**AWP PILOT FACILITY TOUR TALKING POINTS**

**WELCOME AND OVERVIEW**

* El Paso Water Utilities has a proven track record and an **internationally recognized reputation** for implementing **innovative solutions** to ensure we have a safe, secure water supply for today and tomorrow.
* As drought conditions continue across the country, many communities that historically relied on one source of water are now looking at alternative, additional sources. El Paso Water Utilities has already been balancing **several water resources** to meet our city’s water needs for decades.
* The latest innovative solution from El Paso Water Utilities is the Advanced Water Purification Facility project. This pilot facility and the full-scale facility will pave the way for other communities to **a sustainable water future.**
* The full-scale facility would the first of its kind in the country. There is only one other facility that purifies wastewater and puts it directly into their distribution system without blending -- and that is in Namibia, Africa.
* Advanced water purification transforms highly treated wastewater into **fresh drinking water**. This process accelerates nature's water cycle, which circulates the earth’s water from the atmosphere to earth and back again.
* For decades, we have accelerated the natural water cycle along. Used water from homes is cleaned at wastewater plants like the one next to us – the Bustamante Wastewater Treatment Plant. The cleaned water that comes out of this plant and other wastewater plants is reused for irrigation and industrial processes, but some of the water is discharged into the river and used again downstream.
* EPWU will send cleaned water to the advanced water purification facility, rather than downstream for other users.
* Purified water is the highest quality drinking water produced. It is:
	+ **Safe and reliable**
	+ **Drought-proof**
	+ **Sustainable** (preserves our aquifers)
* Today we are giving you a tour of our piloting process. We will run the pilot facility for the next few months and send results to the Texas Commission on Environmental Quality (TCEQ). They will review the pilot plant data and other information before construction of the full-scale facility begins.
* Before you begin, please take a few moments to fill out the pre-tour portion of your survey card.
* Please enjoy this video that gives an overview and background of the project. (SHOW VIDEO)

**\*DENITRIFICATION FILTERS (PRE-PURIFICATION, ONLY IF ASKED)\***

* Reclaimed water from the Bustamante Wastewater Treatment Plant will go through an additional barrier before entering the pilot plant for purification.
* Denitrification filters will remove nitrate and nitrite from the reclaimed water to assure source water quality and consistency.
* Consistent water quality is essential for nanofiltration membranes that are being tested in the purification process.

**BARRIER 1: MEMBRANE FILTRATION**

* (Holding beaker of water) This is what the cleaned water looks like before it enters the purification process.
* At this facility, two types of membrane filtration are being tested: MF and UF. Both membrane filtration processes contain hollow fibers and provide 99.99% removal of contaminants
* The microfiltration (MF) system is on your left (Pall) and the ultrafiltration (UF) system is on the right (Evoqua).
* The UF and MF systems operate the same way, but the UF has a slightly smaller pore size. We are testing both types of membrane filtration systems to verify that either is suitable for a full scale plant.
* (Holding membrane) These are samples of the MF and UF membranes. Each membrane is composed of hollow fibers, perforated with holes 1/300th the width of human hair.
* In both membranes, water flows in from the bottom, through the outside walls of the hollow fibers into the interior, up through the center, and out the top as filtered water. Protozoa, bacteria, and suspended particles are left on the outside surface of the fibers. Only water, salts, and other small molecules can pass through the membrane pores.

**BARRIER 2: NANOFILTRATION AND REVERSE OSMOSIS**

* Nanofiltration (NF) and reverse osmosis (RO) remove up to 98% of dissolved salts, metals, dissolved organic molecules and other materials, many of which are more than 50,000 times smaller than the smallest bacteria or virus.
* (Holding membrane) Water is forced under high pressure through membranes like this with holes so small that a water molecule is almost the only substance that can pass through.
* RO is the same technology used at our desalination plant, the largest inland desalination plant in the world.
* RO is the same technology used by many bottled water companies, baby food manufacturers and for kidney dialysis.
* On the International Space Station, RO is an integral part of recycling wastewater into drinking water.
* (Point out the sampling station on the side of the NF and RO units.) Samples can be taken from any pressure vessel here to monitor and ensure water quality throughout the process.

**BARRIER 3: Ultraviolet Light with Advanced Oxidation**

• Now the water is very clean but as a further safety back-up, the water is sent through a third barrier.

• Barrier 3 is really two processes working together: Ultraviolet Light and Advanced Oxidation.

* Inside this vessel is ultraviolet or UV light, similar to extremely concentrated sunlight, which disinfects the water. (Point to sample UV lamp on outside of the reactor.)
* Hydrogen peroxide is added, and it reacts with the light to form powerfully reactive molecules like those used by nature to clear pollutants from our atmosphere. These molecules destroy any remaining contaminants in the water by breaking them down into harmless compounds.

• This advanced oxidation process will disinfect 99.99% of protozoa, bacteria, and viruses present in about one second. Based on the proven effectiveness of the previous barriers, we expect the number of microbes entering this barrier to already be negligible.

**BARRIER 4: GRANULAR ACTIVATED CARBON**

**•** Granular Activated Carbon (GAC) is the last barrier in the pilot purification process. The GAC removes any remaining hydrogen peroxide from the UV-treated water, a process referred to as “quenching.”

• The GAC works like a sponge to absorb residual micro-pollutants. It can also act as a barrier for microorganisms and contaminants of concern.

* (Get water from sink and fill beaker) This is what the water looks like at the end of the purification process. Pretty clear right? There will be one more step at the full-scale facility:
* Disinfection with chlorine to provide a final barrier for any pathogens remaining in the water and to provide a disinfectant residual for the distribution system. (This is a routine drinking water treatment practice.)
* **Why can’t we drink it?** This pilot facility is not permitted by the state as a drinking water facility yet. Also, as previously explained, the water would still have to be chlorinated before entering the drinking water system.

**REAL-TIME WATER QUALITY MONITORING**

* Water quality is going to be measured constantly as it moves through the pilot facility, rather than intermittently like it would at a traditional water treatment facility.
* This allows us to optimize system performance immediately. It allows us to stay ahead of the curve and make sure all the equipment is working properly.

**TOUR WRAP UP**

* Let’s test your knowledge: Here we have three samples of water: Bottled water reclaimed water and purified recycled water. Who thinks they can identify which water is which?
* [Tour guide to confirm results] Beaker A is tap water, beaker B is purified water and beaker C is recycled water.
* At this point, are there any additional questions about what you have seen today?
* We would like to take a group photo. We will be sending you an email with this photo within the next few days and it will also be posted on our Facebook page. Please gather in front of the banner.
* If you would like to receive more information on the Advanced Water Purification Pilot Facility go to our website: epwu.org and click on water, then purified water.
* Also, please take a brochure and consider inviting others to visit the facility. There is information on how to register for a tour of the Advanced Water Purification Pilot Facility on the back of the brochure. We will begin public tours on September 4, and they will be the 1st and 3rd Fridays of the month.
* We encourage you to follow us on social media. Please take the time to “like” our Facebook page, follow us on Twitter and follow our YouTube page for updates on the program. (Point to table sign: Facebook: El Paso Water Utilities; Twitter: @EPWater; YouTube: El Paso Water Utilities).
* To conclude this tour, we ask that you take a few minutes to answer the last questions on your survey and provide comments to help us improve our tours for future participants.