also be used to water other plants in the landscape. Specifically to item 4.1.1 Landscape Design in the proposal: Option 1 states that "Turf shall not exceed 40% of the landscapable area". Watergardens can help reduce the amount of turf. Option 2 states "Builders keeping a natural landscape that requires no supplemental irrigation would meet the requirements of this option". Watergardens can be a form of natural landscape. I would ask that the EPA review the proposal, specifically with respect to ornamental water features, and lift the restrictions proposed in the draft. Sincerely, Susan Sanders United Pet Group, Inc. Marketing Manager, TetraPond United Pet Group www.unitedpetgroup.com</p>
§4.1.4-c46	John Heap	<p>I have reviewed the proposed regulations regarding artificial water features and decorative ponds. I am confused as to the rationale the EPA used to make this proposal. Our company has been building decorative lakes, streams and water features for over 30 years and we strongly disagree with the thought process the EPA is employing. Water features, decorative lakes and streams bring many benefits to the citizens of the United States including but not limited to: water storage, filtering systems and wetlands, watering areas and habitat for birds and animals and the human benefits of staying in touch with the natural world. We also use our products and technology to build wastewater impoundments, water storage reservoirs, manure lagoons, detention ponds, golf course lakes & streams and employ between 90-110 people. This misguided legislation will severely limit our ability to generate enough work to continue supporting our employees and their families. Water features and decorative ponds if designed, engineered and built with considerations of site drainage and hydrology will provide detention and filtering of storm water flows. This produces the best of both worlds, detention to release and filter suspended materials and esthetics to enhance our surroundings with the relaxing and soothing elements of nature. Water is and always will be the source of life on our planet and should not be hindered by</p>

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		government regulations that are not based on sound science. The EPA should continue to do its work to keep our water resources and groundwater safe through the continuing education and growth of the knowledge base within the organization and its regulators. Respectfully, John B. Heap CLI-ClearWater Construction www.coloradolining.com
§4.1.4-c47	Carol Reineke	I have read the proposed regulations regarding ponds for the water sense program. As a pond owner I find it unreasonable and unfair to allow a builder to install a swimming pool under the Water Sense program, but not be able to install a pond and qualify for the Water Sense label. Obviously whoever drafted these regulations has never after a stressful day at work, sat down by a pond and listened to the sound of a waterfall and watched their fish swim among the plants. For those of us who have ponds, will our ponds be grandfathered if we decide to sell our homes, or will we have to fill in our ponds to have the Water Sense label? My pond with its fish, flowers, and moving water soothes my senses and allows me to relax and meditate. I cannot understand how the Government has the right to tell me that my pond serves no "practical purpose". As written these regulations though well intended are not fair. We have water restrictions here in Georgia. My grass has not been watered in over a year. In previous years our summer water bill would run over fifty dollars a month. Now even though we have been doing water changes for our fish, our last two bills have been less than \$40.00 a month. Yet under the Water Sense program a new home builder to qualify with the "Water Sense Label" could have a swimming pool but not a pond. While the regulations in the program only apply to builders who wish to participate, how long is it before the EPA decides to impose them on all builders and existing homeowners? Carol Reineke
§4.1.4-c48	Paul Liniger	To Whom It May Concern: Please be very careful in considering this rule. Water features have countless benefits and most all systems are self contained. There is also a tremendous amount of interest in rain gardens and bio swales, some of which are used also as water features in the Landscape (which is how we are able to sell people on the idea of sustainability because incorporating a water feature into a swale is appealing yet also beneficial to the environment). The idea of sustainable landscapes doesn't involve not using water but using water wisely. We install permeable pavers, rework on-site drainage to capture and utilize waters in aesthetically pleasing man made features. Water features, ponds, fountains, bubblers etc, actually improve the value of homes and of the life around them, for both Humans and Animals. I have installed countless water features in my life. Many of them support fish, insects, frogs, birds, snakes, squirrels, herons etc., not to mention they also are mini eco systems for bacteria and water cleaning enzymes and oxygen producing plants and algae. This is one of the shortest sighted pieces of legislation I have heard of affecting our industry to day. Water features are one of the MOST

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		popular landscape elements and a great revenue source for an entire industry. If you want to conserve on water, then outlaw the installation of Lawn areas. I can see some litigation coming very soon regarding this. This is just another example of our government saving us from ourselves, and it is a real shame that I would even have to write this email. Good luck getting educated people involved in creating more interest in water-efficient single-family new homes. Paul Liniger President Crystal Springs Landscapes, Inc. www.crystalscapes.com
§4.1.4-c49	Kevin Quisenberry	Subject: Ornamental Water Features Please convey to the EPA that we as homeowners and homeowners associations disagree with their assessment in this matter and that until they get scientific proof to leave well enough alone on infringing on the rights of the people. Kevin Quisenberry Treasurer Sterling Gate HOA
§4.1.4-c50	John Mattaboni	Why does the government think it is entitled to dictate every last little detail of our lives? Who told you that have have the authority to control everything you see? I'm here to tell you that you do not and that one day the people will get sick of their political masters and do away with all of you once and for all. I, for one, will build any damn water feature I please. I don't need your permission and I will never ask for it. What's next, banning bird baths? Kiddie pools? Lawn sprinklers (I know you've got a hard-on for that one)? Perhaps the free people of the United States should be made to beg for a daily allotment of drinking water from our Beneficent Overloads. We can't have people have people drinking too much water, we need our EPA slave master to come by with the ladle once a day to make sure we get a "fair" ration while we toil away at our menial jobs -- all so we can pay our taxes and keep our slave masters fat in government benefits. I can't wait to see it all come down someday.
§4.1.4-c51	Rob Murphy	Hi, I am very strongly opposed to your proposal regarding the ban of ornamental water features. It seems as though there has been no research into the matter. Have you ever thought of what a learning tool ponds have been for schools. Creating an ecosystem that children can interact with so that they can learn first hand about water quality and what it takes to maintain a balanced ecosystem. How about the fact that ornamental water features are viewed as works of art, or the fact that having sprinkler systems to grow grass in your yard is an extremely inefficient use of water. My point is that this proposal lacks supporting data for this ban and doesn't take into consideration that there are many people like myself who enjoy the sights and sounds that ornamental water features provide. I for one will not stand for this kind of attack towards myself, my business, and my clients. Rob WaterScapes
§4.1.4-c52	Nita-Jo Rountree	I just read that you are considering banning builders from including outdoor water features in new construction. I am a homeowner with a koi pond, and I cannot tell you how wonderful the sound and look

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		of water in my own backyard is for my peace of mind. Please remember that homes are a refuge from the stresses of everyday life. Don't take away such an important addition to them. Nita-Jo Rountree
§4.1.4-c53	William Johnson	To Whom it May Concern, Attached please find a proposed revised specification for subsection 4.1.4 This proposed revision incorporates language that covers the benefits derived from the incorporation of ornamental water features into new home construction. This language is intended to maximize the benefit of the water usage in an ornamental water feature, while it defines limitations that minimize water consumption and eliminate water loss. It is a fact that real estate adjunct to water is often priced and taxed at a higher rate than other similar nearby real estate thus establishing the inherent value of water features. PROPOSED LANGUAGE Ornamental Water Features 4.1.4 This specification establishes that builders may install or facilitate the installation of water use efficient and sustainable ornamental water features. Ornamental water features are defined as fountains, ponds, lakes, waterfalls, man-made streams, wetlands and other water related constructions provided for the benefit of aquatic and/or wildlife habitat, or to enhance the value of the real estate or structure. Ornamental water features designed to recirculate potable or treated water that could negatively impact wildlife must minimize evaporative or plant transpirational losses and eliminate seepage loss. Ornamental water features may be designed to contain reclaimed water must do so without seepage loss. When stormwater, blended water and other water that is not considered fit for human consumption is utilized within an ornamental water feature, all seepage into the ground must be controlled seepage through soils or other media designed to maximize physical filtration and facilitate the biological remediation of any water-borne waste so as to protect ground water.
§4.1.4-c54	William Johnson	Dear EPA Committee Members, The committee's efforts to conserve water are highly commendable and timely. Water is a resource that is undervalued by too many Americans. We wish to make our position known on an EPA Water Sense New Home specification particularly subsection 4.1.4 as made available for public comment at the Web address shown below. This subsection of the draft specification states that "Ornamental water feature - Builders shall not installer facilitate the installation of ornamental water features." This thinking leaves this proposed specification short of the realization that ornamental water features are landscape improvements have real, utilitarian and monetary value. This value is similar to that of the pools/spas covered in subsection 4.1.3 and the full value can be even more varied than the pools and spas. A fundamental tenet of real estate valuation is the fact that people most often pay a premium to live in close proximity to water whatever its source natural or man-made. Many governmental entities tax real estate close to natural and man-made water features at a higher rate than other adjacent

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		<p>real estate reflecting the value. Many Americans derive a significant portion of their living from the design, construction and maintenance of decorative and landscape water features. Ornamental water features are often utilized for health benefits of swimming and aquatic exercise as are pools and spas. Ornamental water features are utilized for stormwater retention, detention, wetland and other biological remediation. This draft specification currently ignores the real estate value and overall economic impact of ornamental and landscape water features and the associated industry in the United States of America. All activities of Americans should be evaluated concerning their impact on our valuable water resources. When one ranks ornamental and landscape water use, one finds more intrinsic value than in many other water-related human activities. We implore your committee to discharge its responsibilities by considering these facts and to act accordingly by amending this proposed specification to facilitate the continued design, construction and maintenance of ornamental and landscape water features. We suggest that ornamental and landscape water features be constructed so as to minimize evaporative and seepage loss of water except where stormwater is remediate prior to incorporation into ground water. We suggest that man-made water features enjoy the same designation as pools and spas as the add value to the real estate, to the local wildlife habitat, to the environment and ultimately to the quality of life in the United States of America. Respectfully Yours, William A. Johnson Field Technical Engineer Firestone Specialty Products Company</p>
§4.1.4-c55	Stephen Pategas	<p>Dear Sir or Madam, As a practicing landscape architect registered in the State of Florida I work on residential and commercial projects. The banning of ornamental water features should not be part of this code. Water features are an important part of gardens and are used for not only aesthetic purposes (as are plants) but are also used to: 1.Mask the noise of traffic, barking dogs, airplanes, power equipment and partying neighbors. 2. Attract wildlife to gardens and during periods without rainfall often provides the only water source. If we lure wildlife to our gardens we should also be responsible enough to provide water. The Audubon Society suggests providing water before food. 3. Provide an escape from stress and create a healthier mental condition. There are numerous ways to save our water resources without seriously compromising the benefits of the use of gardens. Any homeowner who incorporates a water feature could not achieve your designation and may decide to not incorporate ANY of the Water Sense water saving principles. Regards, Stephen G. Pategas, RLA, ASLA Hortus Oasis, Inc. Stephen G. Pategas, RLA, ASLA, Landscape Architect www.hortusoasis.com</p>
§4.1.4-c56	Dominic Shaw	<p>To whom it may concern: With respect to the potential banning of water features, we ask that you consider the potential of water elements in their social and physical context before proclaiming that they</p>

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		<p>have no functional or practical purpose. Water features provide auditory stimulation and have been found to enhance environmental conditions for patients at hospitals and nursing homes. There is no reason that these benefits cannot be utilized in home environments with the addition of small water features. Additionally, in recent years, many water features and backyard ponds have been combined with water reuse systems providing a decorative basin to capture rainwater to reduce water use around the landscape. It would be shortsighted to declare that these types of uses have no place on new home installations. Certainly water features evaporate water but in many cases these water elements have benefits to the outdoor environment by reducing heat island effects around patios and hardscape elements around the home. Reducing the temperature close to the structures would provide some reduction in cooling requirements for the home. Less tangible but equally important is water's impact on mental health. Water features are soothing and sources of comfort to all who take the time to enjoy them as is evidenced by any water feature in the public realm. Water is an important part of the social context and should not be banned from the family domicile because of misconceptions of no function or practical purpose. Please consider these points and those presented in the attached documents prior to unceremoniously banning all water features. Sincerely, Dominic Shaw Waterline Studios, Inc www.waterlinefountains.com</p>
§4.1.4-c57	Sally Karo	<p>All they are saying in the EPA Water Sense 4.1.4, is that in order to meet the criteria of being listed as a "Water sense home", you cannot have the contractor build an ornamental water feature. Where did all the fear that we cannot have ponds or water features come from in the IPPCA? Sally Karo</p>
§4.1.4-c58	Colin A. MacLachlan	<p>To Whom It May Concern: I have recently read a synopsis of your guidelines for new single-family homes. Just several observations. Eliminating water features in new homes provided they are recirculating systems will not tremendously reduce daily water usage. Water features can add a tremendous element to the landscape of a new home and make it more enjoyable without the need for continuous reintroduction of water like turfgrass or even long showers. Gray water could even be used to fill or supply these systems provided that the water features have plants and filters that could break down any soaps and nitrogen that is introduced. Most recirculating water features have such filters and plants. You should also consider adding guidelines for landscaping which include the use of native plants and non-invasive, drought tolerant plants. These plants will generally not require watering once they are established. Colin A. MacLachlan BRAY HILL, LLC</p>
§4.1.4-c59	Dana Nunez Brown	<p>I support most all of the new WaterSense guidelines for conserving water and decreasing demand. I take exception with the idea that outdoor ornamental water features are inherently adverse in impact. From 29</p>

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		<p>years of experience in environmental planning and landscape architecture, I can assure you that many ornamental water features are wasteful of water, but many are not (particularly newer installations) and none have to be. We and many of our colleagues designed them using recirculating water and most often within ponds to help aerate the water. I urge you to revise your guidelines to recommend that ornamental water features utilize a water recirculating system and that those which do not are not recommended under the WaterSense guidelines. Thank you. Dana Nunez Brown, ASLA, AICP Principal BROWN+DANOS landdesign, inc. www.browndanos.com</p>
§4.1.4-c60	Carol Engle	<p>I am very concerned about the new WaterSense EPA statements. Firstly, I am another of those people who have a water garden with live Koi which bring me immense enjoyment. We do not use excessive water and certainly less than a large swimming pool but it would be more water than the average household. In addition, although I live in a single family home, I also have a barn in which reside a number of horses -- all of whom need water to exist and could possibly put me in another bracket of water usage. I noted you spoke primarily of "new" homes but we all have hopes of someday moving to a new home and starting again & I would be most interested in your comments please. Thank you. Sincere regards, Carol R. Engle Boonton Township, NJ</p>
§4.1.4-c61	Paula Biles	<p>Thank you for taking time on July 16 to listen to my concerns about the proposed Water Sense guideline for ornamental water features. I also appreciate your patience in explaining its intent, designed solely as a voluntary designation for new construction. Saving water is very important to me and to others in the water gardening field . We greatly appreciate the concept of the Water Sense seal; it educates people and provides recommendations for water conservation actions. Because of its goals (and hopefully its effects) the impact of considering water features as unnecessary and wasteful of water may be significant, whether intended or not. As I understand from our conversation, by now you are well aware of the benefits of water gardens, ponds, and water features -- economic, beautification, convenience, social, and therapeutic. Those benefits are diverse and intense. They range from providing a backyard retreat for overworked couples seeking solace, to serving as the foundation for a wildlife sanctuary, to making a home for cherished family pets, to creating a maintenance-free display with water lilies to increase the value of a home. And the list goes on & My major concern is that although unintentional, this guideline would reinforce the common misconception that water features/ponds use lots of water. It would paint them all with a broad brush, without differentiating between closed system water features (which contain and recirculate water) from the features that use up water. Here in Florida our dwindling water supply is an increasing problem. So conservation is coupled with programs to educate and provide</p>

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		<p>alternative treatment/supply. (As with other counties in SW Florida, we make use of reclaimed water for irrigation.) As I mentioned on the phone, my county has been on water restrictions for about 10 years, with the past 2 years limited to outside watering for one day per week. I am acutely aware of people's misconceptions about the amount of water used in ponds. I have helped fight battles against municipalities that want to ban ponds because they don't realize water features use less water than any other kind of garden lawn, vegetable, or ornamental flower. An uninformed decision against water gardens can actually cause an INCREASE in water usage since most landscape alternatives use more water. A brief mini-bio may help explain why I see this as such an important issue. I grew up in a family that gardened and volunteered for environmental causes, so an appreciation for conserving our natural resources was instilled at an early age. I've been involved with water gardening since the mid-1980s in numerous capacities -- teaching, lecturing, writing, and management. I formed a local pond club, worked with hobbyist and trade magazines as editor and writer, was executive director of the International Waterlily & Water Gardening Society, and most recently co-authored a book on lotus. The profound effect of ponds and water gardens has been reaffirmed over and over again. They inspire people to care deeply about the ponds and their inhabitants (flora and/or fauna), while becoming dedicated stewards of the environment. The water features attracts new "natural" advocates in an era when the trend is away from parks and gardens. It teaches people that everything is connected to everything else, everything that gets thrown away goes somewhere else, and that there is no such thing as a free lunch. In short, it teaches sustainability, along with an appreciation and responsibility for nature that is practiced on a daily basis, thus saving environmental resources - especially water. This link with nature and connection to sustainability issues is extremely important in today's society of constantly-on-the-go people and nature deficit disorder kids. Anything that can attract their interest and educate them is vital. Its even more beneficial is that can be done while also reducing the total amount of water used in the backyard landscape. Since water gardens appeal to all ages, cultures, and socio-economic levels, their relevance for explaining our responsibility to conserve water is immeasurable. Considering all of this, I hope the Water Sense guideline committee will modify the wording and definitions to better achieve the guideline's goals of saving water. Purely decorative water features that use up water should be considered as unnecessary and not be able to obtain the Water Sense seal. However garden water features that retain and recirculate water should be encouraged, especially as an alternative to other gardens and turf, which use substantially larger quantities of water, chemicals, and pesticides. Ideally the Water Sense seal could become a wonderful way to promote "xeriscape ponds" to help save water. Aquatically Yours,</p>

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		Paula Biles The Lotus: Know It and Grow It www.AboutTheLotus.com
§4.1.4-c62	Gayle Larson	Hi, As both a landscape designer and a homeowner/gardener, I have some real concerns about the new proposed guidelines for waterfeatures. A well-designed and installed waterfeature uses little water and recycles it efficiently, using very little electricity. The guidelines appear to allow swimming pools--now there's an efficient and sustainable use of water and power!!! Perhaps the guidelines should be more specific as to how much "discretionary" water is used per square foot, etc. rather than how it's used? Even a large waterfall uses much less water annually than a grass lawn! A natural-seeming pond or waterfall supports wildlife. Under these guidelines, no properties designated as backyard wildlife habitats would be eligible for the Watersense approval. Finally, I really think that energy efficiency and water conservation should be addressed together in the creation of "green" labeling. Separating them makes things more confusing, expensive and daunting for the consumer and contractor. We're much more likely to get people to participate and be supportive of an all-inclusive program than several disparate ones. Thanks for your attention and I hope the comments from the public will spark some additional fine tuning to what is basically a good plan. Gayle Larson, CPH Poulsbo
§4.1.4-c63	Faith Bettcher	Personally I have a water feature in my home and my home is a certified wildlife sanctuary. My garden is home to many birds, squirrels, racoons, fish, and I have even had herron. The feature is a recirculation system and does not require anything beyond the existing pump. Water features add tranquility as well to the landscape. I hope you rethink this and will use the new draft. Faith Bettcher The Seed & The Sower
§4.1.4-c64	Andy Smith	<p>Section 4.0 - Outdoor Water Efficiency Criteria: I am writing on behalf of a coalition of concerned parties to express extreme concern over the WaterSense Draft Water-Efficient Single Family New Home Specifications released for comment on May 22, 2008. It is our collective opinion that the landscape section has been developed without relevant stakeholder input that is vital to marketplace acceptance and overall program effectiveness. Due to the scope of concern and the dubious origin of the text, we feel very strongly that this landscape specification development process should be subject to a delay of not less than 90 days to allow for a complete revision with the cooperation and input from the undersigned. Because of the wide array of problematic issues, we have chosen to share only a sampling of the concerns in principle. " Design limitations placed upon the use of turfgrass in landscape designfail to consider:</p> <ul style="list-style-type: none"> • The significant positive benefits of turfgrass, including passive cooling, erosion prevention, oxygen production, carbon sequestration, biofiltration and recreational opportunity.

