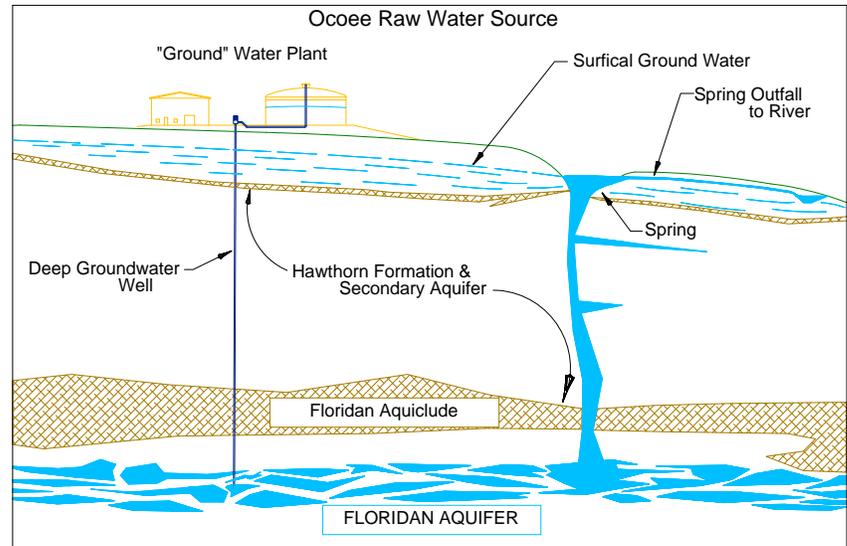


Prepared by the City of Ocoee June 1, 2008

## Ocoee's Water Source, Treatment and Protection

The following is a brief overview of the City's water system from source to final quality assurance at consumption. If after reading this overview you have any questions, please do not hesitate to contact the City's Utilities Department.

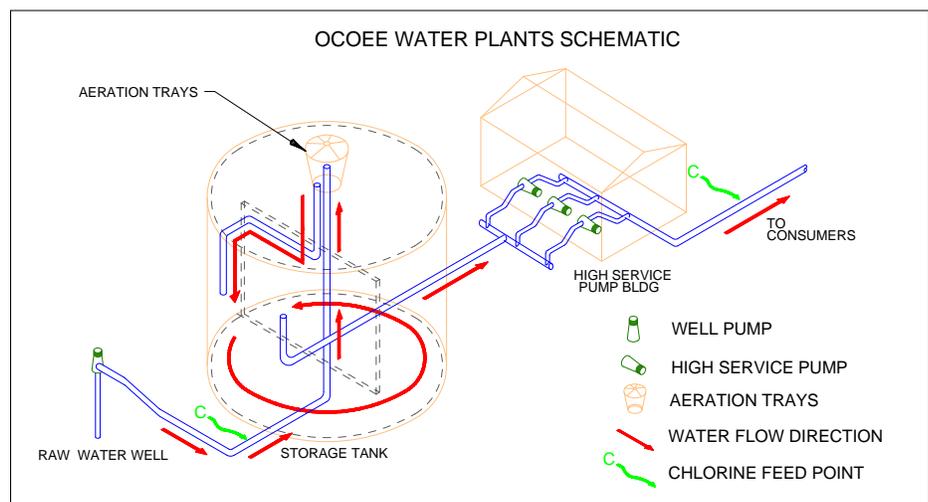
**SOURCE:** The City of Ocoee's drinking water comes from the Floridan Aquifer (see Floridan Aquifer diagram) which underlies most of the state and varies in depth – from 200' near Ocala to 1,200' underneath the Everglades. The Floridan Aquifer is capped by an impervious layer called an aquiclude and is contained in porous limerock underneath the aquiclude. The water in the aquifer generally flows down the center and out the sides of the state, flowing from 1' per 1,000 years to many feet per day. Geologically, the Floridan Aquifer is overlaid by stratus of alternating layers of sands, clays and limerock. Based on the makeup and thickness of layers above the Floridan Aquifer, downward water movement is greatly affected. The net effect over time is that the water is cleansed by both filtration and a natural biological process before entering the Floridan Aquifer.



The Floridan Aquifer is the only major artesian (under pressure) aquifer within Florida, where water can rise above the aquiclude. The elevation that the water will reach is called the piezometric level of an aquifer. If the piezometric level is above ground and the aquifer's water can find a path to the surface, a spring is formed. The Floridan has been estimated to exceed the volume of the Great Lakes, but due to increased demand, the aquifer's piezometric level has an average dropped 0.4 feet since 1930.

For Ocoee, the Floridan Aquifer provides an excellent and consistent water source. Ocoee has six wells that extend to an average depth of 1,200' and into a high yielding zone in the aquifer. The water quality is consistently outstanding running down the center of the state and gets worse as you move toward the coast. Because of the natural protection provided, the aquifer is not usually subjected to external influences that other water sources experience. Ocoee's water supply is as clean and desirable as any spring water within the state.

