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Plumbing Product Review  
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Governor Tony Evers Dawn Crim, Secretary

May 6, 2022

U.S. Water LLC  
Kevin Marshall  
6902 Venture Circle  
Weston WI 54476

Re: Description: Water Treatment Device – Ion Exchange  
Manufacturer: U.S. Water LLC  
Product Name: Arsenic Shield: AS101252, AS2011865, AS252472, AS502472-2 and AS1002472-4  
Model Number(s): Arsenic Shield: AS101252, AS2011865, AS252472, AS502472-2 and AS1002472-4  
eSLA PTO No.: PP-052200005-PTOWTD

The specifications and/or plans for these arsenic reduction systems have been reviewed and determined to be in compliance with chapters SPS 382 through 384, Wisconsin Administrative Code, and Chapters 145 and 160, Wisconsin Statutes.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wisconsin Administrative Code. This approval is valid until the end of May 2027.

This approval is contingent upon compliance with the following stipulation(s):

1. These arsenic reduction systems shall:

- a. be installed, maintained and used in strict accordance with the manufacturer's published instructions, Chapters 381-386 Wis. Adm. Code and this product approval. If there is a conflict between the manufacturer's instructions and the Wis. Adm. Code or this Plumbing Product Approval, then the Wis. Adm. Code and this Plumbing Product Approval shall take precedence.
- b. be installed by persons holding the proper license or registration in accordance with Wis. Stats. § 145.
- c. be installed with a flow controls to prevent the systems from exceeding the maximum rated service flow rates specified in Table 1 of 1.
- d. be installed with sample taps immediately upstream and downstream, and downstream of the point of chemical injection, if present.
- e. be installed *without* bypass piping. If a bypass is strongly desired, then it shall be of the locking type.
- f. discharge in accordance with s. SPS 382.38(3) Wis. Adm. Code.
- g. have their regeneration schedule staggered from other point-of-entry water treatment devices to the maximum extent possible.
- h. be installed with a dedicated drain lines terminating with air gaps that conforms to s. SPS 382.41 Wis. Adm Code (i.e., ASME A112.1.2 or ASME A112.1.3).
- i. bear a permanent, indelible label displaying the following minimum information:
  - i. manufacturer's name and contact information;
  - ii. model number;
  - iii. maximum rated service flow rate and corresponding pressure drop;
  - iv. operating pressure range; and
  - v. operating temperature range.

2. All water distribution piping shall be marked as required by Table SPS 382.40-1a.

3. All wall hydrants not served by these arsenic reduction systems shall have at least one of the following:
  - a. the handles of the hydrant shall be removed;
  - b. the hydrant shall be capped and sealed using solder; or
  - c. signage shall be posted immediately above the hydrant indicating the water is unfit for human consumption.
4. Drain, waste and vent systems shall be properly sized to manage the additional wastewater loads generated by these arsenic reduction systems.
5. The raw water shall be evaluated for the following anions, in addition to dissolved arsenic, to establish the required frequency of regeneration and reserve capacity:
  - a. carbonate ( $\text{CO}_3^{2-}$ )
  - b. bicarbonate ( $\text{HCO}_3^-$ )
  - c. chloride ( $\text{Cl}^-$ )
  - d. fluoride ( $\text{F}^-$ )
  - e. nitrate ( $\text{NO}_3^-$ )
  - f. phosphate ( $\text{PO}_4^{3-}$ )
  - g. sulfate ( $\text{SO}_4^{2-}$ )
6. The reserve capacity shall be  $\geq 20\%$ .
7. If the installation of any system component being installed interrupts the electrical continuity of the path to ground, then a properly sized electrical bonding jumper shall be installed to reestablish electrical continuity.
8. All electrical aspects of installation shall conform to Ch. SPS 316 Wis. Adm. Code.
9. These arsenic reduction systems have undergone sufficient testing to document the product's ability to reduce only those contaminants and/or substances as specified in this approval letter when the product is installed and maintained in strict accordance with the manufacturer's published instructions and this approval.
10. If these arsenic reduction systems are modified or additional assertions of function or performance are made, then this approval shall be considered null and void, unless the change is first submitted to the department for review and the approval is reaffirmed.
11. Where the Department of Natural Resources (DNR) has jurisdiction, a written approval may be required prior to installation of these systems in a water supply system to reduce the concentration of a contaminant that exceeds the primary drinking water standards contained in Ch. NR 809, Wis. Admin. Code, the enforcement standards contained in Ch. NR 140, Wis. Admin. Code, or for a water supply system that is subject to a written advisory opinion by the DNR. For more information contact the DNR Drinking and Groundwater staff assigned to your county:  
<https://dnr.wi.gov/topic/drinkingWater/documents/CountyContacts.pdf>
12. If one or more arsenic reduction systems are installed on a non-transient non-community water supply (NTNC) or a transient non-community water supply (TNC) in response to a directive from the Wisconsin Department of Natural Resources (WDNR), then a site-specific installation approval and final inspection from DSPS are required.