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		<ul style="list-style-type: none"> • Regional climatic differences. • Turfgrass species and cultivar selection strategies for low water use and drought tolerance. "Irrigation specifications fail to recognize: o Alternative control strategies that limit runoff • The benefits of incorporating technology that would interrupt alter or suspend irrigation cycles in periods of sufficient rainfall or moisture. • The use of self adjusting controller technology. • The hindrance to innovation in product use and development caused by mandating specific equipment rather than projecting desired outcome. "Omission of ornamental water features pays no heed to: • Significant habitat creation for a variety of wildlife, often displaced by residential development. • The use of such features to facilitate rain water collection or as storage for reclaimed water to be used for irrigation "
§4.1.4-c65	Pat Kleman	We are ardently opposed to the passage of the Ornamental Water Feature 4.1.4. We do not want the government deciding what we can install in our backyard!!
§4.1.4-c66	Mary Barton Bailey	<p>Ornamental Water Features 4.1.4 - This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient.</p> <p>Of course they serve a function to all of the wildlife, insects and frogs that choose to visit my pond over the course of the season. Please tell the dragonflies, butterflies, geese, and frogs that they can no longer use my pond because their residing there serves no purpose. I use the water efficiently, when I do water changes, to water my trees, grass and plants.</p> <p>I consider this one more invasion to my privacy as a citizen</p>
§4.1.4-c67	Robert F. Murphy	As a conscientious developer of both commercial and residential properties, I am offended by the language in the proposed amendment suggesting that there is no aesthetic or intrinsic value to the use of ponds, waterfalls and other water features to enhance the beauty of our surroundings. I have utilized water features in nearly all of my projects including the Tamarack Resort Development in Wisconsin Dells, Wi. (pond and waterfall), The Hilton Garden Inn Hotel in Lake Delton, Wi. ("water wall" in lobby designed by Frank Lloyd Wright architect James Dresser) as well as a waterfall at my own residence in

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		<p>Wisconsin Dells. These water features are a significant addition to the aesthetics of the buildings and projects which they grace and add not only beauty but also a soothing and relaxing presence provided by the sounds and hydration of the water itself. I cannot imagine what these locations would be like without their water features and find it incomprehensible that such a restriction would even be proposed. Are the waterparks in Wisconsin Dells next on the "hit-list?" As a concerned citizen and taxpayer, I would urge the EPA to abandon any plans to seek to destroy the use of water features to enhance the beauty of our surroundings.</p>
§4.1.4-c68	Connie Espeland	<p>I'm not entirely sure what to make of this. I just read through the document via the following link http://www.epa.gov/WaterSense/docs/home_draft_spec508.pdf and am quit shocked that any one person or group of persons no matter how meaning can take away the homeowners right to landscape their property. I completely understand and support water conservation. I utilize several rain barrels to water my yard and do not resort to using a sprinkler unless we are in a severe draught. I also have a small backyard pond with a small waterfall. I do not feel that this added feature robs the environment of its valuable resource. Only rain fall goes into the pond. The pond waters the birds, rabbits and any other wild life that wanders into my yard. No I understand that this draft applies to new builders but if this is implemented than it will trickle down to existing homes. Your job is to educate not dictate. I would venture to guess that more water is wasted on recreational pools by city, county and private homeowners than is deemed wasted by ornamental ponds and waterfalls. How about the water that is released from fire hydrants.</p>
§4.1.4-c69	Steve Hedberg	<p>It has been brought to our attention that the EPA is proposing that Ornamental Water Features not be installed by builders because they serve "no functional or practical purpose". I'm sorry but I need to strongly disagree with you. The use of man made water features along with natural occurring water bodies through the creation of filtration through bogs, gravel streams, waterfalls, & aeration promotes a healthy ecosystem in to an otherwise stagnant environment. In addition a closed ecosystem ornamental water feature in addition to being aesthetically appealing attracts, provides a life environment for many forms of wild life, and enhances human experience through providing the tranquil sound of running water which has a calming effect on the human nerves and in a urban setting can drown out or mitigate automobile, rail, & airplane</p>

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		<p>noise. These are just a few of the many reasons Ornamental Water Features are an important benefit to nature as well as the human experience. It would be a tragedy to impose government mandates on a National basis restricting something which positively touches so many people and is beginning to have positive environmental benefits. I appreciate your serious consideration of this issue. Sincerely, Steve Hedberg</p>
§4.1.4-c70	Chris Deer	<p>I own an aquarium and garden pond store here in Hanahan, SC near Charleston, SC. We have been in business more than 25 years selling, installing and maintaining water garden features and aquariums for homes and business throughout the Charleston area. Water garden features (ornamental ponds, fountains, etc) amount to about 50% of our business in the spring and summer months when the aquarium business slows. Water features not only add beauty to a piece of property, they also offer benefits for wildlife. In my personal home garden pond, my yard now thrives with insect eating dragonflies, endless species of birds, butterflies and squirrels all using the pond for reproduction, drink and even bathing. Why should these additions be banned? What information do you have that leads you to believe water features should be banned? Also, do you realize the consequences to to my business and thousands of other aquatic businesses around the country if this ban were to take effect? Why have I had no information provided to me concerning this "secret" banning of the water garden industry? I look forward to hearing from you. Chris Deer, Tideline Aquatics</p>
§4.1.4-c71	John Olson	<p>It was recently brought to my attention that you issued the following proposal: Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient. I am so glad that we saw this in time to keep your organization from making a foolish mistake and costing millions of gallons in wasted water. You see backyard ponds and water gardens not only use 15%-50% less water on an annual basis than the same square footage of lawn they also provide valuable micro habitats to fish, plants, frogs, and local wildlife. Of course these water features are a life saving stress reducer to hundreds of thousands of pond owners as well. Please reconsider the error of including that section in your proposed guidelines. Certainly your</p>

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		<p>organization would want to investigate the possibility of completely reversing its position and encouraging the inclusion of backyard ponds and water gardens to not only conserve water but help the reduction of global warming, the promotion of healthy eco systems and the medical benefits that pond ownership allows.</p> <p>Since you are working towards public benefit with your guidelines one can only hope you would not wish to enact guidelines that would have the opposite effect as you were hoping for while ruining the livelihoods of tens of thousands of pond professionals thru out the United States.</p> <p>Best wishes on your project and with a little more research and careful planning I am sure your guidelines will be a benefit to society over the current flawed version.</p> <p>Thank you for your time. John Olson, Chief Executive Officer, Graystone Industries, Inc.,</p>
§4.1.4-c72	Janet Gilman	<p>It has come to my attention that you feel Ponds, Waterfall, Water Features etc., do not have a valid place in our landscapes....</p> <p>This is not true, it provides places for birds, frogs, fish etc., to live and the recycle of the water from filters in the yard, provide water to plants, Trees, shrubs, etc..... so that you don't have to use water from the our local water to water our yards etc..</p> <p>We will fight this, because they have a great place in our eco system and help multiple things to survive.</p>
§4.1.4-c73	Don Arthur	<p>In regards to :“4.1.4 Ornamental water feature – Builders shall not install or facilitate the installation of ornamental water features.”Has anyone on this committee talked to anyone in the water feature industry to get facts and figures on the benefits of installing a water feature as opposed to other types of landscaping? A water feature uses less water than a comparable area of grass. A properly designed and installed water feature can improve the environment by providing a water source for animals. We have incorporated into our feature, the downspouts off of the roof of a warehouse. When it rains, the water runs through a wetland and is stored and re-circulated before any excess is returned to the aquifer. More people installing water features are requesting this kind of innovations in their own features for capturing and using rainwater. Please get more input before you put wording such as 4.1.4 into the new home specifications. Don Arthur, Director of Operations, Pondsaway, Inc</p>
§4.1.4-c74	Peter J. Gonzalez	<p>I recently came across this latest of proposals from the EPA: Ornamental Water Features 4.1.4 This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for</p>

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		<p>aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient.</p> <p>I am completely skeptical as to where exactly the EPA got its facts in regards to water features and its conclusion that this type of beautification is considered a waste of water. First of all water features are not solely for the purpose of aesthetics. They attract an abundance of wildlife that have been displaced by rampant development all over our country over the last century. It is also known that the movement of water causes air purification by creating negative ionization. Furthermore, like a swimming pool which does not seem to be included in the EPA's definition of a water feature, people use fountains and ponds to relieve stress from the day to day grind of life.</p> <p>I also want to bring up the fact that for every square foot you see a water feature is one square foot less in having to waste water by irrigating a lawn or landscaping that does demand water on a constant basis. A pond holds water not drains it into the ground. We will not even get into detail with the fact that with all the water wasted on a lawn, it must also come with a mixture of pesticides and fertilizers which ultimately find its way to our ground water and oceans.</p> <p>I find it completely amazing that the EPA is really planning this crusade against an industry that has nothing to do with wasting water, and yet seems to turn a blind eye at the industries that have blatant disregard for the environment when it comes to water conservation. One shining example are all the golf courses that have sprung up across our country over the last 2 decades. I used to work in one and it was daily we would go out before opening to pick up all the dead birds from the ground because they have been feeding on the pristine grass that has been treated by a ridiculous amount chemicals that is mixed with the irrigation water to keep the non native look that is a golf course all so that a few drunk people can go smack a little ball into a little hole. This is also irrigation that is distributed by diesel powered pump that was housed in a room bigger then an average size living room, because the size of these properties require that kind of water pumping and distribution.</p> <p>Is this lack of priority simply because the EPA will find it easier to do away with just a few in one industry rather than fighting the PGA? All the while the EPA can tell the mostly uneducated public that you guys are doing something to fight waste. Someone is not doing their homework here and it is disturbing to know that our government is prepared to put hundreds of thousands of people out of work over a false perception and not actual facts. I urge you to consider the real facts and consequences that come from such a poorly thought out idea. Peter J. Gonzalez, The Asla Group, Inc</p>
§4.1.4-	Gary Wallace	With concern, I correspond with you. As a manufacturer within the water gardening industry, your

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c75		<p>recommendation that our industry has an adverse effect on our environment, defies logic. Our industry revolves around sound environmental practices; from microbial water treatments to energy efficient pumps and filtration systems. Our goal is for the enhancement of outdoor living and the preservation of our living environment.</p> <p>Please email or mail your findings to my office, as would like to review your documentation and try to understand your direction; in your suggested requirement. I would like to address specifics with you; as I believe you are misinformed and I would enjoy discussing your position with you.</p> <p>Respectfully, Gary Wallace – President Tierra Innovations, Inc.</p>
§4.1.4-c76	Chip Van Geffen	<p>I must voice my concerns over this possible legislation re: ornamental water features. Please take the time to realize that these water features do , in fact, provide a practical purpose. They provide a relaxing place to relieve stress, and add re-sale value to one's home. They are also a means for thousand's of tax-payers to earn a living , by servicing watergardens and selling pond-related products. Sincerely, Chip Van Geffen, Aquatic Specialties, Inc.</p>
§4.1.4-c77	Dick Schweiger	<p>I am amazed that you would consider outlawing ornamental water features. I am 100% against this type of government overreach on our personal freedoms. Does this mean you will remove all government water features? Such as the Washington Monument reflecting pool in the mall? How about all the fountains to war heroes in our cities. Or does this mean that EPA will be able to pick and choose who has water features. Remember we are a democracy and still have some personal freedom to do with what we want with our own money. If you want to outlaw something that “serves no functional or practical purpose” why don't you start with our congress? With an approval rating in the low teens, the majority of the country would be glad to see them go away. Dick Schweiger, Oregon Air Reps, Inc</p>
§4.1.4-c78	Steve Parrott	<p>I was recently informed that the EPA Water Sense Committee is considering legislation to prohibit builders from the installation of ornamental water features. The language of that bill, '...these water features serve no functional or practical purpose...' is not only inaccurate but fails to recognize ornamental water features as a well established and important form of landscape art.</p> <p>Water features have graced landscapes throughout the world for centuries. They provide serene venues for contemplation and, as with every other form of artistic expression, stimulate aesthetic appreciation, greatly enhancing a viewers experience of the outdoors and serving as a positive contribution to the wellbeing of individuals. Water features are a valid art form, a part of our culture and have no less value than painting, sculpture and architecture. Imagine the outcry if a government agency attempted to outlaw any of these other art forms.</p>

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		<p>Certainly, there is an energy and water cost associated with ornamental water features, just as there are costs associated with every other art form. But these costs can be minimized through best practices in water and energy conservation, making good use of technologies readily available. It should also be recognized that water features are filled with water, then this water is circulated. A calculation of the amount of water used over time is minimal, almost entirely due to evaporation.</p> <p>While I haven't done the calculations, I wouldn't be surprised to find that a water feature of a certain size actually used less water than a lawn covering the same area. Your claim that '...their water use is not considered efficient..' simply doesn't hold water (no pun intended).</p> <p>For the above reasons I strongly oppose this bill. Aesthetics and beautification are important. We should strive to conserve water, but the criminalization of installing ornamental water features does not serve that goal. Steve Parrott, Communication and Marketing Director, CAST Lighting, LLC.</p>
§4.1.4-c79	Minnie Rafferty	<p>Your proposed Water Sense committee requirement is a ridiculous topic to waste any time on. Why do you pick on Ponds, waterfalls etc. What about the golf courses? They are the biggest useless use of water ever. No one should dictate to us if we wish to have a pleasurable water feature in our homes or place of business.</p> <p>In today's world where there is just so much violence and people are trying to keep their life together in spite of the gas crunch, housing crunch etc, why take away something that gives us pleasure. It is like saying we can no longer have swimming pools, Jacuzzi's etc. Don't be a bunch of Richard Craniums and waste your time on this. Go after those sprinkler systems that go haywire on the apartment complexes and golf courses. I have often seen them running in the rain, or gushing out all over the road un-cared for.</p> <p>You are all very wrong if you think that it is provided solely for aesthetic or beautification purposes. These features no matter where they are located, home or business give pleasure and a feast to the eyes that view them. It promotes tranquility and inner peace. These ponds also bring people together, peace and harmony and that you cannot buy. Angered by your proposal, Minnie Rafferty</p>
§4.1.4-c80	Dave Burns	<p>To whom it may concern, We are very concerned about the proposition that you have written concerning the building of ponds & ornamental water features. We take offense to the statement that these features serve no functional or practical purpose. Firstly, ponds are great for the environment because they provide a home for many types of wildlife including fish, frogs, birds & squirrels as well as dragonflies, butterflies, ladybugs & so much more. They promote plant growth providing oxygen for the pond inhabitants & us. Your comments about the water use being not efficient is completely false. The amount</p>

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		<p>of water "used" in a pond is minimal. The water is recirculated with energy efficient pumps in most ponds. Some ponds even use solar pumps to circulate the water. We should also mention the health benefits to the people who own ponds. the sound of water is soothing & promotes stress relief. We own a pond & water garden store & would be put out of business if your proposition is considered. But what bothers us the most is the fact that you would be hurting the environment. Consider the fact that building in the US is on going & we are losing our natural spaces to buildings & houses. The back yard ornamental pond brings a little part of nature back & gives back homes to the wild life. Please reconsider your proposal. Sincerely, Dave & Lisa Burns</p>
§4.1.4-c81	John Gordon	<p>EPA should consider that water features recirculate water and, once filled, only use additional water to replace evaporation not replaced by rain. Most are not on irrigation systems for the automatic addition of water and those that are only actually use water as necessitated by evaporation. A further consideration is that ponds and some other water features with fish and plants assist in sensitizing younger generations to the delicate balance of ecology. If EPA's term "builder" includes landscape design and build firms as well as house-builders, any ban on the design and installation of water-features will be essentially laughed at. Landscape designers and contractors are not going to stop adding water-features to residential gardens any more than landscape architects and their clients will stop installing impressive water fountains in urban plazas (where evaporative water loss is often very great!). The environmental education of children is the focus of H.R. 3036, the No Child Left Inside Act. The bill will very soon be debated on the floor of the House of Representatives. We need to be supporting and encouraging all aspects of environmental education, both in our educational systems and at home! Final suggestion: Invite comments on your draft regulations from the membership of the Association of Professional Landscape Designers (admin@apld.org) as well as the American Society of Landscape Architects (rblackwell@asla.org)." Sincerely, John Gordon, Belvedere Landscape Design, LLC,</p>
§4.1.4-c82	Bill Morgan	<p>The proposed EPA Water Sense requirement, Ornamental Water Feature, 4.1.4, is flawed and detrimental to many businesses in the Aquatic and Water Features industry. Please reconsider these proposed restrictions and research further before enacting. Many, many livelihoods are at stake. Disappointed and Dismayed by this Senseless Proposal, Bill Morgan, National Sales Manager, AquaMaster Fountains & Aerators</p>
§4.1.4-c83	Dave May	<p>Do not pass 4.1.4. What right does OUR government have dictating to us how we use our water. What's next we can't wash our clothes or bathe. Dave May</p>