**TREATMENT:** Raw groundwater entering an Ocoee Water Treatment Plant is first mixed with both liquid chlorine and fluoride, which is conveyed up and into aeration trays that sit upon the plant's half million gallon storage tanks. The trays are configured such that the water cascades over them to allow undesirable gasses within the water to diffuse to the air. The bottom of the trays are ported into a corner of the storage tank (yes a round tank can have a corner!). Afterwards, the half-treated water slowly moves around the perimeter of the tank to the other corner where the chlorine has more time for disinfection while settling particles reach the tank's bottom. A



plumbed connection in the tank conveys water to the plant's high service pumps that send water under pressure to Ocoee's water consumers. To ensure that the water remains safe, it is polished by adding chlorine as it leaves the plant.

**PROTECTION:** The key elements that are considered in the delivery of water to customers after treatment are the length of time before water is consumed, the amount of chlorine concentration received by the end user, and the maintenance of pressure in the water lines. The City addresses the first issue by use of sound engineering; waterlines that are looped are not oversized and should

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not be extended in one direction for a long distance. Also, in cooler weather the City may be required to flush lines to speed the water through the system.

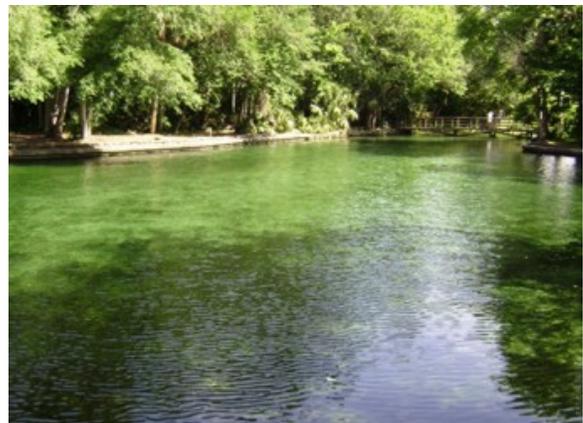
Chlorine in water lines continues to react and slowly dissipate. The City’s goal is to have a minimum concentration of 0.5 mg/l (milligrams per liter) with a maximum concentration of 1.5 mg/l. By maintaining this range, the City ensures the water is safe and its taste is not overtly affected. To ensure this goal is met, Utilities Staff continuously samples chlorine throughout the system, including their customers’ homes. With the results from this monitoring, the final chlorine polish as discussed above can be adjusted to ensure the City’s goal is achieved.

Water pressure is the measure of stored energy that is able to perform work and is commonly measured in pounds per square in (PSI). This energy is used to propel water from one location to another, run irrigation systems and most importantly, protect the water system. Higher pressure in the water lines ensures that water will move out of the lines and not allow contaminant intrusion into the line. However, line pressure is occasionally interrupted and the City has operational protocols to address those interruptions, which include system repairs, boil alert notices, flushing of lines, two successive days of passing water sample(s) and/or super-chlorination of affected lines. The City shall notify each affected consumer of the issue and follow that up with a second notification when the water is safe for consumption.

Finally, there are times that a consumer’s pressure becomes higher than the City’s line pressure. The City can not guarantee the safety of the consumers’ water. So to ensure that outside water does not enter the City’s lines, the City requires the consumers to install a device that will not allow backflow into the lines. The Utilities Department has a dedicated division that determines locations and types; and inspects, coordinates and tests these devices at both homes, commercial and/or industrial locations.



Ocoee’s Raw Water Supply comes from the same source as one of the local springs.



Some people with special medical needs may be more vulnerable to impurities in drinking water than the general population. Immuno-compromised persons, such as people with cancer that are undergoing chemotherapy, people who have received organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and occasionally infants, can be particularly at risk for infection from this and any drinking water source. These people should seek advice about consuming drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

The United States Environmental Protection Agency’s Safe Drinking Water Act (SDWA) has established primary drinking water contaminant standards with a risk assessment goal of the following:

“An individual would have to drink two liters of water every day for a lifetime (70 years), from the same source, which contained the maximum level of contaminants allowed, in order to face a one in a million risk of developing cancer or other disease as a result of drinking the water.” In order to assess this risk, the following statistics from the National Safety Council ([www.nsc.org](http://www.nsc.org)) have been provided for comparison:

Lifetime Odds of Death Due To:	
Fireworks Discharge	1 in 949,602
Contact with Venomous Snakes and Lizards	1 in 542,630
Contact with Hot Tap Water	1 in 88,335
Exposure to Lightning	1 in 79,133
Accidental Drowning or Submersion	1 in 1,060