A NTNC system is a system that regularly serves at least 25 of the same people for six months of the year. Examples of NTNC systems include, but are not limited to, schools, daycares and factories.

A TNC system is a system that serves at least 25 people at least 60 days of the year but does not serve the same 25 people over six months of the year. Examples of TNC systems include, but are not limited to, restaurants, motels, taverns, parks and campgrounds.

The site-specific installation approval is the responsibility of the installer and shall be obtained prior to the device(s) being put in service. Site-specific water treatment system installation approvals are initiated via this link:

<https://esla.wi.gov/portalcommunitylogin>

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The final inspection shall occur prior to the device(s) being put in service and be performed by the DSPS Plumbing Consultant having authority in the district:

<https://dsps.wi.gov/Documents/Programs/Maps/Plumbing.pdf>

When the final inspection has been completed, this department will notify the WDNR. The WDNR shall then monitor the performance of the device(s) to its satisfaction. A suggested frequency and overall duration of monitoring is provided elsewhere in this letter.

If these arsenic reduction systems are installed on a TNC/NTNC and put in consumptive service prior to obtaining a site-specific installation approval and final inspection, then any pertinent approval for such arsenic reduction system is immediately rendered null and void and the arsenic reduction systems may be ordered removed.

13. This department suggests the performance of these arsenic reduction systems be monitored on a quarterly basis.

The department suggests that performance samples be collected during peak use periods and at a time most remote from the last regeneration cycle as possible.

When these arsenic reduction systems are installed on copper water supply systems, concerns relating to decreased alkalinity and subsequent copper corrosion are applicable. For this reason, a chemical injection port shall be installed downstream of the arsenic reduction systems as part of each installation on copper water supply piping.

If elevated copper is detected, then lead, alkalinity and pH samples should also be collected. Lead and copper corrosion samples should be collected in accordance with the USEPA's Lead/Copper Rule (i.e., first draw, overnight dwell samples as distant from the point of entry as possible).

**Table 1 of 1**  
**Arsenic Reduction Capabilities**

Model Number	Estimated Bed Life (gals.)*	Max. Flow* (gpm)
AS101252	525,600	10.0
AS201865	1,182,400	15.0
AS252472	2,102,400	25.0
AS502472-2	4,204,800	50.0
AS1002472-4	8,409,600	100.0

\* = A flow restrictor must be installed to prevent exceeding the flow rates displayed

♦ = capacities listed at 20% reserve

Based on a total arsenic concentration of 17 µg/l, comprised of 13.0 µg/l As V and 4.0 µg/l As III, in addition to the design parameters in Table 1a:

**Table 1a**

Parameter	Maximum Concentration
phosphate (PO4)	30 µg/l
silica	12 mg/l
pH	7.4
iron	0.3 mg/l
manganese	0.05 mg/l
hardness (as CaCO3)	141.2 mg/l

These arsenic reduction systems were tested under controlled laboratory, or field, conditions. The actual performance of these arsenic reduction systems for a specific end use installation will vary from the tested conditions based on local factors such as water pressure, water temperature and water chemistry.

14. Ongoing service and maintenance of these arsenic reduction systems shall be performed by U.S Water LLC, 6905 Venture Circle, Weston WI 54476; 800-932-2216. <https://www.uswater.com/>

15. A complete set of product literature, including installation, operation and maintenance instructions shall be provided to the arsenic reduction system owner and remain onsite.

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Technical notations:

- a. This approval supersedes the approval issued April 25, 2017 under eSLA PTO No. PP-031703810-PTOWTD

The department is in no way endorsing these arsenic reduction systems or any advertising and is not responsible for any situation which may result from their use.

Sincerely,

Glen W. Schlüter  
Plumbing Product Reviewer  
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Division of Industry Services  
Bureau of Technical Services  
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