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§4.1.4-c84	Steve Hedberg	<p>It has been brought to our attention that the EPA is proposing that Ornamental Water Features not be installed by builders because they serve “no functional or practical purpose”. I’m sorry but I need to strongly disagree with you. The use of man made water features along with natural occurring water bodies through the creation of filtration through bogs, gravel streams, waterfalls, & aeration promotes a healthy ecosystem in to an otherwise stagnant environment. In addition a closed ecosystem ornamental water feature in addition to being aesthetically appealing attracts, provides a life environment for many forms of wild life, and enhances human experience through providing the tranquil sound of running water which has a calming effect on the human nerves and in a urban setting can drown out or mitigate automobile, rail, & airplane noise. These are just a few of the many reasons Ornamental Water Features are an important benefit to nature as well as the human experience. It would be a tragedy to impose government mandates on a National basis restricting something which positively touches so many people and is beginning to have positive environmental benefits. I appreciate your serious consideration of this issue.</p> <p>Sincerely, Steve Hedberg</p>
§4.1.4-c85	Diana Gallo	<p>I don’t understand do we not have enough serious matters to attend to. This bill is frivolous and unnecessary I would think you have more important things to do like figuring out how to help people get health care or reduce price improve the economy. If this is what you are wasting our Tax Money on you should go to jail for fraud. Diana Gallo</p>
§4.1.4-c86	Ken Weipert	<p>I am writing to voice my opposition to this proposed regulation, Ornamental Water Features 4.1.4. It should not be applied to Koi ponds. I am a Koi hobbist who also considers my pond to be an important part of my yard from an aesthetic point of view. It is my firm conviction that water conservation should be encouraged but this proposal is not effective in addressing this issue for the following reasons.</p> <p>A properly built Koi pond uses less water per square foot than an irrigated lawn of the same sq. footage given the same weather conditions. Given this fact, your proposed regulation makes no sence. In addition, the amount of wildlife, birds, frogs, and insects that also make use of a Koi ponds water, a Koi pond is a net contribution to the environment, not a burden. Futhermore, the water in a Koi pond can be reused for irrigation purposes, thus increasing its effecency even futher. This proposed regulation is without any merit on all of these points, most especially water conservation and function.</p> <p>If you would like more information on the subject of Koi and Koi ponds please contact the Associated Koi Clubs of America or myself.</p> <p>Regards,</p>

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		Ken Weipert, AKCA Representative of Triad Koi and Water Garden Club
§4.1.4-c87	Rob Murphy	I am very strongly opposed to your proposal regarding the ban of ornamental water features. It seems as though there has been no research into the matter. Have you ever thought of what a learning tool ponds have been for schools. Creating an ecosystem that children can interact with so that they can learn first hand about water quality and what it takes to maintain a balanced ecosystem. How about the fact that ornamental water features are viewed as works of art, or the fact that having sprinkler systems to grow grass in your yard is an extremely inefficient use of water. My point is that this proposal lacks supporting data for this ban and doesn't take into consideration that there are many people like myself who enjoy the sights and sounds that ornamental water features provide. I for one will not stand for this kind of attack towards myself, my business, and my clients. Rob, WaterScapes
§4.1.4-c88	Chris Clevers	A number of studies have been done on the water usage of a pond versus that of a similar square foot area of grass area and it has been found that the pond actually uses about 1/3 of the water as the grass area. This would seem to more than meet your intended savings of 20% or more of typical water use to meet the green home criteria. Couple this with the benefits of pond ownership namely; real and ongoing stress reduction, property enhancement and beautification, providing a natural habitat for native creatures, interaction with nature in your own yard, availability of highly nutritious water for watering of flowerbeds and finally the ability to take a vacation in your own yard and avoid freeway travel and the gas and greenhouse gases that travel would create. We respectfully request that EPA carefully review their wording to avoid laying the groundwork to preclude a beneficial and potentially integral part of making a property truly green. In our opinion a pond could not only do this but significantly improve the true "green" nature of a property over time. Respectfully, Chris Clevers. President, Hikari Sales USA, Inc.
§4.1.4-c89	Joel Police	It has recently been brought to my attention that the EPA is proposing a ban on the construction of ornamental water features. As a member of the IPPCA (International Professional Pond Contractors Association), I find it quite unsettling that the EPA has taken it upon itself to act as judge and jury regarding what aspects of the green industry are considered functional or practical. Had someone from the EPA contacted leaders from the IPPCA, you would of discovered that water conservation is an extremely important issue to all members of the organization, including contractors and pond owners. Pond and water feature design continues to evolve and the future includes provisions to incorporate grey water and rain water to better utilize available water sources and reduce dependence on residential water supplies. Furthermore, had you spoken with IPPCA leaders, they could of directed

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		<p>you to studies that have definitively shown that a pond is a more efficient use of water than turf grass. The proposed ban uses language such as "solely for aesthetics and beautification purposes" to justify the elimination of ponds and water features. Will this ban be extended to all landscaping in general? After all, the purpose of landscaping around homes, businesses and public spaces is for "aesthetics and beautification purposes". Therefore, based on the reasoning in 4.1.4, no landscaping should be allowed to use any water resources whatsoever since it would not be an efficient use of water.</p> <p>And what about swimming pools and hot tubs? Water parks and splash parks? I suppose they provide functions such as relaxation, exercise, and public enjoyment. But are they efficient and sustainable uses of our water resources? Hardly! What is next for the EPA? Mandating the elimination of goldfish bowls and aquariums?</p> <p>Perhaps by working with members of the pond and water feature industry, a sensible approach can be taken to reach the goal of protecting water resources instead of creating outrage and antagonism toward the EPA. As a pond builder and a pond owner, ensuring the supply of water now and in the future concerns all of us so that we can continue to enjoy the relaxation, exercise and enjoyment water features bring.</p> <p>To say that water features possess no practical or functional purpose is an insult to anyone who has ever spent even a brief moment transfixed by the beauty of a water feature. Mandating autocratic rules will not produce any improvements in water conservation but rather drive citizens to either ignore the decree or take actions even more detrimental than the present situation. However, cooperation and stewardship would be a much more sensible approach, especially considering contractors and pond owners alike have a vested interest in seeing water conservation improved for future generations.</p> <p>Sincerely Joel Police, Owner Fins & Flowers Water Gardens</p>
§4.1.4-c90	John Hawley	<p>Please consider my comments in support of water features, fountains and such relative to this proposed ban. Our water features provide a useful a purpose as does our lawn grasses, bath tubs, showers, and kitchen sinks. However, unlike our lawn grasses, bath tubs, showers, and kitchen sinks many of us recycle the water used in our water features. Do you recycle your lawn water, bathing and kitchen sink water? Maybe ban sod farms and make sod use illegal. Fat chance eh? Would this ban then result in shutting down the fountains in Vegas and the water features in our nations capital? Did this proposal come out of some rule making office at EPA or was generated from a particular Congressperson I might also contact? Kind Regards, John Hawley</p>
§4.1.4-	Joseph Shay	<p>If the IPPCA has correctly stated your intentions, they are reprehensible government interference with</p>

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c91		commerce. As with many other government regulations, e.g. environmental impact, they are not founded on a scale of impact to our standard of living, but on an arbitrary "feel-good" scale dictated by a few individuals. Joseph Shay, Designing Women Landscaping & Nursery
§4.1.4-c92	William Johnson	<p>Dear EPA Committee Members,</p> <p>The committee's efforts to conserve water are highly commendable and timely. Water is a resource that is undervalued by too many Americans.</p> <p>We wish to make our position known on an EPA Water Sense New Home specification particularly subsection 4.1.4 as made available for public comment at the Web address shown below. This subsection of the draft specification states that "Ornamental water feature - Builders shall not installer facilitate the installation of ornamental water features." This thinking leaves this proposed specification short of the realization that ornamental water features are landscape improvements have real, utilitarian and monetary value. This value is similar to that of the pools/spas covered in subsection 4.1.3 and the full value can be even more varied than the pools and spas.</p> <p>A fundamental tenet of real estate valuation is the fact that people most often pay a premium to live in close proximity to water whatever its source natural or man-made. Many governmental entities tax real estate close to natural and man-made water features at a higher rate than other adjacent real estate reflecting the value. Many Americans derive a significant portion of their living from the design, construction and maintenance of decorative and landscape water features. Ornamental water features are often utilized for health benefits of swimming and aquatic exercise as are pools and spas. Ornamental water features are utilized for stormwater retention, detention, wetland and other biological remediation. This draft specification currently ignores the real estate value and overall economic impact of ornamental and landscape water features and the associated industry in the United States of America. All activities of Americans should be evaluated concerning their impact on our valuable water resources. When one ranks ornamental and landscape water use, one finds more intrinsic value than in many other water-related human activities. We implore your committee to discharge its responsibilities by considering these facts and to act accordingly by amending this proposed specification to facilitate the continued design, construction and maintenance of ornamental and landscape water features. We suggest that ornamental and landscape water features be constructed so as to minimize evaporative and seepage loss of water except where stormwater is remediate prior to incorporation into ground water. We suggest that man-made water features enjoy the same designation as pools and spas as the add value to the real estate, to the local wildlife habitat, to the environment and ultimately to the quality of life in the</p>

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		<p>United States of America. Respectfully Yours, William A. Johnson, Field Technical Engineer, Firestone Specialty Products Company</p>
§4.1.4-c93	Carolyn J. Weise	<p>On my behalf, please veto this proposal/bill/or whatever else the EPA proposes! With the diminishing wilderness and wetlands, these ornamental water features are the last refuge of much indigenous wildlife, some which may be already in danger. Along with diminishing wilderness, wetlands, coastal wildlife areas, there is a marked economic problem in this country. It can be noted in my area in particular by all the foreclosure notices on homes, some of these homes less than a year old. Now, the EPA proposes a restriction which will remove many opportunities to homeowners who rely on this as an industry, to build and develop ornamental water features. Without more research and better far-sighted inspection, this will not only resolve a very limited water usage problem (which will be better served by enforcing plumbing repairs and exacting other blatant wasteful practices by the general public!) a large portion of the country is going to be jobless as a direct result of this legislation. Psychological tests have proven conclusively in places such as NY that water features have a definite impact on the welfare of viewers. If we can be given time to accrue the data, it will be provided. Do not accept this bill. I am a constituent and I vote! I own a koi pond, native wildlife visit the pond, drink out of the pond (the water being cleaner than surrounding canals and waterways). In the northern climates, such as my former NY home, an ornamental fish pond is the ONLY viable water source for over wintering wildlife. I believe the EPA has not done their homework! Vote this down on my behalf. Sincerely, Carolyn J. Weise</p>
§4.1.4-c94	Lisa Greeney	<p>To Whom It May Concern:</p> <p>I received news of this proposal (EPA Water Sense Committee's proposed requirement 4.1.4.) this morning and found it very disturbing as this affects so many parts of my life. As an employee of Hedberg Landscape Supplies, it is my primary job to sell Water Features to customers, both contactors and homeowners. I am a pond owner and water feature owner as well. I could write and explain the ecosystem to you, but I'd probably only be repeating what numerous people and co-workers would be writing you. As I sit back and look at my personal aspect of a pond and the pond life, I go back to other things. I thought perhaps I could take you on a different journey.</p> <p>Living in Minnesota, with all the different bodies of water, I am still intrigued to find and see how many people travel to water. We have Gooseberry Falls, Lake Superior, Minnehaha Falls and thousands of lakes, rivers and ponds. In the United States there's Niagara Falls, Old Faithful, The Grand Canyon, and the Hoover Dam just to name a few, which brings joy and delight to thousands of people every year.</p>

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		<p>When hiking, people are drawn to the sound of water either falling or rushing and will go towards the sound. Ever just stop and watch in wonder the pure aw of mother nature in a waterfall? What goes through your mind? Is it the beautiful sound it's making? Or, could it be the awesome sight of the rushing water? No wonder people try and capture these magnificent splendors in their yards! I think of all the smiles I see on so many faces. Of a homeowner that is proud of what they just built or what was built for them. The discovery of nature and family time spent together. The wonderful mornings sitting outside drinking coffee and enjoying a captured part of nature. This world is in such a rush all the time that we forget the simple things in life. A water feature brings you back to a more simple time. Time seems to slow down, lets you catch your breath. A "Mayberry" kind of era. You feel no rush to get on with issues, stress or the fast pace of life. For a split moment in time, nothing can touch you or hurt you. It is a peacefully serene moment that is all yours. I think of our daughters' friend Kristy, who past away at the young age of 21, in December 2007, who use to come over just to watch and feed the fish and forget about her heart transplant and her medications. To my sisters' father-in-law who has cancer and could forget about his disease for a bit. I look at my father who has heart disease and is on life support with a new heart pump. He sits by the pond, watches the fish, and listens to the waterfalls. I know his blood pressure lowers when he is out there. I have a customer that lost her son in Iraq and built a Reflection Pond in his memory with a bench she sits on and watches the fish and water. A pond is not just about the ecosystem and water. It is so much more. It is a true factor in which the circle of life begins, journeys and ends. It is a rare moment in time. It is magnificent in its glory. It is my job, my livelihood, my passion. It is a life style. It is a way of life. Tank you for listening. Lisa Greeney</p>
§4.1.4-c95	Bob Wambach	<p>I am writing in regards to the proposed EPA regulation of water features. Our own United States Department of Agriculture National Resource Conservation Service states as a web page title "A pond or water garden will likely become the focal point for all your backyard conservation.", and "...water gardens are for birds, butterflies, frogs, fish, and .." and, "The Natural Resources Conservation Service, National Association of Conservation Districts, and Wildlife Habitat Council encourage you to sign up in the "Backyard Conservation" program. To participate, use some of the conservation practices in your backyard that are showcased in this series of tip sheets -- tree planting, wildlife habitat, backyard pond, backyard wetland, composting, mulching, nutrient management, terracing, water conservation, and pest management." (http://www.nrcs.usda.gov/feature/backyard/bkpond.html) Yet the EPA seems to believe "these water features serve no functional or practical purpose." (Ornamental Water features 4.1.4) How do you explain the discrepancy between the USDA, which clearly lists water features as a conservation</p>

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		<p>practice and the EPA? FEMA’s water conservation recommendations state, “Avoid installing ornamental water features (such as fountains) unless they use recycled water.” (http://www.fema.gov/areyouready/appendix_a.shtml) All back yard water features use recycled water. Not only do they use recycled water, but they provide much needed wildlife habitat and consume less water than a common lawn requires. Swimming pools serve a less “functional or practical purpose” than a back yard water feature. If we regulate or restrict wildlife sanctuaries such as back yard ponds, how does one defend the installation of a sterile swimming pool or even a lawn? I suggest you contact the Denver Water Board or other local communities that have dealt with water restrictions since 2000. Many came up with broad reaching terms in their original drafts in regards to water features. In nearly all of these communities conservation groups, home owners and businesses alike provided the education and information that was lacking when drafting the original language of water restrictions. The resulting restrictions included language such as "No restrictions if water is not sprayed in the air" or “This prohibition does not apply to operation of fountains and waterfalls performing functions essential to the support of aquatic life.” If broad language and generalities are to be used perhaps they are best reserved for areas of wasteful use or overuse of water such as car washes, lawn irrigation systems, non-aerating fountains and swimming pools. Thank You, Bob Wambach, Landscape Manager, Avant Gardening</p>
§4.1.4-c96	Cheryl Gross	<p>I am surprised by the EPA's proposal opposing the construction or "ornamental" water features as "they serve no functional or practical purpose". I've had a 10 by 5 foot pond with a small waterfall in my yard for several years. It not only serves to cover the noise of traffic from a nearby busy road and provide me and my guests with a relaxing environment, but attracts suburban Florida wildlife. Birds, possums, raccoons, turtles, frogs and snakes all use the pond as a place to swim, drink, reproduce and sometimes dine on the carp. Even the neighborhood dogs and cats stop in for a drink. My neighborhood was constructed on a filled-in marsh back in the 50's and 60's; as an environmental scientist, I like to think my small pond makes some small amends for that destruction. A small amount of ground water is pumped during the non-rainy season to maintain the pond's water level; however far, far more is pumped out to support unrestricted growth in this state and water lawns that "serve no functional or practical purpose". I urge you to reconsider your position on water features and to instead focus on requiring that they be suitable to the natural environment, be constructed "greenly" and operate with energy efficiency, preferably using solar. Sincerely, Cheryl A. Gross</p>

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§4.1.4-c97	Danny Keelan	<p>I am outraged that our government is on the verge of telling me what I can and can't have as landscaping on my own property (Ornamental Water Features 4.1.4). I suppose you'll also try to outlaw swimming pools and hot tubs, watering our lawns and flowers, washing our vehicles and our pets and allowing children to run through the sprinkler. This smells like someone is already neglecting their own personal hygiene so save water -- it stinks. Do us all a favor and save water by showering with a friend. The next thing I suppose our government will do is take my property from me so one of their friends can build a convenience store where my house is now -- oops I forgot -- Big Brother already decided it's okay to do that! Makes a person want to move to another country, like Idaho. Thank you, comrade. Sincerely, Danny Keelan</p>
§4.1.4-c98	Michael Richter	<p>I find proposal 4.1.4 “ornamental water features” outrageous. How can you say that the installation of fountains and other water features serve no practical purpose? “There are thousands of installations that have been used in peoples homes, hospitals and other public facilities purposely to provide serenity and the calming effect people need with the hectic lifestyle they lead today. N.Y.C. has just had a sustainable environmentally friendly waterfall installed in the East River underneath one of its bridges. Backed by N.Y.C. funds mayor Bloomberg said that the peace as well as the attraction to tourists will make N.Y.C. a prime destination with this new water feature</p>
§4.1.4-c99	Chris Beberg	<p>I am writing in response to the EPA Water Sense Committee’s proposed requirement 4.1.4 related to a restriction on installing ornamental water features. The committee’s comment that these features provide no “functional or practical purpose” is completely inaccurate. I live in the suburban Minneapolis area, in an upland area void of natural water features. I have a water garden in my yard that our family spends a great deal of time around together...learning, laughing, and loving. Ornamental water features are entirely based upon creating an environment for countless life forms to exist. There isn’t an hour that goes by that doesn’t include dozens of birds and other woodland critters visiting my pond for a drink of water. This spring we watched a Mallard duck hatch 8 eggs...right in our suburban back yard. Ornamental water features use less water then the same area covered with a turf grass. Ornamental water features require very minimal water additions; I would use much more water on a regular basis to water the grass in the same area. Ornamental water features provide a place to retain rain water / storm water for use in irrigating other high water demand areas such as turf. Water features will become the heart of collecting, retaining, and returning to use storm water / rain water runoff in residential sites. Ornamental ponds are the key to</p>

