

safety. It was designed to handle a Magnitude 7.5 seismic event, making it highly unlikely that earthquake shaking would cause significant damage. The pump station incorporates all of the design criteria used for critical facilities that need to be fully operational after a seismic event.

- **Pipe and connection design:** All below-ground connections between the well and the pump facility are flexible, to allow for shaking, rotation, slip and settlement. It is highly unlikely that earthquake shaking would cause damage to these essential connections.

### What professional expertise is behind the well?

The well's location and design were thoroughly evaluated by top seismic scientists and engineers, including:

- Kathy Goetz Troost, LG, a research scientist from the University of Washington's Department of Geological Sciences
- Burt Clothier, LHG from Robinson, Noble & Saltbush, Inc., a local environmental, geotechnical engineering, and hydrogeologic consulting firm
- Greg Hill, PE from Roth Hill LLC, an engineering and consulting firm and infrastructure specialist

### Will I need to do anything before I can use the water from the well?

Yes. You will be given detailed information about steps you should take to disinfect the well water for personal use. Boiling in combination with chlorination is widely considered the best way to disinfect water.

### Does this mean I don't need to store water for myself and my family?

No! The Emergency Well does *not* relieve you of the responsibility to be prepared for an emergency in your home. We urge residents to store a three-day supply of water, with one gallon of water per person per day.

### Learn more about the Emergency Well and emergency preparedness at [www.mercergov.org](http://www.mercergov.org)



# Important Information About Mercer Island's Emergency Water Supply



Because disaster can strike any time, the City of Mercer Island has built an Emergency Well. This well will provide Island residents with water for the most essential uses for up to several weeks if an earthquake or other disaster disrupts our normal water supply from Seattle Public Utilities (SPU).

The City of Mercer Island is the first jurisdiction in Washington State to receive a 'source permit' for an Emergency Well. The permit was authorized by the Washington State Department of Ecology.

## Q&A About the City's Emergency Well

### Where is it?

The well is conveniently located in Rotary Park, in the center of the Island and next to the Mercer Island Library.

### Why did the City build this well?

SPU provides all of Mercer Island's drinking water, so it is important for us to have a back-up source for emergencies. Efforts by the City to secure an emergency source permit began in 2005 after new seismic studies were released showing that Mercer Island sits squarely above the Seattle Fault.

### Does this well connect with the City's existing water system?

The well itself is not connected to the City's current water supply system. It is completely separate

and independent. The relatively small flows produced by the well are not sufficient to move through miles of pipes across the Island's challenging topography, and could serve only a small portion of the Island.

### Will the well stay operational if we have a major earthquake?

Yes, the well system was designed to withstand a Seattle fault earthquake of the worst type. This involves a shallow earthquake of Magnitude 6.7 with fault ruptures at the ground surface.



## Who will operate the well in the event of an emergency?

From the beginning, the well facility was designed to incorporate the involvement of City volunteers. These volunteers are specially trained to assist City utility crews with operating the well. Volunteers have been assigned to one of five groups: well operations, on-site dispensing, bulk loading, remote distribution, or traffic control. An easy-to-follow Operations Guide was developed that gives volunteers step-by-step directions for operating the well and distributing water.

## How will residents get water from the well?

Water from the well will be available to residents on either a walk-up basis or actually in their neighborhoods, depending on conditions existing at the time.

- Water will be distributed at the well facility in portable containers. The City has stored thousands of these at the reservoir site.



- The City also has large containers (shown below) that hold 250 to 325 gallons for distribution of well water around the Island. Volunteers with trucks will help distribute this water, leaving City crews available for other emergency response.

## Can the well operate if we don't have power?

Yes, the well was designed assuming that an emergency event would also cause power outages. The well is directly connected to a back-up generator at the reservoir site next door. The well also can be connected to a portable generator if needed.

## What safeguards did the City take to protect the well during a major earthquake?

The City of Mercer Island considered many factors during design and location of the Emergency Well.

- **Location:** The well is located on the crest of the Island where settlement and liquefaction are not expected to cause serious problems during earthquake shaking.
- **Soil:** The new well rests on a very dense sandy deposit known as Vashon advance outwash, and on Vashon till, a very dense gravelly, silty sand deposit.

These deposits would not amplify the shaking that occurs during an earthquake.

- **Structural design:** Mercer Island is located directly on the active Seattle fault and is at high risk for ground shaking during an earthquake. Therefore, all well structures have been designed to withstand, at a minimum, the expected level of shaking from a Magnitude 6.7 shallow earthquake.
- **Aquifer considerations:** Groundwater is relatively deep at the Emergency Well site and the aquifer providing emergency water has a stable composition composed of sand and gravel. It is highly unlikely that an earthquake would cause permanent changes in the aquifer.
- **Turbidity:** The City's Water Utility and Emergency Management program have procedures in place for checking turbidity (cloudiness) immediately following an event. A manual bypass is available to flush the system of silty water if necessary. Short-term turbidity is expected, but should be cleared before water from the well is needed.



- **Well design:** The well will move with the ground during earthquake shaking. It has two casings that will allow for movement and deflection. The well is 570 feet deep, penetrating the aquifer it taps by more than 100 feet.
- **Pump design:** All mechanical and electrical components of the pump are located at the bottom of the well, buried and coupled with the ground, so it is highly unlikely that earthquake shaking will cause any damage to the pump itself. Critical well pump column connections are secured, and there are stainless steel casing spacers to allow room for deflection.
- **Pump station design:** The well facility was designed for maximum seismic