

# Source Water Assessment Summary

## 0890950 - WEST DUNDEE

*Last Updated on 2003-04-08*

### Importance of Source Water

The Village of West Dundee (Facility Number 0890950) utilizes four active public water supply wells. Well #1 (Illinois EPA #20113), Well #3 (Illinois EPA #00185), Well #4 (Illinois EPA #00177) and Well #5 (Illinois EPA #01067) supplies approximately 714,000 gallons per day to 1,700 service connections with an estimated population of 5,428 individuals.

Wells 2, 3 and 4 were abandoned and are no longer in use as a water source.

### Source Water Quality

West Dundee wells were sampled as part of the Statewide Groundwater Monitoring Program beginning on August 28, 1986. The samples were analyzed for volatile organic compounds (VOC) and inorganic chemicals (IOC). Wells #2 and #4 were also sampled for synthetic organic compounds (SOC).

Review of the VOC and SOC analyses did not indicate quantifiable levels of organic compounds. Review of the IOC collected from these sampling efforts indicate that parameters are consistent with other wells utilizing similar bedrock aquifers in northeastern Illinois. It should also be noted that the IOC results were consistent between all the wells and all monitored parameters were below the groundwater quality standards established under 35 Illinois Administrative Code Part 620.410 with the exception of the total chloride and barium. The concentration of chloride in the source water of Wells #3 and #4 were above the 200 parts per million (ppm) numerical groundwater standard. The observed chloride concentration for Wells #3 and #4 ranged from 218-415 ppm. The concentration of barium in the source water of Wells #1 and #5 were above the 2000 parts per billion (ppb) numerical groundwater standard. The observed barium concentration for Wells #1 and #5 ranged from 8,000-8,400 ppb. The Illinois EPA considers this elevated level the result of natural mineralization in the deep bedrock aquifer. Hence, the levels of these contaminants are not considered a violation because of the stipulation in Part 620.410 that no violation occurs as a result of the natural occurrence of an IOC.

### Susceptibility To Contamination

Based on information obtained in a Well Site Survey published in January 1990 by the Illinois EPA, twenty-five potential sources or possible problem sites were identified within the survey area of West Dundee's wells. Furthermore, information provided by the Leaking Underground Storage Tank and Remedial Project Management Sections of the Illinois EPA indicated several additional sites with ongoing remediation which may be of concern.

The Illinois EPA has determined that West Dundee's Wells #1 and #5 source water is not susceptible to contamination. However, the source water obtained from Wells #3 and #4 is susceptible to contamination. This determination is based on a number of criteria including; monitoring conducted at the wells; monitoring conducted at the entry point to the distribution system; and the available hydrogeologic data on the wells.

### Source Water Protection Efforts

The Illinois Environmental Protection Act provides a minimum protection zone of 400 feet for West Dundee's Wells #3 and #4 and 200 feet for Wells #1 and #5. These minimum protection zones are regulated by the Illinois EPA.

To further minimize the risk to the groundwater supply, the Illinois EPA recommends that six additional activities be assessed. First, the village may wish to enact a "maximum setback zone" ordinance to further protect their water supply. These ordinances are authorized by the Illinois Environmental Protection Act and allow county and municipal officials the opportunity to provide additional protection up to a fixed distance, normally 1,000 feet, from their wells. Second, the

village should explore the options of either properly abandoning the inactive Well #2 or retrofitting it for active use as a source of water supply. Inactive wells that are not properly abandoned can act as direct conduits for surficial contaminants to enter the aquifer and are considered "routes" under the Environmental Protection Act. Third, the water supply staff may wish to revisit their contingency planning documents. Contingency planning documents are a primary means to ensure that, through emergency preparedness, the village will minimize their risk of being without safe and adequate water. Fourth, the water supply staff is encouraged to review their cross connection control program to ensure that it remains current and viable. Cross connections to either the water treatment plant (for example, at bulk water loading stations) or in the distribution system may negate all source water protection initiatives provided by the village. Fifth, the village should obtain aquifer property data and groundwater flow direction information so the recharge areas for Wells #3 and #4 can be mapped. This information can be obtained by completing pump tests and mass water level measurements on wells finished in the aquifer utilized by Wells #3 and #4. Finally, the Illinois EPA recommends that the village investigate additional source water protection management options to address land use activities within the recharge areas of Wells #3 and #4. Specifically, these management options must include potential impacts from point and nonpoint sources of groundwater contamination.