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		<p>keeping collected water clean and available for local irrigation, etc. Ornamental water features are a backyard classroom for children. My three boys have learned to respect nature, have learned the value of creating habitat, and have learned how to conserve water. Lessons such as these aren't learned from a textbook; they are made part of my children's make-up by personalizing it in their everyday life. The 15 children of our neighbors play around our water feature every single day. They marvel at the fish, ask questions about the plants, and enjoy the environment that the water feature creates.</p> <p>I read the Committee's proposal to ban "Builders" from installing or facilitating the installation of ornamental water features. Banning professional installation and support is a significant mistake. A great deal of knowledge is accumulated in the professional installation and sales support network for ornamental water features across this great Country. The professionals are the persons that will help people create and maintain features that do not use excessive amounts of water. Damaging or eliminating the network of knowledgeable water feature sellers would only make it difficult for the homeowner to have a successful eco-friendly project.</p> <p>I encourage you to consider further the eco-friendly and family friendly aspects of ornamental water features. These features are not sterile pools, they are the center of life, learning, and eco-friendly practices in my family!</p> <p>I welcome any opportunity to further explain the aspects I have mentioned here. Thank you for your consideration.</p> <p>Chris Beberg, Andover, Minnesota</p>
§4.1.4-c100	Mike White	<p>If I gather correctly your proposed recommendations correctly your committee doesn't feel that ponds serve much use in our world. So I would guess that you or members of your committee do not own a pond or water feature. And with that in mind I can understand exactly your feelings and thoughts. Twenty years ago I would have agreed with you before I put in my first small pond. Having ponds on my property for the last twenty years they may or may not provide any functional or practical purpose for man but I have seen first hand how important they to nature and the environment. You will notice that I said may or may not provide any functional or practical purpose for man. I heard at one point that having an aquarium with fish in it in your home added years to your expected life span because they reduce stress. I don't know of any studies on the effect of ponds on life span but I can say that they definitely reduce my stress and I would say they are going to add to my life expectancy. How many Americans each year go on vacation close to a natural body of water. Having your own water feature is like going on vacation</p>

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		<p>every day when you return home. But do they waste water? Yes they could but a properly build water feature does not. One of the water features that I have is a 65 ft long pondless stream which is a stream that the water flows down the stream to a underground holding pit and is pumped up to the beginning of the stream and flows down the stream. I built this two years ago and other than the water that was added when I first built it I have added zero water since. It catches enough rain to keep it full for the last two years. It runs year round 24/7. Does it waste electricity? That is debatable but it does not consume or waste water. I think you need to talk to associations that can help inform you of the facts so that you can make an inform decision.</p> <p>Mike White, White Water Filters LLC</p>
§4.1.4-c101	Tony Sargeant	<p>Your proposal for not allowing water features is just wrong. People have been using water for relaxing for the whole time we have been on Earth. It has been proven to lower blood pressure, relieve anxiety and I know by some personal experiences that cancer patients have gotten a tranquil time around water features. You say they have no purpose, is a human life important or helping one who suffers? Have you talked to anyone who has used them?</p> <p>If water features serve no purpose, then why are there so many? Water features are at theme parks, and look at Las Vegas. With all their growth, they have still lowered water consumption. Before your decision making, have you even done an evaporation study? Why not consider rain water harvesting?</p> <p>Why not ask Americans instead of just doing what two or three people think is better for the whole country? Why not just cut the water flow to the mussels in FLA.? Why are they more important than humans? You may want to check how large this industry is! This industry has alot of employees and billions are spent of them. How many more jobs do you want to destroy? There are ways to have features and be water smart at the same time. Instead of using the powerful fist to just say no, why not form a team to work with this industry in an effort to understand how important that these are to people and how we can work together. What a unique idea, the gov't actually working with us for a change. We deserve to have a say also, we are the ones enjoying them. Have you even met with anyone in this industry? Sometimes there are more than one answer. Tony Sargeant</p>
§4.1.4-c102	UNKNOWN	<p>I appreciate the efforts of the federal government in its mission to protect us and our environment, but the proposed specifications appear to be the product of an agency gone mad. The EPA just got through shooting down the efforts of California lawmakers to reduce the tailpipe emissions of automobiles. The regulation of air and water pollution is a health issue. I feel the decision was politically motivated, and disregarded the health issue. Now the EPA is attempting to "help" with water usage issues? The</p>

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		<p>"Specifications" are supposed to be "voluntary", but can be used to draft local regulations. Water features do not always "waste" water. Most of them recycle the water in them. The property owner can also use any water that is drained, or used for cleaning the feature to water their gardens. Any pond or body of water that contains fish is a fertilizer factory. "Used" pond water is very good for the garden, and helps the pond owner to avoid "wasting" water. The development and use of water features predates the founding of our country. For example, the Moors developed many beautiful water features in Spain hundreds of years ago. These features provided the sound and sight of water in a very dry land. These "Specifications" do not address the construction of massive, water intensive fountains, lakes, etc. that are constructed solely as ornaments for commercial projects such as hotels, and shopping centers. The "Specifications" do not address the larger issue of total water use by the household which includes the watering of lawns and gardens which use much more water than ponds and fountains. The issue of water use and wastage by home swimming pools is not addressed. The water in a swimming pool is drained into the sewers, and not used in the garden because of the chemicals used to keep the water safe for swimming. This issue is much bigger than the homeowner. Much more water is used, and yes, wasted, by farmers in the necessary task of producing food for us all. I personally witness the outright wastage of water by municipalities every day. The streets are wet with water runoff from misguided sprinklers. Watering is often done in the middle of the day which wastes water. Are you going to write some "Specifications" to help correct this? The careful description of this as "Proposed", "Voluntary", "Specifications", not "Regulations" neatly avoids the issue that as an agency the EPA does NOT have the legal authority to regulate water that is not used as a means of commerce. I personally am looking forward to the day our federal agencies do the job we hoped they would do, on a non-political basis.</p>
§4.1.4-c103	Janice Kaiser	<p>Ornamental Water Features are an asset to the environment as they promote and support many different types of wildlife. Just one example is the wild bird population at my home, which has doubled, maybe even tripled, because of the advantage of flowing water all winter long, not to mention the additional food source the ponds produce. And the life cycles of plants, insects, larvae, frogs, birds, bats, fish, etc.. that exist because of the ponds and pondless features can only be a benefit to our environment and contribute to the life cycle of our planet. With regard to the "inefficient use of water", filtration makes the use of water extremely efficient when you consider the amount of life it produces in exchange. Please STOP the BAN on Ornamental Water Features. Sincerely, Janice & Bruce Kaiser</p>
§4.1.4-c104	Bill Hoffman	<p>I truly appreciate the EPA's concern and efforts to preserve and improve our water supply. However, encouraging the restriction of water features sends the wrong message. Most water features use no</p>

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		<p>more water than grass or other landscaping using irrigation. It could be categorized under Spas for your purposes. I have another question related to water use. Has the EPA looked into using aquatic plants to filter gray water at sewage plants as it is in San Diego, CA? Would this not be a better way of filtering this water? Thank you for your time. Bill Hoffman, Pond Supplies of Ohio, Inc.</p>
§4.1.4-c105	Rudi Huber	<p>It has come to my attention that there is proposed legislation that will prohibit the use of ornamental water features (Specification 4.1.4). I am both outraged and offended at this unfounded legislation that has chosen to ignore scientific data. This legislation will affect the livelihoods of countless individuals as well as many companies. Please take the time to reconsider this legislation before it's too late. Thank You, Rudi Huber, Northeast Regional Sales Manager, AquaMaster Fountains & Aerators</p>
§4.1.4-c106	Jan Jordan	<p>If water features do not use water efficiently, are not aesthetic or beautiful. Then you must outlaw lawns also. Beauty is in the eye of the beholder. Grass uses far more water, think of all the surface area of every blade of grass using water to grow and evaporate to keep it cool in a square foot, versus a square foot of flat pond surface just evaporating. Ponds recirculate water. Ponds keep our pet fish alive. When we do small water changes, we use the removed water on the garden or yard. None of the water is "wasted". Once a pond is filled, it is filled. A lawn can often have water poured on it till it reaches depths that the grass roots can't even access. Many home ponds serve native birds, frogs, salamanders, turtles as a way station or breeding site. Please reconsider. Thank you, jan jordan</p>
§4.1.4-c107	Nikos Lynch	<p>I am concerned that the wording of the document Water Efficient Single Family New Home Specification does not address in detail the needs and desires of the public. I feel that showing things as impractical is not a sufficient reason to dis-allow them. Kids are not practical, but I love them. I think it would be good to take a look at the real efficiency and potential that a properly incorporated water catchment pond can bring to a home. Thank you for your consideration, Nikos Lynch, Terra Bella Landscaping</p>
§4.1.4-c108	Marie Gallagher	<p>Talk about being over-regulated. Don't we have bigger issues to deal with in these days of BIG environmental issues, credit crunches that are hamstringing home building, oil issues than to over control the ambience of the places in which we gain sustenance? I own a water feature. The water is recirculated...is much less than in a swimming pool...provides to my family, my friends, and to me the enjoyment of hearing and seeing the water in this hurly-burly life we live in. Is there a plan in the works to ban swimming pools as well? What kind of a society are we coming to when we remove the opportunities for beautiful settings to appreciate that enhance the nature around us.</p>

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		<p>Not everything in our lives should be functional or practical. Thanks for the opportunity to express my feelings about this. Marie Gallagher Bird</p>
§4.1.4-c109	Anne Gunn	<p>I am writing to inform you that I strongly disagree with your proposed new “EPA Water Sense Requirement”. Our company, Hydro Dramatics, has been designing and supplying fountain equipment since 1971, in the United States, and at times has shipped equipment abroad. At all times, when we design a system, sensitivity to the environment, natural resources and safety are foremost in our minds. We have designed, and are currently working on projects that will use re-claimed rainwater and “gray” water, which will be filtered and treated to create beautiful, safe fountains for people to enjoy. Many of our recent clients include nursing homes, childrens’ hospitals, and play fountains which are handicapped accessible in public parks. Quite often, these are a rare treat for families who cannot afford a swimming pool at home or even admission to a private pool. When we are able to see the joy and wonderment on their faces, it makes us very proud to be a part of creating this source of happiness. Admittedly, we need to preserve our natural resources, but do we do so at the cost of the tranquil beauty and elegance a fountain brings to a park, a monument, a cemetery, or a meeting place for students on a college campus? Can you imagine a botanical garden without a beautiful pond with water lilies and koi swimming? With all the excesses that occur everyday, particularly in our government, is it necessary to deprive the public of a little cooling, beauty in their lives? Respectfully, Anne Gunn, Fountain Consultant, Hydro Dramatics</p>
§4.1.4-c110	David Thrailkill	<p>It is with great disappointment that I see the proposed EPA Water Sense requirement, Ornamental Water Feature, 4.1.4. I am certain that if extensive research had been applied to this idea and if due diligence had been performed I am sure the benefits of oxygenation to the water source would have stopped such a senseless idea from its onset. The products you mentioned do much much more than mere aesthetics. Please reconsider these proposed restrictions and research further before enacting Regards, David Thrailkill, AquaMaster Fountains and Aerators</p>
§4.1.4-c111	Don Harrawood	<p>I've recently received some very disturbing news that the EPA water sense committee could be banning watergardens and koi ponds across the West and perhaps the rest of the country. Could you please send me any information you have on this ludicrous proposal so I can contact my Congressman and Senators. This kind of government intervention in the private sector goes against the grain of everything we stand for as a free country.</p>

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		<p>I'm a licensed contractor who builds beautiful water features and koi ponds for a living. I've spent years, as well as, thousands of dollars perfecting my trade. I depend on my trade to make a living and to take care of the needs of myself and my family. In addition my customers absolutely love the work we do. They love the fact that we create a sanctuary for them and their families; keeping them off the roads and out of the airports. We build real value in the lives of people.</p> <p>Thank-you for your response. Sincerely for Freedom and Independence, Cor Van Diepen Paradise Landscaping</p>
§4.1.4-c112	Bobbie Byrd	<p>To Whom it may concern. This makes no sense to me. The purpose for these ponds, and ornamental fountains is just like everything else in the world, for pure enjoyment! We have destroyed our natural world with concrete, subdivisions, high rise buildings, etc. Bringing the natural sound of running water, and slowly swimming fish back is like trying to restore what God put here for us to enjoy and relax with. Think of the person who cannot see, but enjoys the sounds of peacefulness. Do you think it would be the sound of lawn mowers running or the sound of cars traveling down the interstate, how about the sound of construction going on? I believe peacefulness comes from water gently running over rocks, or hearing the fish splash every now and then. I speak for my self also. There are a lot of things in this world that are for our enjoyment, which is a purpose! We need now more than ever to find peace in something. I thank God for all those hard working men that build these things for our peacefulness, and enjoyment, and that is a purpose you can not replace. Sincerely, Bobbie Byrd</p>
§4.1.4-c113	William Heyman	<p>I am writing because I understand that you will be in a position to influence the proposed E.P.A. regulation on ornamental ponds in an effort to conserve our valuable water resources. I hope you will take this opportunity to carefully examine the issue from all perspectives.</p> <p>I have experience in the area of government regulation of the pet and exotic animal industries, and can tell you that over the past twenty or so years I have seen some shortsighted and unreasonably re-active (biased) proposals.</p> <p>Surely you agree that reasonable regulations can be created when a real need exists, when that need is not overstated by those with special interests, and when all sides are heard. Although I am not familiar with the exact proposed wording of this regulation, I am not aware of any allowances for 'emergency' applications in obvious water crisis areas, or of any 'temporary' restriction language during such crisis situations. It seems apparent that, although in all bodies of water some water is lost to evaporation, this could be kept to a minimum by limiting the number of hours that pumped water could be sprayed into the air, or over rocks (in a temporary crisis). Have you any studies at your disposal comparing water</p>

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		<p>evaporation in non sprayed vs. moderately circulated ponds? My experience has shown that there is apparent considerable difference. I have always viewed my ponds as a source of good water, should our municipal water supply ever become contaminated by terrorists or other unforeseen disasters. These 'private water reserves' have great value in my opinion.</p> <p>This proposal might also be viewed at another approach to the control of invasive species. This is a completely separate issue which is being addressed at the state level and should be kept at the state level. It is a valid subject for regulation (not over regulation) and is recognized and welcomed by responsible industry professionals when it is done with valid input. This is not the same issue. With that said, allow me to mention that the number of industries that would be affected by this regulation might surprise those not directly involved in landscaping and water gardening.</p> <p>Since I am from the midwest and we would gladly share our water with the rest of the country at the moment, you might think that we have never been 'thirsty'. I understand that in some areas of the country water is not always so plentiful and that it is no joking matter. Should such regulation become necessary, surely it is not a universal (national) situation, but one that is better handled on local levels. That said, let me mention that it appears from what I do know about the proposal, that the authors are about to 'throw the baby out with the bath water'. It will be a cold, sterile world when we regulate away all pet ownership and things of beauty, such as that in water gardens.</p> <p>Please accept this information as my respectful request that you carefully look at all aspects and ramifications of such drastic legislation.</p> <p>Sincerely, William Heyman, Jr., president, Atlantis Aquatic Gardens</p>
§4.1.4-c114	Steve Gorzula	<p>We have reviewed the Draft Water-Efficient Single-Family New Home Specification and the Supporting Statement. It is an excellent step towards offsetting the problems with America's water supply infrastructure, which is not being developed and maintained well enough to meet the nation's growing needs.</p> <p>However, we have some comments regarding: Builders shall not install or facilitate the installation of ornamental water features (defined as fountains, ponds, waterfalls, man-made streams and other decorative water-related constructions provided solely for aesthetic or beautification purposes). Because these water features serve no functional or practical purpose their water use is not considered efficient. The statement underlined above would only be true in some cases. Based upon our field experience, the vast majority of people install backyard ponds (often with fountains, streams, and waterfalls) because they want their own "personal ecosystem". Children in particular develop an early love for Nature by</p>

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		<p>observing the wildlife in and around their backyard pond. Ornamental ponds are used in schools as teaching material for introductory ecology. Backyard ponds have an enormous conservation value, especially for amphibians, in urban areas. The USDA Natural Resources Conservation Service http://www.nrcs.usda.gov/FEATURE/backyard/bkpond.html, the National Wildlife Federation http://www.nwf.org/backyard/water.cfm, the Amphibian Conservation Alliance http://www.frogs.org/index.asp, Audubon http://www.audubon.org/bird/at_home/HealthyYard_BirdHabitat.html, Texas Parks and Wildlife http://www.tpwd.state.tx.us/learning/texas_nature_trackers/amphibian_watch/year_of_the_frog, Louisville Zoo http://www.louisvillezoo.org/conservation/wfpk/frog.htm, Maryland Department of Natural Resources http://www.dnr.state.md.us/wildlife/waponds.asp, the University of Florida http://edis.ifas.ufl.edu/fa037, and a host of other government and non-government organizations actively promote backyard pond building as a very important conservation tool. Perhaps you could develop some best practice guidelines for different types of ornamental water features, comparing their annual water losses per square yard to those from irrigated lawns, flower beds, vegetable plots, swimming pools, hot tubs, car washing, etc.</p> <p>We also believe that it would be useful if you could add a short section on rain water harvesting. It would give an additional way to use water effectively. You can download the “Texas Manual On Rainwater Harvesting” from the Texas Water Development Board web site http://www.twdb.state.tx.us/home/index.asp.</p> <p>Best regards, Steve Gorzula PhD, Director, Pond and Lake Water Quality, Harmony Ponds, Inc.</p>
§4.1.4-c115	Suzanne Sweek	<p>This proposal is so preposterous that I hardly know how to respond. There are much better ways to conserve water in the landscape. And precisely how do you propose to enforce this – with satellite photography? And how much increase in your staff will that take? What’s next, swimming pools – they take a lot more water than 90% of ornamental features, which, by the way, have the benefits of attracting wildlife, moderating temperatures and soothing the spirit. This thoughtless, busybody proposal needs to disappear, and the sooner the better.</p> <p>Suzanne C. Sweek, ASLA</p>
§4.1.4-c116	Dave Jones	<p>I am writing on behalf of a coalition of concerned parties in the Pond and Waterscape Industry to express extreme concern over the Water Sense Draft Water-Efficient Single Family New Home Specifications, primarily section 4.1.4, Ornamental Water Features. It is our collective opinion that the Ornamental Water Features section has been developed without relevant stakeholder input that</p>

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		<p>is vital to marketplace acceptance and overall program effectiveness. A short list of concerns: Omission of ornamental water features per the current language pays no heed to:</p> <ul style="list-style-type: none"> a. Significant habitat creation for many varieties of wildlife, often totally or partially displaced by residential development. b. The use of such features to facilitate rain water collection or as storage for reclaimed water to be used for irrigation and other popular “green” options. c. A plethora of health, hobbyist, recuperative and altruistic values. d. A seven times greater carbon uptake than the World’s oceans (see just released University of Iowa study). e. These features are a mandatory requirement for a “backyard” to become certified as a “wildlife habitat” by other federally funded entities, as well as being promoted by the EPA itself. <p>We are fully aware that the “Water Sense” program has professed and was founded on the grounds that water efficiency does not have to mean significant lifestyle changes. The new home specifications appear to represent a significant departure from such scientific data based guidance, in that the complexion and functionality of the landscape will no longer be a product of local influence and customer needs. To impose such restraints in the name of water use reduction only, without consideration for air quality, land use, water quality and other environmental impacts is highly irresponsible. EPA’s current supporting document only seems to reference water use concerns and regrettably contains several ill informed opinion based statements, rather than scientific facts.</p> <p>The undersigned parties support efforts to curtail water waste in the landscape and many have already invested considerable amounts of private funds investing in new technologies to positively re-enforce these convictions. But programs and policies must be developed in a transparent process which includes the knowledge, products and best practices of affected industries. We feel that by using appropriate equipment, technologies and methodologies, water conservation and landscape water efficiency can be achieved without limiting or eliminating Ornamental Water Features or imposing other draconian practices totally unsupported by scientific data. In conclusion, even though Water Sense is a voluntary program, we feel this type of federal label has already evolved to a point, and will definitely be perceived in such a manner that many state and local units of government will implement these requirements for Water Sense compliance in new construction, carte blanche. Again, we agree with the principal goal of Water Sense and understand a community’s needs to ensure water efficiency. However, as we can</p>

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		<p>demonstrate, the undersigned coalition has much to contribute in the quest for water efficiency that has not been incorporated in the current draft language.</p> <p>We are committed to assisting EPA with the development of this program in a collaborative fashion. The effectiveness of Water Sense can only be enhanced by granting our request to totally replace the current ill-considered language of section 4.1.4 with the scientifically provable and well thought out and researched alternate language that the top tier of professionals in the Pond and Waterscape industry have prepared and are presenting in this document.</p> <p>See the following, and please consider it with favor:</p> <p>Ornamental Water Features 4.1.4 Ornamental Water features shall meet one or more of the following specifications:</p> <ol style="list-style-type: none"> 1) Incorporate a closed recirculation system. 2) Sustain Aquatic life. 3) Provide support for local Wildlife. 4) Utilize reclaimed water. 5) Utilize a naturally occurring water source on site where allowed by local, State or Federal law. (ie; spring, stream, rainwater) Said water shall not be allowed to return to source. <p>Supporting statement: The above specifications were drafted to insure that an ornamental water feature would be functional and serve a positive purpose in a Water Sense Home.</p> <p>Ornamental water features in regards these specifications are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided to serve a beneficial function and purpose in the landscape, environment and overall scope of real value on a site. As these ornamental water features serve an actual functional and practical purpose their water use is considered efficient.</p> <p>Dave A. Jones Executive Director and Chairman of the Board IPPCA “The Pond and Waterscape Industry’s Trade Association”</p>
§4.1.4-c117	Kevin Morrow	<p>The draft specification strictly prohibits the use of ornamental water features. This prohibition is excessive and ignores the possibility of installing features that incorporate captured stormwater, grey water, shading, closed loop or recirculating pump systems, or features that otherwise have no negative impact on potable water usage or have been designed to minimize evaporation. Finally, it is unclear if such fountains and waterfalls are allowed or disallowed as part of a pool design. EPA is urged to</p>

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		reconsider this prohibition as it is currently written. A more comprehensive definition of “ornamental water feature” is needed, as well as due consideration for water features that operate with little or no water loss.
§4.1.4-c118	Hugh Gramling	Consider an allowance for recirculating systems.
§4.1.4-c119	John Marshall	I believe that banning water features is not a first priority in the interest water conservation.
§4.1.4-c120	Nancy Somerville	<p>Section 4.1.4 of the WaterSense policy recommends that builders do not install any ornamental water features on new sites. However, landscape architects and other landscape professionals have found that these devices typically recirculate water and, once filled, require a minimal amount of additional water when their reserves are not refilled by rain. Additionally, these water features provide benefits to the consumer and the environment, including improved aesthetics of the site and providing aural “white noise” that blocks sounds from nearby vehicles and relieves stress. Studies of landscape preference conducted over several decades show consistent patterns across culture, landscape types, and viewer age, that views of water features are consistently appreciated.</p> <p>Landscape architects frequently use non-potable water features that could be considered “ornamental,” yet are used for environmentally beneficial purposes, such as creating artificial wetlands and water gardens and reclaiming or harvesting rainwater. By capturing and reusing rainwater and recycled graywater for use in water features, homeowners can conserve potable water for higher priority uses, such as drinking water. This decreases the volume of water directed to stormwater management systems and reduces the infrastructure and costs associated with pumping, cleaning, and processing municipal water. ASLA believes that the WaterSense policy could better achieve its goals of reducing water usage by encouraging the use of well-designed ornamental, non-potable water features.</p> <p>Further, ASLA is concerned that the WaterSense policy, which is also designed to encourage community infrastructure savings, does not include any standards or recommendations to improve stormwater management. Stormwater runoff and Combined Sewer Overflows are severely stressing the nation’s water infrastructure systems. Moreover, runoff from rain and melting snowfall can cause flooding, erosion, and reduced water quality. Contaminated stormwater runoff from developed land is the leading cause of water quality problems. Vegetative surfaces which may include turfgrass, shade trees, shrubs, swales, biofilters, and green roofs retain precipitation making them excellent tools for stormwater management. On a well-vegetated site with healthy soils rainwater is absorbed and transpired by</p>

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		<p>vegetation, or slowly trickles down and soaks into the soil thereby reducing stormwater runoff and eliminating the need for supplemental irrigation of the vegetation. Managing stormwater runoff on sites can lead to reduced infrastructure and energy expenditures associated with municipal water treatment. Thus, ASLA recommends that the WaterSense policy encourage landscape architects, designers, developers and homeowners to provide increased green spaces which will address stormwater management issues and reduce outdoor potable water use which are the goals of the WaterSense program. ASLA believes that by incorporating sound landscape design techniques into its WaterSense policy, the EPA has a unique opportunity to educate the public about stormwater management practices and how to best take advantage of natural precipitation while conserving water.</p>
§4.1.4-c121	Jeffrey Alderman	<p>I understand that a change has been proposed in the EPA Water Sense New Homes Specification 4.1.4 for water-efficient new single-family homes: The new proposed draft for Ornamental Water Features reads as follows: "This specification establishes that builders shall not install or facilitate the installation of ornamental water features. Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams and other decorative water related constructions provided solely for aesthetic or beautification purposes. Because these water features serve no functional or practical purpose their water use is not considered efficient." As a registered civil engineer in the state of California, I have designed hundreds of water feature projects over the course of 25 years. My comments regarding the above-proposed new specification draft are as follows: The purpose of water features is not "solely for aesthetic or beautification purposes." (emphasis mine). Your premise is flawed. Aesthetics and beautification are certainly some of the major purposes for water features, as is the case with landscaping in general. Water features also provide the following benefits as well:</p> <p>Provision of Earth Grading/ Earthwork/ Stabilization Options -- in some cases, the installation of a water feature, such as waterfall/ retaining walls, are a superior solution for earth grading and stabilization of land; than soil surface slopes, landscaping, and other methods would provide. Noise abatement -- in many of our projects, water features provide a pleasant, and often necessary, buffer to outside traffic and other unwanted noises.</p> <p>Serenity/ Mental and Physical Health -- a peaceful sanctuary to which people can retreat to escape from their every-day stresses and pressures of life; and to promote reflection, contemplation, etc.</p> <p>Appreciation and Learning/Studying Environment for aquatic ecosystems -- to observe, appreciate, and study fish, amphibians, aquatic plants, and other aquatic life forms and their environments in water features which include them. Promotion of</p>

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		<p>Ecological Awareness and Concerns -- often a direct result of the appreciation and learning/studying aquatic ecosystems, is a person's growing awareness, care, and concern for ecological issues in general; which is a great benefit and need in our society and world. Provision of Hobbies -- this includes the planning and building of the water features, raising of koi, catfish, frogs, water plants, etc. Vast libraries of books, pamphlets, websites, etc., have been written, published, posted, and distributed, with a large and growing population purchasing and utilizing this literature. Provision of a</p> <p>Growing Hobby Economy and Market -- Millions of dollars are now being spent annually at specialty and hardware stores, construction materials yards, aquatic and conventional plant nurseries, etc., for this burgeoning water gardening hobby. Homeowners often want existing water features to be provided on their property upon their purchase. Others like to plan and build them themselves. This is their prerogative.</p> <p>Provision of a Growing Construction Economy and Market -- New Water feature and Pond specialty contractors are popping up in almost every community throughout the United States, either as contractors who solely install water features, as well as existing landscape, grading, and building contractors, who are expanding into this new, growing, and exciting field. These contractors also bring much-needed business to the same stores, yards, nurseries, suppliers, etc. The number of Engineers, Architects, and Landscape Architects who design water features are also growing significantly; either as professionals who solely design water features (such as Alderman Engineering), as well as existing landscape architects, architects, etc., who are expanding into this field. This is especially important and helpful in view of the current downturn in our economical conditions in general, and of the construction industry in particular.</p> <p>Elevation of Property Values -- The presence of water features/ water gardens elevates the economic values of residential properties. This is especially important and helpful in view of the current downturn in property values throughout the United States, for our citizens and for the land development, construction, and real estate industry in particular.</p> <p>Provision of a Growing Social Network -- There is a large growth of water feature and gardening groups and societies throughout the United States and the world. Many of these groups are local in nature, and many are international. This gives people an avenue to inter-connect with one another, who share the same interests. There are several other purposes and benefits that home water features and water gardens provide, beyond those listed above. The enhancement and improvement of private property for "aesthetic or beautification purposes" alone is important to many homeowners. There is no</p>

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		<p>justification for the Committee to dismiss these considerations and desires by interfering with an edict that "builders shall not install or facilitate the installation of ornamental water features". With gasoline and fuel prices increasing sharply, many people are staying at home, rather than traveling. Many are converting their properties into "aesthetic" and "beautification" oases; or want to purchase private properties that already have beautiful environments; as they desire. It is their God-given right to do so. An edict by your Committee that "builders shall not install or facilitate the installation of ornamental water features" is unconstitutional. It introduces yet another attempt to infringe and encroach upon our God-given rights and liberties. Our Constitution guarantees our freedom and liberties from oppressive, excessive governmental controls, edicts, and interference.</p> <p>The Constitution clearly prevents the EPA, or any governmental agency, from imposing this type of interference. Therefore, the statement: "these water features serve no functional or practical purpose" clearly is incorrect. If the goal "that builders shall not install or facilitate the installation of ornamental water features" were to occur, an entire water feature and gardening hobby, construction, and design industry would be extremely curtailed, if not effectively eliminated altogether. This would occur in the face of our current poor economic conditions in our nation - particularly in the land development, construction, and real estate industries. The growing residential water feature industry is currently one of the few bright and growing sectors of our economy. It would be extremely foolish to jeopardize that. The assertion that residential water features' and water gardens' "water use is not considered efficient" is also incorrect. Properly designed and installed water features have very effective waterproofing liners, which virtually prevent any appreciable water leakage and losses due to percolation into the soils and geologic formations that are below and adjacent to them. After their initial filling, the "make-up" fill water that is added to properly designed and installed water features is only due to evaporative losses, and to a very minor degree, due to overspray and misting effects. The flowing water that occurs in water features is due to re-circulatory pumping systems, which transport the water volumes that already exist in the water features - and is not due to a constant filling of water from an outside water supply source. The evaporative water losses in water features are actually less than, or close to, water losses that occur due to the evapotranspiration processes that naturally occur in many turfs and plants. The mismanagement and waste of water is a widespread problem, which must be addressed and corrected. There are many inefficiencies and practices which must be streamlined and renovated. In comparison to the widespread poor, water wastefulness practices which are practiced daily, the use and purported mismanagement of water for residential and commercial water features and water gardens is, by comparison, an extremely</p>

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		<p>miniscule consideration. Serious reforms should begin with the current waste of enormous amounts of water, rather than imposing unconstitutional interferences with private homeowners, and the land development, construction, and real estate industries; which currently are already in extreme economic distress.</p> <p>My comments also apply to ornamental "hardscape" water features; which include fountains, ponds, etc., and which do not have any aquatic life forms. It is the prerogative of private homeowners and land developers, contractors, etc., as to what type of water features that they want to construct and/or own. I am aware that the overall goal and mission of the EPA Water Sense New Homes Program is to conserve and save water. This is an important goal in view of the increasing scarcity of usable, potable, fresh water in our nation and world. However, in your pursuit of this commendable goal, your approach is extremely myopic. This proposed draft revision overlooks many other overriding, legitimate, and important concerns and issues; which should not be ignored or dismissed. The proposed revision was written poorly, and it appears that very little serious thought was put into it. I hope that the Committee takes these issues into strong consideration, and that you are dissuaded from further considering this ill-conceived change that has been proposed in the EPA Water Sense New Homes Specification 4.1.4 for water-efficient new single-family homes. Sincerely, Jeffrey R. Alderman CA R.C.E. 36046</p>
§4.1.4-c122	Jim Kirchner	<p>Ornamental water features blend more naturally into the landscape, requires far less maintenance, and utilizes far fewer chemicals than pools. In addition, the average volume of ornamental water features is significantly less than the average volume of water in pools or spas. There is no minimum volume of water included in the definition of "Ornamental Water Feature" and therefore even a simple birdbath could fall within the definition. Water within an ornamental water feature can utilize captured rainwater, and recirculates existing water. Evaporation from an ornamental water feature, lake or pool is about the same as the evapo-transpiration from turf grass, however, once an ornamental water feature or pool is filled, ONLY the water lost from evaporation needs to be replaced, while the amount of water required to maintain turf grass includes water lost from evapo-transpiration as well as water infiltrated into the soil, and run-off from slopes. Therefore turf grass maintenance consumes far more water than that of pools, spas, or ornamental water features. In addition, should reason ever occur to drain an ornamental water feature, the spent water is an excellent source of water for the garden, unlike spent pool water. For these reasons, we propose that all restrictions on the use of ornamental water features be removed entirely from the draft, including the potential of inclusion of surface area of the water feature in turf grass calculation as stated for pools and spas in the current draft. If ornamental water features remain in the</p>

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		rulings, then the definition of these water features should include a minimum volume of water. We recommend this minimum volume of water be the same as a small pool or about 10,000 gallons. Sincerely, The Minnesota Water Garden Society Board of Directors: Jim Kirchner
§4.1.4-c123	P. Jeff Knopp	Is a recirculating bird bath an “ornamental water feature”? Define this better.
§4.1.4-c124	Timothy Malooly	This call-out may have negative unintended consequences and I suggest WaterSense re-evaluate this call-out and work with qualified professionals in the landscape industry to specify workable solutions to this section while enabling WaterSense to promote water conservation.
§4.2-c1	Marty Schrero	I am concerned about section 4.2.1.3 Sprinkler heads shall not be used to water plantings other than maintained turf grass. I believe there are many conditions where mist heads with mp high efficiency nozzles would be appropriate for watering planting beds. Also, there are some planting areas that are too large to be effectively established watering with drip irrigation. Please let me know if this has been considered.
§4.2-c2	Dotty Woodson	I think you need to add a requirement for a rain and freeze sensor on the irrigation controller if you are not going to require weather based irrigation controllers. Dotty Woodson, Ed. D. Extension Program Specialist- Water Resources Texas AgriLife Extension Texas A & M University System Dallas Research and Extension Center
§4.2-c3	Jt Bonefas	Water Sense home should have the landscape in mind as well. 1. Require rain sensor with rain delay on the irrigation (lawn sprinkler) system. 2. Drip only on the curb to sidewalk would be sensible. THINGS THAT WOULD BE GOOD AS WELL 1. Have the lawn be built with garden soil and not sand with a ratio of compost so that the homeowner would not have to overwater there lawns to get them established 2. Use Zoysia instead of St Augustine in the Houston area then you would not need to mow as frequently there by saving on gas used to mow. Other water rationing for a lawn is really up to the home owners being vigilant with there watering. Good Luck with that.
§4.2-c4	Adrienne LaBranche	Greetings, I would like to offer some feedback on the Draft Water-Efficient Single-Family New Home Specification. My comments are detailed as follows: While determining irrigation run time on ET follows sound scientific research, not all states have this information available to the public. A portion of my PhD research is to develop an ETo website for the state of Virginia (this will be completed in the next few months). I will be more than willing to share this website with the EPA and any of the other state websites I am aware of. One complication with utilizing ETo data is that irrigation run times will require

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		<p>frequent altering. Another option is to base irrigation on monthly average ETo, rather than daily or weekly. Also when specifying crop coefficients for cool season grass, the 0.6 level does not correlate to the Irrigation Associations level of 0.8. The guidelines should also include a crop coefficient for warm season grass. The Irrigation Association utilizes 0.6 for warm season grasses. On page 8 of the statement document, there is a statement that reads, Microirrigation systems lose significantly less water to runoff and ET than conventional systems because the water is applied to the roots. ET in this statement should be “evaporation” plant transpiration is not affected by microirrigation practices. I commend the EPA for moving forward with WaterSense projects and guidelines as we all are aware of the water issues that plague the population today and tomorrow. Sincerely, Adrienne LaBranche Adrienne J LaBranche Ph.D. Candidate Virginia Tech Environmental Design and Planning College of Architecture and Urban Studies</p>
§4.2-c5	D Reeves	<p>Sprinkler heads should not operate a greater pressures than the manufacturer recommends. No residential rotary sprinkler should ever operate at greater than 50 psi, and no spray type sprinkler should exceed 25-30 psi Sprinkler systems should be required to be inspected and tuned up annually, preferably at season start up by a certified Water Sense Partner. This would include making nozzle adjustments and head placement to compensate for landscape growth, checking for sprinkler performance and controller adjustments.</p>
§4.2-c6	Ram Dhan Khalsa	<p>Dear Water Sense, I wanted to comment on the draft New House Water Use Specification. The concept of ETo, and that of an ET for a cool season grass. EPA’s response was that in the “water conservation world” these terms either have the same meaning, or that the meaning for these terms, used in the “landscape irrigation management and agriculture irrigation management,” are different than the meaning in the EPA’s water conservation world? I have included the language on ETo from the specification, the support material, and FAO 56. To reemphasis the difference in language I have highlighted the conflicting sentences. Specification 4.1.1.2 Option 2 * Develop the landscape design using a water budget approach. The evapotranspiration (ET) limit on the landscapable area shall be no more than 60 percent of the reference ET (ETo) for cool-season grass. For purposes of the ET calculation, the available precipitation shall be no more than 25 percent of the average annual rainfall amount. Turf shall not be installed on slopes greater than 4:1. Builders keeping a natural landscape that requires no supplemental irrigation would meet the requirements of this option. Support material “Landscape Designs” This specification establishes that homebuilders shall landscape the entire yard so that either (1) the turf shall not exceed 40 percent of the landscapable area or (2) the evapotranspiration</p>

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		<p>(ET) limit on the landscapable area shall be no more than 60 percent of the reference ETo for cool season grass. The available precipitation for calculation purposes shall be no more than 25 percent of the average annual rainfall amount. The Specification also establishes that turf shall not be installed on slopes greater than 4:1. FAO 56, Part A Reference evapotranspiration (ETo) Part A deals with the evapotranspiration from the reference surface, the so-called reference crop evapotranspiration or reference evapotranspiration, denoted as ETo. The reference surface is a hypothetical grass reference crop with an assumed crop height of 0.12 m, a fixed surface resistance of 70 s m-1 and an albedo of 0.23. The reference surface closely resembles an extensive surface of green, well-watered grass of uniform height, actively growing and completely shading the ground. The fixed surface resistance of 70 s m-1 implies a moderately dry soil surface resulting from about a weekly irrigation frequency. ETo has nothing to do with the ET of a cool season grass. I hope there is someone at the EPA who understands this difference and can clarify what the specification intent is. Best regards, Ram Dhan Khalsa</p>
§4.2-c7	Marc Kovach	<p>My comments concerning the draft irrigation requirements for WaterSense Homes are listed below: I feel that the 40% maximum turf requirement should also include for a set lot size, and the percentage of turf should be increased for larger lots. Maybe 40% for 1/3 acre sized lots and 50-60% for lots larger than 1/3 acre. Larger lots in more rural settings typically have larger turf areas to allow children more room to play. Many times parks are not easily accessible in these areas. I think the minimum spray coverage for turf areas should be decrease from 8' to 4'. Most manufacturers offer 4' side strip nozzles to efficiently irrigate these areas. Although drip does provide a more efficient means of irrigation for these areas, most small turf areas have limited foot traffic and would often go unnoticed if a leak would occur. Weather-based or soil sensor controllers should be required. Check valves for sprinklers and drip tubing should be required. Master valve and flow sensor should be required. Pressure-regulation at the master valve should be required. Spray heads should have some type of pressure compensating device or pressure regulator installed in the riser. Respectfully, Marc A. Kovach, CID Kovach Design Solutions</p>
§4.2-c8	Mike Henry	<p>Item 4.1.1.1.2 Option 2 - Needs correction. It is contradictory as written: ETo = reference evapotranspiration; ET for cool-season turfgrass is 80% of ETo. Thus, they are not the same amount of water. It should read: "Develop the landscape design using a water budget approach. The water budget maximum limit on the landscapeable area shall be 60% of the annual reference evapotranspiration (ETo)." If I can provide any further information or clarification, please contact me at the above e-mail or by phone; Mike Henry Environmental Horticulture Advisor University of California Cooperative Extension</p>
§4.2-c9	Michele	<p>Dear EPA staff: Thank you for the opportunity to comment regarding the water sense program draft.</p>

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	Fletcher	<p>Anything that promotes water conservation is great. I have blind copied a number of colleagues who I hope will add their thoughts and ideas during your comment period. (by July 21). I'm sure some of them can comment more knowledgably than I to among other things, the irrigation parameters you've set and to whatever I've missed in my brief onceover of your draft. Re the draft rules: How would ET be practically determined during the design process so we Designers might properly comply? Would all water features be excluded? For instance some of the VSLDs designers (certified designers) do a lot of water feature installation; for some design/build firms that is a major component of their business. Perhaps the size of the water feature should be scrutinized rather than having a blanket elimination of water features. I think there should be a greater educational component in your program especially in regard to watering& For instance: Watering deeply once or twice a week is better both for plant establishment AND water conservation than a "little bit" of water every day. (But try convincing your average homeowner). Use drip watering or hand watering rather than sprinklers. Avoid watering onto impermeable surfaces where it just runs off. Etc. Perhaps information such as this could be in the "Operating Manual" that you specify a builder provide to the homeowner&. I would also suggest an education campaign if you're going to encourage "Natural Landscaping" by builders. I suggest you write something into the regulations to encourage rain garden design. For instance perhaps you can have a slightly larger area of turf (or a small fountain or something??), if you have a certain minimum size rain garden area on the property to slow run-off by a certain percent. There should be some caveat about the length of the "grow-in" phase, oh say, the first year or two (or first year plus second summer season) after planting during which even "drought tolerant" plants require a greater amount of watering to become established than they will need later. I encourage the EPA to have discussions with Designer Association members (VSLD, APLD, ASLA) and with State Landscape Associations (VNLA in my state of Virginia, ANLA nationally), before finalizing rules in order to ensure the new regulation doesn't end up discouraging homeowners and professional landscapers who are trying to make a difference in protecting our water use and to get the best effects of landscaping in preserving efficient water use. Perhaps there could be different levels of compliance like LEED's platinum, gold, silver levels& I hope you get a healthy amount of commentary and suggestions from experienced industry members before proceeding. Thank you, Michele Michele Fletcher, VSLD & VCH certified Michele Fletcher Landscape Designs Landscape Design & Horticultural Consulting Member: Virginia Society of Landscape Designers Virginia Nursery Landscape Association West Virginia Nursery & Landscape Association Piedmont Landscape Association Virginia Green Industry Council For</p>

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		more landscape information go online to: http://www.vsls.org and http://www.viriniagardening.com GO GREEN! Unifying Horticulture in Virginia!
§4.2-c10	Andrew Davis	<p>From the EPA web site..... Products labeled through WaterSense will: " Be backed by the credibility of the U.S. EPA To be considered for the label, a product area must be able to: " Provide measurable results 1) Taking these EPA statements from the EPA web site at face value, I assert that the EPA should NOT use the IA-SWAT protocol....repeat, should NOT use the IA-SWAT test result. From the EPA web site..... To be considered for the label, a product area must be able to: " Be independently verified by a third party to confirm that the product meets EPA criteria for efficiency and performance 2) Taking this EPA statements from the EPA web site, I assert that the EPA should use the statistically evaluated, multi-year field study of ET controllers by water districts which show that controllers which have passed the IA-SWAT protocol have NOT saved water. Discussion of the first point in this email: The IA-SWAT test of irrigation controllers has several flaws: " It is a 30 days test which is too short to show how the controller will water over the year and real-world data shows that some irrigation controllers which pass the 30-day IA-SWAT test, so NO water savings over the course of several years." It is a test of controllers programmed by the manufacturer and tested by highly technical people at universities. So the test is not real-world. It does NOT reveal whether a consumer or a contractor can understand and program the controller. "It is a test requiring .4" of rain and that means testing in the winter in California. So no performance information available for the irrigation controllers for the summer when most water is used. The EPA does NOT want to stake its credibility on limited and flawed testing. Discussion of the second point in this email: Since the "products labeled through Water Sense will be back by the credibility of the U.S. EPA", it is important the best available data be used to grant Water Sense labeling privileges. The best available data is from the multi-year field study of ET controllers by water districts. In these programs, water districts paid homeowners and contractors who purchased AND installed AND programmed the irrigation controllers, most of which had passed the IA-SWAT protocol. The irrigation controllers purchased, installed and programmed BY HOMEOWNERS is as "real-world" as it gets. These multi-year field studies showed the many controllers that passed the IA-SWAT protocol did NOT save any water as the seasons changed. The EPA should want to its labeling program and its credibility backed by third-party, multi-year field testing showing which brands of consumer-installed and consumer-programmed irrigation controllers SAVED WATER and which brands WASTED WATER. Sincerely, Andrew Davis</p>
§4.2-c11	William	Here are my comments as I understand the draft of Water Sense Regulations - New Single Family

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	Kabaker	Homes. 1. Install separate irrigation meter. 2. Install flow control equipment on irrigation and domestic mainlines. 3. Install smart irrigation controllers. I look forward to assisting the Water Sense efforts to impart meaningful water conservation. Sincerely, Bill Kabaker -- Precise Landscape Water Conservation, Inc.
§4.2-c12	Robert Healey	I can understand the intent for design, observation and audit by a WaterSense irrigation Partner, but the installation angle might be very difficult to a WaterSense installer. All irrigation systems should require, at a minimum, an automatic rain shut-off device. Moisture sensors an additionally plus. Bob Healey
§4.2-c13	Todd Hancock	I think 4" pop up is already typical is too short and 6 Inches would be better as a minimum. Pressure regulation is important to efficiency of spray nozzles and prevents misting and fogging. Typical Nozzles are designed to operate @ 30 PSI and each 5 PSI above that causes losses 6 to 8%. Fine water droplets caused by high pressures often evaporate or fog off to the atmosphere. So nozzles operated at 45 PSI will loose 20% to evaporation. To me this is far more of a concern that the amount of turf present because turf is beneficial. Head to Head coverage should be supplied on open areas greater than 5 feet wide. Holistically, we want to see more landscaped area and less site coverage with structure and hardscape to minimize storm water run off. Largest problems with turf, partially in new home construction revolves around the fact most of the top soil is removed and construction activities compacts the soil. The area is graded to move water away from the structure then leveled off with builders' sand. Returning the top soil and incorporating organic materials will improve the turf, and water holding capacity. Each percent of organic material in the soil increases the water holding capacity by 16,000 gallons down to 12' deep. A minimum of 6" of 50/50 mix of top soil and fully composed material will minimize run off and irrigation requirements. In effect, a soil with 50% organic material content 6" deep will hold 9 gallons of water which is available for plant use, minimizes run off and allow for deep roots on turf grass thus making it more drought tolerant. I am not sure how a large tree or a tree with the potential to become large actually fits into your equations but native trees should be a factor because they help reduce heat island effect, reduce A/C requirements and remove carbon from the air. Property installed and watered turf helps, trap particulate matter, slows down run off, helps improve infiltration. Mulch should be 3 to 4 inches deep as a minimum to be effective. Using Mulch up against the structure is bad because it increases pest pressures. In other words, you want hardscape, or pervious materials used for drive ways and walk ways near the structure and landscape away from the structure so rain water run off can infiltrate. The goal should be to have improved soil so that its infiltration rate in the landscaped area is as close as possible to what it would have been if the site had not been developed. Inclosing, the amount of

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		turf and the reduction of turf is less important than is site preparation and proper Irrigation design. I know the goal is to reduce potable water use but those things can be achieved with proper design taking into consideration distribution uniformity which should be greater than 65% and ideally 75 or better. Good Pressure Regulation, Proper Zoning of the Irrigation, IE don't mix west and north solar exposures, don't mix turf with other plantings. Sloped areas even less than 4:1 should have checks valves so the irrigation system does not drain out the lowest head when the station shuts down. All beds and non-turf areas should be low volume and drip, preferably where the emitters apply water only to the rootball of the plant, thus immunizing weeds in those areas. Texas has recently revised it irrigation laws, which includes many things including, providing drawings, hydraulic calculations, run times and consumer education. Todd Hancock ELS Landscape LLC
§4.2-c14	Mike Huck	To who it may concern: Having grown up in southeastern Wisconsin and since moving to southern California I have had the opportunity to work with and experience a wide range of landscape and irrigation needs and requirements and hence find the outdoor water efficiency section of the Draft Water Efficient Single Family New Home Specification lacking what I would think is the obvious. You provide no incentive or provision for areas of the country not requiring any landscape irrigation at all! I grew up, both in a time and place, where very few if any lawns were irrigated. My own family's home was set on a 3/4 acre lot comprised of 95% turfgrass cover and it never received any moisture other than what mother nature provided. Where practical, this should be an option that is promoted in your guidelines! I would propose the following be added to Section 4.1 under the landscape design section of 4.1.1 and suggest adding section "4.1.1.3 Option 3 - There is no limitation on turf area or its placement providing that no irrigation system is installed." Sincerely, Mike Huck Irrigation & Turfgrass Services
§4.2-c15	Fred Liljegren	I appreciate the opportunity to comment on EPA's Draft Water-Efficient Single-Family New Home Specification. As a licensed Landscape Architect, Environmental Planner, Master Gardner and Water Conservation Specialist for over 30 years, I have seen many programs come and go. I commend your efforts in combining many of the elements that promote water conservation in a residential setting into one document that is simple and concise. Over many years of working with the public and with the Green Industry I will share with you some observations and recommendations that will hopefully improve both the quality and acceptability of your efforts. I will focus my comments on the outdoor landscape where the majority of water is wasted in the western U.S. In 4.1.1.1 Option 1 it states that <input type="checkbox"/> Turf shall not exceed 40% of the landscapable area. Turf shall not be installed on slopes greater than 4:1 <input type="checkbox"/> and in 4.2.1.2 Irrigation systems it states that shall be designed to sustain the landscape without creating flow

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		<p>or spray that leaves the property during a minimum continuous operating duration. This being stated I encourage you to consider adding a uniformity standard or efficiency percentage for the irrigation system. My experience has shown that unless the water can be applied evenly to turf areas more water will be required. I have evaluated many sprinkler systems over the years have had uniformities of about 0.5 or less (1.0 being perfect) and homeowners doing their best use twice as much water as necessary to keep their turf green. In these evaluations, 30 gallons of water was applied to each square foot of turf for the season where the turf only needed 15 gallons per square foot. Please consider including an irrigation uniformity of 0.65 or greater (preferably 0.75) or one recommended by a WaterSense Irrigation Partner as a minimum standard for sprinkler systems. In 4.1.1.2 Option 2 it states that a water budget approach can be used based on “The evapotranspiration (ET) limit on the landscapable area shall be no more than 60 percent of the reference ET (ET_o) for cool-season grass. For purposes of the ET calculation, the available precipitation shall be no more than 25 percent of the average annual rainfall amount.” These computations become very complicated and depending on the specific ET for cool season grass used, the numbers can vary significantly. For example, I am currently working with Utah State University to obtain research on varieties of turf that grow in areas of the world that only receive 6. Typical bluegrasses in my region need about 25 inches to grow but use 50” because of poor sprinkler uniformity. I suggest the EPA or a WaterSense Irrigation Partner provide the 60 percent ET limit for different regions in the U.S. to avoid creative variations by different individuals and organizations. In 4.1.4 Ornamental water feature you state that “Builders shall not install or facilitate the installation of ornamental water features.” This is a very bold statement and in many cases will have builders and homeowners opt out. Water features are very relaxing and can cool the surrounding landscape but do use water. Those who want this option will require it just as much as a woman denied of using lipstick with her make-up would opt out and use lipstick. I suggest that you reconsider this to avoid eliminating these popular features in your conservation efforts. Ornamental water features should be allowed and be addressed the same as 4.1.3 Pools/spas. If installed prior to owner occupancy, the water surface area shall be deducted from the turf allowance under Landscape Design Option 1 and included as landscapable area under Landscape Design Option 2. I appreciate the opportunity to comment on your draft document and applaud your efforts to improve water use efficiency. Thank you, Fred Liljegen</p>
§4.2-c16	Tom Carey	For homes with automated irrigation systems, please require that all are equipped with rain sensor devices or soil moisture sensors so the system does not run when enough moisture is in the soil.
§4.2-c17	Tim Pouge	Water Sense Partner, Below are some of my brief comments after reading your first draft. I think we

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		<p>should address topics like these, before any further development. More emphasis on the control(s) for the turf irrigation, like, centrally based controllers/weather station(s), ET-based controller, Flow sensor tied to the water budget/Moisture sensors as required, tied to turf species and the local micro-climate. The water manager, whether its the homeowner, or service contractor is the biggest factor in determining proper scheduling and therefore proper water allocation. The water allotment shouldn't be calculated until the turf variety is chosen in its appropriate climate zone. Should specify indigenous plantings and turf, for low consumptive water use and optimum plant health. Re-calculate the ornamental water feature ban, to be incorporated in total turf allowed, there are pondless water features using little amounts of water, also there is no mention of rainwater harvesting for such a feature, pools could be thought of as noncompliant too with the amount of water needed to operate and the added complexity of dealing with chlorinated water. Both segments when properly designed can be integrated safely into the homes envelop. Emphasis on a design (by certified professionals) for the landscape, irrigation system, pool/water feature to accompany the home design as well. This should be the criteria for going forward with such a policy statement. Thank you, Tim Pogue Tim Pogue CID,CIC,CLIA,CGIA,CWCM-L Director, Irrigation Sales for Shemin, The Landscape Supply Company</p>
§4.2-c18	DeVille Hubbard	<p>Dear EPA Representative Thank you for your work on this document I am in agreement with your intent to conserve water. My Comments When this plan goes into effect, as currently drafted, only a hand full of Texas licensed Irrigators will be qualified for this WaterSense program. Holding a valid Texas Irrigation License will not qualify us to install a residential irrigation for a builder that is applying for the WaterSense program. I can only assume most builders will apply for this program. No one is against water conservation it is just that the existing Texas irrigators, six thousand +/-, are being forced to add on additional credentials or not be eligible to install these irrigation systems in Texas. My understanding is that you have to take a qualified test with an approved program, (IA - QWEL), and then keep up with more annual CEU's. This is a redundant expense in time and money that should not be necessary for a Texas licensed Irrigator that has already been tested and is qualified to design and install this work. If you feel that the Texas licensing program qualifies for admittance to the WaterSense and that persons holding a valid Texas Irrigation license need no further accreditation than please let me know what process would expedite my filling out the appropriate forms. Thank you for your consideration of my request [second comment] Dear EPA Representatives Although there are only a few Texas licensed irrigators currently approved as WaterSense partners , I believe with-in a year those who are interested in the program will get CEU, in approved programs, that will provide them that opportunity. I have read</p>

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		<p>the letter from Andrew K. Smith and his coalition. I feel it is better to regulate(recommend) the desired results that to try and describe how to achieve the results. In the case of water conservation the goal is to use less water. In North Texas we supplement one inch a week in the summer months to sustain a 100% healthy landscape. The conservation goal for us could be 75% of that or three fourths of an inch per week. This can easily be used in a mathematical formula to produce a water budget in gallons per week or month. A water budget could be based on 75% PET of the entire site if it were designed at current standards. Then the landscape designers (WaterSense Partner) could use that water budget to design an regionally appropriate planting plan that may include more hardscape and beds and less turf. If the EPA will state in the new policy a preliminary water budget goal of 75% of weekly PET I think the industry would be supportive. DeVille Hubbard</p>
§4.2-c19	Dean Minchillo	<p>WaterSense- LCRA appreciates the initiative, energy, and time EPA has invested toward developing a water efficient home specification package that includes both outdoor and indoor measures. However, we think additional outdoor measures are needed to truly achieve a reduction in water use. Research has shown that the majority of new homes being built will include irrigation systems. Research has also shown that new homes -even with water efficient fixtures- use more water than older homes due to automatic irrigation systems. Irrigation systems are only as efficient as they are designed to be. A poorly designed irrigation system will do a poor job of distributing the right amount of water for plants and turf. The result can be dry spots in the landscape, causing the homeowner to apply more water, or over saturate areas causing diseases and other landscape. Outdoor water conservation should include much more than just limiting irrigated turf, or designing a landscape around ET rates and smart controllers. A smart controller, or ET/weather based controller, is only as good as the irrigation system it is operating. An improperly designed, and installed, system will still perform poorly, no matter how smart its controller is. Another measure we recommend adding is inclusion of adequate soil in the landscape. Without good quality soil, including both soil content and depth, there can be very little water holding capacity for turf and plant roots. Turf grown on shallow soil must be watered more frequently than turf grown on deeper soil. Finally, turf and plant selection are essential to efficient water use in the landscape. A landscape created with native and adapted species will require less supplemental water as it becomes more established resulting in a sustainable, low water use landscape. Additional criteria we suggest adding include: 1) Irrigation System Design criteria - Valves and circuits should be based on water use (hydro-zoning) - Head-to-head coverage spacing for sprinkler heads, and adjusted for prevailing winds - Distribution uniformity of .6 or higher - Pop-up spray heads and rotors set back 6 inches from impervious</p>

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		<p>surfaces (to prevent damage by vehicles and other traffic) - Approved rain shut-off device connected to controller - Pressure regulation not to exceed manufactures recommended operating range 2) Soil Criteria - All irrigated and newly planted turf areas have a minimum settled soil depth of 6 - 8 inches - Improved soil have a minimum organic content of 5% or mixed with 20% compost 3) Native and adapted plants - Shall be used where appropriate and available - Elimination of plants that's that are considered to be invasive to the area in the landscape design Please consider this additional criteria when developing the final specifications. A properly designed landscape and irrigation system, including adequate soil and proper plant selection, will go a long way to conserving outdoor water use. Please feel free to contact me if you have questions, comments, or would like more information. Thank you for your consideration, Dean Minchillo Water Conservation Coordinator-LCRA</p>
§4.2-c20	John DeCell	<p>To whom it may concern, Although I am in favor of the WaterSense® program and a set of specifications for water efficiency in single family homes, I am deeply troubled by the stated goal for irrigation. Section 4.1 states, "The goal of the water-efficient landscape criteria is to reduce or obviate the need for supplemental irrigation." In my mind, this is a step by the federal government to "do away with" my profession and intended source of employment and income for the next twenty years. In the vast majority of the United States of America, an unlicensed contractor can drive up to a single family residence, dig trenches in the yard and install an irrigation system. The system is not designed, inspected, or measured in any manner. The end user is not educated on how to operate the system correctly or how much water should be applied to the landscape during the changing seasons. In addition, no attention is given to ongoing system maintenance. This is why irrigation systems waste water. Irrigation systems themselves are not the cause of wasted water. It is inefficient design, installation, management, and maintenance creating a conservation issue. A properly designed irrigation system that is installed correctly using quality components and is managed and maintained correctly can conserve our water resources and provide for healthy plant growth. It is not necessary to eliminate irrigation and the thousands of jobs that accompany the industry such as irrigation equipment manufacturers, distributors, irrigation and landscape contractors, lawn mowing equipment manufacturers, yard mowing services, fertilizer companies, trade journal magazines, association employees, software developers and more. The first step should be to require the installation of an efficient irrigation system. The system should be designed and a copy of the design should be on the site during the installation of the system. The system should be inspected during the installation process to ensure it is installed per the design. The system should be measured after the installation to make certain it meets a specified distribution of uniformity</p>

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		<p>(DU). The end user should be educated on the use of the control system and on the different water requirements of the plant material during the changing seasons. These steps will assure that new systems being installed will have the ability to be efficient systems. Additional requirements to consider might consist of an annual visual inspection of the system along with pressure readings to make sure it is functioning properly and possibly an audit of the system every two or three years to make sure it continues to meet the required DU. These new steps will not only create more efficient irrigation systems, but they will create more jobs in the industry as well for designers, inspectors, auditors, and more. If the answer were to simply “do away with” an industry that might be seen as an environmental concern, why not start with the automobile industry? Let’s eliminate the green house gases automobiles emit every day causing global warming. This will certainly reduce the demand for oil. People moved around on foot or by riding animals for thousands and thousands of years. We have only had automobiles for just over 100 years. I’m sure we could get use to the change and just think of the improvements to the environment. I ask that you remove the stated goal to “obviate the need for supplemental irrigation.” There are thousands of people in this country such as myself who have spent decades building businesses and careers that rely on this industry to feed and support our families. Sincerely, John DeCell Software Republic</p>
§4.2-c21	David Bracciano	<p>Thank you for proposing draft criteria on an EPA Water Sense Single Family New Home Specification. We support the development of water efficiency standards in new homes that will provide consistency with other new home water efficiency standards throughout the U.S. The development of an EPA standard should be designed to create a program that ultimately steers new home specifications toward one common standard. The following comments are provided and have been organized according to the section headings within the draft document. Section 1.0 Scope and Objection When referencing the intent to reduce indoor and outdoor water usage in new residential homes and encourage community infrastructure savings there is are no percentages provided. This section requires clarification as provided in your supporting materials. Since it may not be clear, is the goal to reduce potential and existing water use by at least 20% or more? Section 3.6.1 Dishwashers This section indicates that dishwashers should have an energy star label. Should a water factor be associated with the energy star label as well? The recommendation is to use a water factor that is consistent with new technologies in the market that meet consumer expectations. Section 4.1.1.2 Landscape Design (Option 2) Florida grasses are warm season grasses; however there appears to be no reference to warm season grasses in this section. Furthermore, it is not clear how and if the appropriate plants are available to meet the</p>

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		<p>60% ET requirement or how the irrigation contractor and landscape architect work together. Please clarify in the document. Are there statistics available that show how much water this will save versus a landscape having a lower ET rate and if so, they need to be incorporated into the document. Builders that plant drought tolerant materials which survive without supplemental irrigation and established without an irrigation system are not addressed. According to the draft, this landscape can be 100% turf grass, which appears to be inconsistent with other program goals. It also appears that there is no specific instruction provided that clearly identifies the plant materials selected for the budget will survive and/or thrive under the budget. There needs to be rationale on how landscape plantings should be selected and how a reviewer will determine if the landscape will meet the water use requirements in ET calculation for the entire site. Section 4.1.2 Mulching There should be additional specifications regarding the installation of organic mulches and at least a 2 inch annular spacing of the mulch away from the base of trees and shrubs. Section 4.2.1 Irrigation System Design (Design and Installation) The following comments are a composite of several subsections (4.2.1.1, 4.2.1.2, 4.2.1.4). Unless specific standards are required within this effort there is no assurance that partners will correctly design and install the system. There is no reference or recognition of Florida Irrigation Society training or to the Irrigation Association or similar programs. There is no description of head to head coverage, matched precipitation rates, shrubs on different zones or spray interference. West Central Florida soils generally precludes the use of micro-irrigation in turf grass due to high infiltration rates. Additionally, we generally require that installed irrigated turf be no less than four foot wide strips due to landscape functionality and spray head coverage issues. Section 4.2.2 Irrigation Controller There are no requirements for rain shut off devices which are required by law in Florida. The requirements for multi-programmable controllers with the capabilities listed are pretty common and are required in most local ordinances here. It is unclear how this equates to savings without SMS or ET controllers. Savings associated with this technology need to be provided. Section 4.2.3 Sprinkler Heads The over four inch height should be based on the type of turf grass. The sprinkler head should have a pop-up height three inches greater than the optimum cut height for turf grasses. This should generally cover irrigation of turfgrass just prior to a defined cut. Section 4.2.4 Micro-irrigation Systems Minimally, these systems should be designed to meet IA standards and provide uniform application rates in the beds it is installed into, based on soil types. Section 4.2.5 Schedule In Florida, generally there would be at least three schedules- establishment, dry season and wet season. Please provide for this type of flexibility in the schedule requirement. Section 5.1 Home Owner Operating Manual Should the builder develop a maintenance schedule for irrigation or is it more</p>

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		<p>appropriate to require the irrigation or landscape contractor to complete this? It is unclear how this would be accomplished by the builder and whether they can determine if the schedule is correct. A schematic of the irrigation system should be provided to the homebuyer. Section 6.0 Definitions The following are brief comments and questions regarding the definitions sections of the document. Defining ET limit (ET_o): At the time of this writing the following link did not provide specific information on St. Augustine turf as was indicated in the definition. http://www.irrigation.org/gov/default.aspx?r=1&pg=et_connection.htm. Defining mulching material: Clarification is needed in reference to the consideration of permeable artificial turf in this definition. What is its affect on soil temperature? There is concern because it is banned in many places in Florida due to the heat island affect. Consideration of organic mulching material seems more appropriate. Defining water budget: Creating a methodology along with the necessary tools is required to develop and implement certification programs. Yet there appears to be no indication that this is being done for the home labeling program. This area needs clarification and supporting documentation. We look forward to the continued success of the EPA Water Sense program. Thanks! David Bracciano Demand Management Coordinator Tampa Bay Water</p>
§4.2-c22	Lynn Ruck	<p>Just saw the newest proposal to ban water features in new home construction. Rain Water Solutions has been in business for 8 years selling our 65 gallon rain barrel that we manufacture in NC and now Ohio along with selling all size systems of rain harvesting equipment for above and below ground applications. We spend a great deal of our time and energy to outreach/ education for the promotion of water conservation and storm water BMPs. What we are realizing now is that any rain harvesting system can be designed around slowing the storm water off you roof's surface by collecting the rain water and reusing for irrigation, BUT the best part is designing the overflow of the system into a rain garden or water feature using a dry rock bed. I believe when you mandate change it is important to educate people on options and benefits of how to conserve which in turn will help the transition of change. By educating landscapers and homeowners on how to reuse rain water for such things as irrigation and water features you are not taking away a means of making money you are giving them the the "know how" of conservation. A water feature in most situations will already have a pump and will only need a containment tank and filtration. Please contact us with any feedback on my comment. When it rains, it stores!</p>
§4.2-c23	Ben Davis	<p>Dear Watersense, I feel it improper to limit our landscapes in the name of saving water. It is realistic to reduce water use by 30% or more through the use of proper irrigation design, and the use of technology</p>

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		<p>that has been used in the agriculture industry for years. The following are recommended: Moisture sensor based control systems Proper spacing and location of irrigation devices Proper placement of valves Use of check valves Use of drip irrigation Collection of rainwater for irrigation Use of grey water for irrigation Landscape provides valuable cleansing of the air, provides emotional benefits, and prevents erosion. Please consider these and other alternatives to limiting landscape use. Thanks, Ben Davis Hill, Clark and Associates</p>
§4.2-c24	Robert Reaves	<p>I was totally baffled when I saw the EPA Water Sense recommendations for irrigation controller in Section 4.2.2. Instead the EPA should be recommending smart, weather-based irrigation controllers that automatically adjust the watering schedule based on either real-time ET, historical ET - singling out those controller products that have successfully completed the IA's SWAT testing protocols. The controller specifications you outline in Section 4.2.2. are nothing new. This is old, dummy-style irrigation controller technology. The dumb controllers are the precise reason for more than 50% water waste in American landscapes. You state, "These criteria will be revised if and when EPA develops a final specification for weather-based or sensor-based irrigation control technology." You have ample material available to make this possible now. For years the Irrigation Association's SWAT committee - comprised of irrigation manufacturers, distributors, water agencies and other groups have developed testing protocols and definitions for smart controllers. In addition the Bureau of Reclamation has written two in-depth reports on weather-based/sensor based technology. Products have now been on the market for many years. Their price is competitive with existing dummy controllers. I think it is time EPA finalize things and get the ball rolling on adding the weather based controller technology to the draft specification for the single family new home specification. And I believe the only way smart controller technology will be the norm is when water companies, state governments, etc. allow only the installation of smart controllers. Robert Reaves AMC Industries</p>
§4.2-c25	Roderick F. Gregory	<p>4.2.1.1 Irrigation System Design: "All irrigation systems shall be designed, installed, and audited by a WaterSense Irrigation Partner." Unless this is intended to be a full-employment regulation for landscaping companies, limiting this to "audited by a WaterSense Irrigation Partner" is suggested. As an owner-builder, I might prefer to design and install the system myself. Tools are readily available for educating users on designing irrigation systems. An audit would certify that the system does in fact meet WaterSense requirements.</p> <p>4.2.1.2 Irrigation System Design: "This will be measured during the irrigation audit and the minimum continuous operating durations shall be 7 minutes for pop-up, fixed-spray sprinklers;...." The local clay</p>

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		soils dictated a duration of 3 minutes following a test by the local water conservancy district. Perhaps this minimum should be reexamined. Thank you for your consideration. Roderick F. Gregory
§4.2-c26	Michael Dukes	<p>I am submitting comments on the Water Sense Draft New Home Specification related to outdoor water use (section 4.0).</p> <ol style="list-style-type: none"> 1. Is there justification for the 40% turfgrass in Option 1? There are many turf species that do not require irrigation. If one of these without irrigation would be very conservative but does not necessarily meet the "...natural landscape..." criterion in Option 2. 2. Related to the 40% turfgrass requirement in Option 1, there are legitimate reasons that a specific home site would not meet the 40% requirement. Turfgrass is sometimes required in given areas by code (e.g. swales and other sloped areas). From my experience, many builders in Florida are ready to go to 60% and maybe 50% turfgrass. Lower may be difficult. Consider how this would be implemented to achieve 40%. Would it need to be implemented on every single home or could a given builder/developer achieve this requirement as an average across all of his homes? This would make it easier to deal with the requirement under variable real world conditions. 3. I think Option 2 needs to be more specific and tied to scientific studies. Ultimately, I believe the water budget approach allows for the greatest flexibility in design and implementation. Water management districts already use this approach in Florida to allocate Consumptive Use (sometimes called Water Use) Permits. The approach includes an ET estimate for the particular plant type, an estimate of effective rainfall that contributes to plant water requirements and finally an irrigation efficiency adjustment. How does the water budget relate to the 20% savings goal relative to non-Water Sense comparison? Both Options seem to have a more stringent savings goal. I estimate that Option 2 will result in a 50% reduction 4. Option 2 should include an irrigation efficiency factor that would essentially increase the water budget to account for non-uniformity and other minor losses inherent in irrigation systems. The IA and much of the scientific literature recommends the low quarter distribution uniformity (DU); however, I have argued in the literature that DU low half for landscape irrigation is adequate for budgeting. The IA points out that for scheduling the DU low half is more appropriate and DU low quarter. See the IA Turf and Landscape Irrigation Scheduling and Water Management publication. 5. The average annual cool season turfgrass Kc (I assume the California Kc values will be used since they are prevalent in the literature but not scientifically defensible) is approximately 0.8; whereas, we have measured the same in Florida for warm-season turfgrasses. Cool season may be questioned in

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		<p>the south since these grasses do not survive and are not used in this region of the U.S. 6. I know the Smart controller specification is under review and will be added, but simply adding an effective Smart Irrigation controller will result in a conservative 50% savings for the moderate to high water users in Florida (contact me for literature to back up this assertion). Keep in mind that this savings is with no landscape or irrigation changes.</p>
§4.2-c27	Kevin Morrow	<p><u>4.2.1.1: Design and Installation of an Irrigation System</u> This section requires that all irrigation systems be designed, installed and audited by a WaterSense irrigation partner to earn a WaterSense label. While the auditing component of this requirement needs further clarification, the overall requirement is likely to unjustifiably increase construction costs in areas where contractors with the WaterSense accreditation are scarce. For example, according to EPA's website there are approximately 750 licensed professionals across the nation and in Puerto Rico that have been WaterSense certified, but only two of these are located in the state of Arkansas. Of the two, only one serves residential customers. As a result, builders in Arkansas are at a disadvantage and are presented with a disincentive to participate in the program due to the lack of available, certified irrigation specialists. This disparity creates an unfair disadvantage to licensed professionals who may not be WaterSense partners, but are otherwise fully qualified and capable of installing irrigation systems to meet or exceed standard specifications. Instead of placing requirements on the landscape/irrigation specialists, EPA should focus on the components and criteria of the system, as it does in sections 4.2.1.2-4.2.1.4. The requirement that systems be designed, installed and audited by partners should be deleted. At a minimum, EPA must address how builders who are working in markets that are underserved by irrigation partners can meet this requirement.</p> <p><u>4.2.1.2: Design and Installation of an Irrigation System</u> This section outlines the amount of time that sprinklers can operate. Unfortunately, the arbitrary limits on watering times do not adequately reflect geographic differences in soil types and permeability, nor slope conditions nor the different water needs of various species. For example, often, a limited time of longer watering shortly after planting encourages healthier root systems and more drought-tolerant turf and plantings that save water in the long term. Watering times should be sufficiently flexible to best suit the needs of the landscape.</p> <p><u>Third-Party Certification</u> The current proposal suggests that third-party certification of homes seeking the WaterSense label will be required, but it provides no details on what process must be followed to obtain the certification.</p>

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		<p>Providing a structured third party certification process will assist both certifiers and those seeking home certification with a well defined and presumably streamlined process for participation and verification. Because the entire premise of the program revolves around the certification, however, failing to provide any details of the certification process is a troublesome omission. Home certification is an integral part of the WaterSense program that will have a direct effect on whether or not builders participate. Therefore, NAHB believes EPA must define the parameters and process for certification and verifier qualifications and invite public comment on them prior to finalizing the program.</p> <p>In developing the certification process, NAHB suggests that EPA keep it as simple as possible to minimize confusion and delay, and to maximize the number of people deemed qualified to conduct certification activities.</p> <p>Certification: The certification itself should follow a standard protocol, possibly laid out as a series of steps along a timeline or checklist for ease of use. A flowchart could also be helpful in identifying steps and responsibilities. The specification has several requirements such as installing efficient plumbing fixtures and appliances that can be verified by visual inspection. EPA is urged to simply develop a checklist for these items with yes/no boxes. For measures that require performance testing, such as meeting a targeted service pressure, EPA should identify the testing protocol.</p> <p>Verification: At a minimum, EPA should establish the verifier eligibility requirements and accreditation processes, identify who is responsible for training (if necessary) and accrediting verifiers, and determine roles, responsibilities, and tasks for both builder and verifier. EPA should also make options available for builders in areas where there are no verifiers, such as allowing a letter from a building inspector to serve as an acceptable validation. As above, because compliance with most of the criteria can be assessed via a visual inspection, the qualifications for verifiers should be minimal.</p>
§4.2-c28	Hugh Gramling	<p><u>4.2 Irrigation System Design</u> Irrigation system standards for efficient design and proper installation already exist. Some examples are: The Irrigation Association's Turf and Landscape Irrigation Best Management Practices; Florida Building Code Appendix F: Proposed Construction Building Codes for Turf and Landscape Irrigation Systems; Florida Irrigation Society Standards and Specifications for Turf and Landscape Irrigation Systems; and the University of Florida's Institute of Food and Agricultural Sciences' Florida-Friendly Design Standards. The latter was developed in accordance with Florida Statute 373.228 and is required to</p>

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		<p>be used by local governments when developing landscape and irrigation ordinances.</p> <p><u>4.2.1.2</u> Overspray and runoff should be minimized through proper design, installation and maintenance. Without knowing the specifics of the irrigation system, landscape and site conditions it is difficult, if not impossible, to determine run times, especially on a national scale. As stated, an irrigation audit should be performed to determine the appropriate timer settings, which will depend on the application rate and landscape water needs.</p> <p><u>4.2.1.4</u> Florida soils are not conducive to microirrigation of turf. Turf installed in strips less than four feet wide is difficult to properly maintain and irrigate.</p> <p><u>4.2.2 Irrigation Controller</u> Since 1991, Florida law has required that rain sensors be installed on automatic irrigation systems.</p> <p>4.2.3 Sprinkler Heads Sprinkler heads should also be adjusted to avoid any potential interference with their spray pattern.</p> <p>4.2.5 Schedule As described, these aren't seasonal schedules; they are establishment and maintenance schedules. A seasonal maintenance schedule should be provided to address seasonal water needs.</p>
§4.2-c29	Steven Malloch	<p>Irrigation Controller Criteria 4.2.2: In the absence of a soil moisture sensor, all systems should, at minimum, include an operable rain sensor. Simply having the capability to accept a rain sensor is not sufficient. The cost of such sensors is minimal and the potential savings are significant.</p> <p>The Operating Manual should also include basic information about efficient lawn watering tactics. Although it certainly is important to ensure that homeowners have information about how to operate a sprinkler system, in order to apply that information appropriately homeowners also need to have basic information about what they should be seeking to achieve in operating the system. For example, information about the importance of encouraging the growth of deep roots and about what types of watering practices are needed to achieve that growth are essential to continued efficient use of irrigation systems.</p>
§4.2-c30	Nate Kredich	<p>Please clarify whether the specification requires every irrigation system to have controllers or just requires that if a project has controllers, they must meet the criteria listed? If the latter is true, it will</p>

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		create a disincentive for controllers to be used at all. If it's the former, it raises concerns that overcomplicated controllers might be hard to come by, and they may confuse homeowners leading to under use or misuse.
§4.2-c31	Martha Rose	The Seattle Public Utilities found that all irrigation systems use more water than non-irrigation systems. Why be so generous to people who have swimming pools, and lawns. Just require rain water harvesting to supply all exterior water needs. Much of this country is in a drought and it's stupid to use potable water for any outdoor uses. --
§4.2-c32	Marvin Shaw	4.2.1.2 Irrigation systems should be designed to sustain the landscape without creating flow or spray that leaves the property during minimum continuous operating conditions... Recommendation: Change "minimum continuous operating durations" to "maximum continuous operating durations". Establishing a maximum continuous runtime will ensure that plants are not overwatered and runoff is kept to a minimum. Recommendation: Soil types and plant evapotranspiration requirements should also be taken into account in order to establish a runtime. 4.2.1.3 Sprinkler heads shall not be used to water plantings other than maintained turf grass. Recommendation: Expand restrictions on spray irrigation to include groundcovers as many groundcovers respond best to spray irrigation, but require less water. 4.2.5 Schedule: Two seasonal water schedules shall be posted at the controller. One schedule should be designed to address the initial grow-in phase of the landscape... Recommendation: Differentiate between new/established watering times as well as seasonal watering schedules.
§4.2-c33	P. Jeff Knopp	4.2.1.2 In the statement "irrigation systems shall be designed to sustain the landscape without creating flow or spray that leaves the property" does property mean irrigated area? 4.2.1.3 Better define "sprinkler heads shall not be used to water plantings other than maintained turf grass." Does this mean that above ground irrigation systems can only be used in lawn areas? This is unrealistic. 4.2.1.4 Better define microirrigation. 4.2.3 So if a sprinkler head pops up 3" it is not a sprinkler head? 4.2.5 Schedule: delete the term "seasonal" in the 1st sentence.
§4.2-c34	Timothy Malooly	I respect the spirit of the approach of this section but WaterSense has left out many vital considerations that if ignored, will likely result in negative unintended consequences that will undermine the spirit of

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		<p>intent of this section. See my comments herein and also consider calling-out the use of IA Best Practices contained in the 50 page IA Turf and Landscape Irrigation Best Management Practices (http://www.irrigation.org/gov/default.aspx?pg=BMPs.htm&id=104) dated April, 2005 and the Landscape Irrigation Scheduling and Water Management text, currently under peer review. By so employing IA BMPs and the new Scheduling and Water Management document, WaterSense can eliminate much of the language contained in section 4.2.1 through 4.2.1.4.</p> <p>4.2.1.2 – Irrigation audit requirements cannot be adequately called-out in this paragraph and the paragraph exposes this inadequacy. I suggest complete strikeout of this paragraph and instead WaterSense should immediately work with qualified irrigation auditors and the Irrigation Association to create a specific section within this program for irrigation audit including minimum baseline performance goals. I also suggest audits of irrigation systems be called-for on a periodic basis with records and suggested improvements submitted to the local water purveyor, owner and maintenance technician. Academic material and detailed audit guidelines exist and when combined with the above-referenced IA BMPs, and corresponding human behavior, will likely exceed the expectations of WaterSense. 4.2.1.3 and 4.2.1.4 - Sprinklers used to water non-turf areas are not inherently inefficient. The human decision to misuse and mis-schedule these components is the culprit. Please remove this call-out and instead focus on reinforcement of proper human behavior and help reinforce the requirement to use qualified irrigation practitioners in their specialties. 4.2.2 – It is apparent this call-out is resultant of a lack of EPA labeled irrigation control technologies. Many water-efficient control technologies exist can could be called out via “...use of and proper programming of and certified instruction of the end user of EPA WaterSense labeled landscape irrigation controller...”. Certified instruction is intended to promote an actual orientation session of system programming and operation takes place with the owner and maintenance technician and documentation of this orientation is submitted to someone say, the local water purveyor as proof of completion. I also suggest a system audit be undertaken to ensure a system meets minimum performance standards and to establish a baseline for future audits. When will WaterSense have published, landscape irrigation control products that qualify for EPA WaterSense labeling?</p> <p>4.2.3 and 4.2.4 – It appears these call-outs are in reaction to poor human behavior. Again, I respectfully request EPA concentrate on improving human decision-making as the root cause of poor outcomes and not concentrate on specify equipment call-out. Sprinklers with less than 4 inch pop-up height have a use and should not bear the brunt of poor human behavior. The same applies to the design and assembly of microirrigation. If such systems are not designed or installed per manufacturer recommendation, IA</p>

Comment Number	Commenter Name	Comment
		<p>BMPs or with the best interests of water conservation in mind, that human behavior should be punished or at least re-directed via punitive action. Editorial: Sprinkler components don't waste water, people waste water. Support established standards and WaterSense will quickly exceed its expectations for water conservation in the landscape.</p> <p>4.2.5 – See my comments above related to section 4.2.1.1. Embrace the IA the Landscape Irrigation Scheduling and Water Management text, currently under peer review. I do agree however, that SMART scheduling should not necessarily be employed during plant establishment periods. WaterSense may choose to create language encouraging a limit to the length of plant establishment period of a newly installed landscape of not greater than “x” and an establishment period of replacement or augmented landscapes of “y”.</p> <p>I applaud EPA WaterSense for its intent to set guidelines and goals for landscape irrigation in its Water Efficient Single Family Home Specification. However in its current form, much is missing that will likely cause confusion and undermining of the spirit of intent of the Specification. Further, in its current form, this Specification does little to dissuade poor human behavior and will likely cause hardship among those who promote water efficient landscape irrigation. The industry primarily via the Irrigation Association and its affiliates and partners, has a great deal of accumulated information that EPA could choose to use to establish and support workable goals of the WaterSense Program. Constructive promotion of this information will likely create immediate positive results in terms of more efficient water use outcomes and with little “punishment” of those who work daily to promote water efficient industry behavior. Despite how the industry –especially the practitioner segment- may currently appear to EPA, landscape irrigation design, installation, scheduling, maintenance and audit is much more complicated than some (including some in our own industry) may have you believe. Pro proof of this assertion, look at the result on any given day as you drive through your community. Currently available landscape irrigation components are more efficient today than ever before. But they are merely components of an entire system that is dependent upon human decision-making for its final form and function. Human behavior is the root cause of inefficient water use, not the raw components themselves.</p> <p>Please concentrate on workable redirection of human behavior. Pay attention to the possibilities of unintended negative ramifications of published programs (voluntary or not) and create publications that reward those who strive daily to promote water efficient irrigation practices at the expense of those who don't. I am happy to be of further service. Respectfully submitted, Tim Timothy R. Malooly CIC, CLIA, CID, EPA WaterSense Partner</p>

Comment Number	Commenter Name	Comment
		President Irrigation By Design, Inc.
§5.0-c1	Hugh Gramling	Instead of builders developing manuals, they should provide buyers with the manufacturers' manuals. In addition, landscape and irrigation contractors should provide buyers with post-construction documentation. According to the Landscape Irrigation and Florida-Friendly Design Standards, this would include "as-constructed drawings, recommended maintenance activities and schedules, operational schedule, design precipitation rates, instructions on adjusting the system to apply less water after the landscape is established, maintenance schedule, water source, water shut-off method, and the manufacturer's operational guide for their irrigation controller."
§5.0-c2	Timothy Malooly	WaterSense should, as part of the 4.0 Section calling-out a process for detailed instruction, baseline audit and periodic follow-up to ensure human behavior and system performance are within the spirit of intent of the Guidelines over time. See my comments above for reference.
§6.0-c1	Hugh Gramling	Definitions "Builder Partner" should be included in the Definitions section. "Microirrigation" flow rates should be limited to 30 gallons per hour or less.
§6.0-c2	P. Jeff Knopp	Definitions ET Limt – this is very subjective and will result in "creative engineering." Just provide values. The definition of ETo provided is really ETt. Hardscape – wood decks are permeable. Landscapable area – decks are not necessarily hard. What about permeable pavements used for patios, etc? Microirrigation system - Technically "miniature sprays" is a sprinkler head – need a better definition. Sprinkler head – Sprinkler heads are not buried under ground. Need better definition.

Appendix A – General Comments of Support

Comment Number	Commenter Name	Comment
A-1	David Stoller	I support the design installation, audit requirement for New Water Sense certified homes. David Stoller daveyandgoliath@comcast.net Davey & Goliath Landscape Solutions The Sustainable Design and Build People www.daveyandgoliathlandscape.com (206)533-2157
A-2	Johana Olson	I feel that this is great proposal - as someone who is in the agricultural/landscape industry - I have witnessed the wasted water for lawns where half the water goes on the concrete. People must be regulated on there water use - especially in regard to watering lawns - water is a valuable resource and if people can't make smart decisions on there own - we must regulate! Water should be used for essentials, not aesthetics. Thanks Johana Olson 612-390-0834
A-3	Mike Baron	The California Landscape Contractors Association would like to go on record as commending the EPA on its WaterSense Program goal of reducing water use on residential properties by 20 percent over the marketplace norm. CLCA also would like to thank the EPA for allowing additional time to provide feedback on the current draft Water-Efficient Single-Family New Home Specification. This has enabled CLCA to work with the Irrigation Association on the recently submitted landscape and irrigation industry comments that they coordinated. Thank you for your time and efforts.

Appendix B – General Comments of Objection

Comment Number	Commenter Name	Comment
B-1	Steve Shifton	<p>It would appear that the bulk of the new requirements are of the prescriptive, rather than a quantitative methodology. This is a great way to work with kindergartners, but not builders who are wishing to be rewarded for their actual accomplishments. Why not simply list the entire known alternative with which to achieve the desired goal of 20% less water use and then leave it to the builders to utilize whatever methodology accomplishes this goal? It is always frustrating when one has exceeded the desired result, but one is unable to receive any recognition due to simply having not met one of a list of specified requirements. For example, do you really care if there are two showerheads in a shower if water flow is restricted to one or the other, or if it is limited to a level that meets the desired goal? I could go on and on with possible examples, but the general point is the important one. Let the builders design their homes to meet the goals; don't limit them in how they accomplish what we all would like to see happen. Steve Shifton Country Construction</p>
B-2	Mary Wheeler	<p>In light of the need to protect our water supply, my concern is that if we are not careful, we will end up a concrete city. Plant materials require water. Plant materials create clean air. There are many ways to govern the amount of water that is wasted. Irrigation systems can be regulated through rain sensors, timers, and types of irrigation products. For example, drip irrigation has little or no waste. Zoning areas that have different needs. Overhead sprinklers can be used during the day when least evaporation occurs. Fines can be enacted for abuse. Most ponds and water features, once filled use their own recycled water and a small amount of water is added to maintain the water level. Again, any legislation passed should work with the problem in a way that offers reasonable solutions. It's all about balance and accountability. I would hope that a reasonable solution will be considered. Mary Mary E. Wheeler Director of Human Resources Wheeler Landscaping, Inc.</p>
B-3	Barbara Sehgal	<p>Energy efficient plumbing fixtures/appliances and smart landscape design are NOT enough! Why are you not including RAIN COLLECTION & RECYCLING SYSTEMS as seen in Washington, D. C. in Oct 2007 at the Solar Decathalon? EVERY ENTRY INCLUDED RAIN COLLECTION & RECYCLING SYSTEMS! YOUR WATERSENSE DRAFT FAILS TO INCLUDE WATER COLLECTION TECHNOLOGY. ALL THE 'USAGE' TECHNOLOGIES FOR SAVING WATER ARE ALL WELL AND GOOD BUT WHAT IS MISSING ARE THE WATER-COLLECTION TECHNOLOGIES (THAT EXIST TODAY AND WERE DEMONSTRATED AS PART OF ALL OF THE ENERGY-EFFICIENT HOMES AT THE "SOLAR DECATHLON" IN OCTOBER 2007 ON THE MALL IN WASHINGTON, D.C.). DIDN'T</p>

Comment Number	Commenter Name	Comment
		<p>ANY OF YOUR CURRENT 'PARTNERS' (OR EPA EMPLOYEES FOR THAT MATTER) ATTEND THIS MONUMENTAL PARADIGM-CHANGING EVENT? WATER-COLLECTION TECHNOLOGIES (WHICH WOULD RESULT IN HOMES DRAWING LESS WATER FROM MUNICIPAL SUPPLIES) IS THE EQUIVALENT OF SOLAR-PANEL-EQUIPPED HOMES CAPABLE OF NET-ZERO ENERGY USE IN WHICH THEY ARE ABLE TO SELL POWER BACK TO THE GRID! YOUR CURRENTLY POSTED SPECIFICATION IS ONLY ADDRESSING HALF OF THE PROBLEM - USAGE! YOU ARE MISSING THE OPPORTUNITY TO INCLUDE WATER-COLLECTION TECHNOLOGIES ALONG WITH WATER-USAGE TECHNOLOGIES IN YOUR DRAFT SPECIFICATION!</p>
B-4	Gail Treece	<p>First, change is rarely made through rules since there is always a cost involved to manufactures and consumers. While governmental agencies estimate "no cost or no impact" that doesn't mean there is no cost to the tax payers, that would be you and me, and I am not willing to pay for your misguided need to provide a "quick fix" with the cost dumper on new home owners. What about older homes? Your regulations have little impact; these are just something you are published so that it will look like you are trying to do something. What have you provided (put money into) educating the public, and provide specific incentives, prior to developing these regulations? Obviously not enough or these rules would not have been written and the problem would not exist. What have you done to work with local and rural communities to find ways to promote water conservation? If you don't get buy-in through education, and a true interest from the public in rural and metro areas, you are wasting everyone's time. Let's talk about rural! Rural areas support metro areas by providing food, water, and many natural resources that are heavily consumed in metro areas with little thought as to the consumption and desecration of rural industrial needs. We in America would be nothing without Rural America. Stop spending tax payers time and money writing more regulations. You cannot regulate the root causes of American needs, however education, partnerships, and demonstration projects are a far better way to achieve positive results and public acceptance. You have to look no farther than Cooperative Extension Programs available though out the US and involve the public. Don't dictate, get involved! Power always dictates, never solves anything, it only produces apathy that ends with nothing. Your rules will never take us where we need to go! Gail Treece</p>
B-5	Bill Schwab	<p>The EPA is incapable of obtaining unbiased report data by which they determine how various regulations are passed to begin with. For example, the way you assessed small engine pollution some years back. You could not make your claim that a lawn mower was a gross polluter, so, you kept adding engine size until the gross pollution figure you were looking for was achieved, then you relabeled</p>

Comment Number	Commenter Name	Comment
		<p>engines under 100 horsepower as "small engines" You do not need, nor do we the people want you in our personal affairs any more than you already are. I have a vested interest in clean air and m ample water supply, I have asthma. Our living is dependent on those who sue water to enhance the environment by planting trees and lawns, and in return, those plants eat carbon dioxide, you know the vary substance Ozone AI created an entire industry from while flying around in a corporate jet to each of his 20,000 sq ft homes. When you get done regulating, taxing, fining, spending and wasting, you will have succeeded in making America less competitive in the work place than we already are. Take this advice and step out of this issue and go back to what you know best how to do, which is almost nothing but legislate, control, and ruin the livelihoods of us hard working Americans who are proud to do what we do. Bill Schwab Naturescape Landscape Company www.naturescapelandscape.com www.paversnow.com</p>
B-6	Ken Kelly	<p>Looks like your proposal follows no scientific rules or has no basis in fact but placates the so called green revolution movement. How about just leaving regulation to people's bank account. Just charge more for water and people will use less of it naturally just like gas. Ken Kelly</p>