

The Wellhead

Word

Winter 2010

Protecting Groundwater Supplies Through Wellhead Protection

Connecting the Dots

Previous issues of the Wellhead Word Newsletter have stressed the importance of identifying potential sources of contamination (psoc's), maintaining an updated contingency plan and educating citizens about how their everyday activities can impact a ground water supply. Recent issues have even given real-life examples of why such measures are so important to the health of a community's citizens. The incidents that occurred at Lone Grove and

Windmill Run Marina offered insight into how crucial a role a contingency plan can play in times of an emergency. They also exposed how costly contamination of a ground water supply can be to a small community. Prevention is the best defense to protect the resource, the public and your budget. In this issue of the Wellhead Word, we will take a closer look at psoc's and explore how topography can increase the threat of contamination to a ground water supply.



Topography and Your Drinking Water

When you think of threats to your drinking water do you think about the topography of your area? Not many of us do but it is becoming more evident that this is a factor that should be considered; especially if you live in an area with karst topography. In fact, it is recommended that individuals who live in areas with karst topography have soil profiles performed rather than percolation tests prior to installing an on-site septic system because of the potential threats to a ground water supply. Why is topography important? How does it relate to contamination of a ground water supply? Why are soil profiles better than percolation tests? How great of a threat is a malfunctioning on-site septic system?

Topography is the feature on the surface of an area of land and it influences how water moves.

Topography is the feature on the surface of an area of land and it influences how water moves. Karst is defined as an area of irregular limestone in which erosion has produced fissures, sinkholes, underground streams, and caverns. The porous nature of karst terrain results in a very high pollution potential.

Streams and surface runoff enter sinkholes and caves, and bypass natural filtration through soil and sediment. Ground water can travel rapidly through these underground networks – up to thousands of feet, or even miles, per day – transmitting contaminants to wells and springs in the vicinity. Unless watersheds are protected, these direct connections between the surface and the subsurface can threaten the quality of our

drinking water. The safest watersheds are those in which all residents understand the landscape and work together to reduce sources of pollution such as stormwater runoff, improper disposal of household chemicals or the over-application of pesticides, herbicides and fertilizers.

Understanding your areas topography and the soils on your property can prevent harmful pollutants from entering your ground water. The best method for determining the type soils on your property is with a soil profile. Soil profile descriptions are used to identify and characterize the soil at a specific site. In addition to determining the soil texture, other physical properties of the soil are described like depth to shallow ground water and depth to shallow bedrock. Soil profiles identify many limiting factors that may affect the soils ability to properly treat waste water. The traditional soil test method, the percolation test, does not have

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the ability to identify limiting factors such as redoximorphic features, the presence of water, soil with a high clay content or rock. One of DEQ's main concerns is protection of our groundwater. Profiles give those running the test the ability to determine if the soil present will be able to properly treat the waste water.

Being aware of your areas' topography and how your day-to-day activities can affect groundwater can help prevent contamination of your drinking water supply. Clean drinking water is vital to the health of a community. Without it, community growth cannot be achieved. Understanding that our individual activities

can have wide-spread, long-lasting effects to our health, our neighbor's health and the health of future generations re-emphasizes the importance of Wellhead Protection.

References: Zokaite, Carol, 1997. Living on Karst. Cave Conservancy of the Virginias.

On-site Systems & Groundwater

Not all threats to a groundwater supply are obvious. Many are lurking below the surface of the soil and may not be easy to identify. An example of such a potential threat are improperly designed on-site treatment systems. The article below from the Winter 2009 issue of Pipeline examines this threat closer and highlights the cost benefit of protecting drinking water sources. For more information about the article, please contact the National Environmental Services Center (NESC) at 1-800-624-8301.

Protecting Source Water Saves Money

As a small community official, providing drinking water to the community is often part of your job. By preventing water contamination in the first place, getting it back to pure and clear will be an easier and less expensive task. Contamination that doesn't reach your intake is contamination

you will never have to filter or treat.

Some direct impacts of contamination include: the cost of obtaining a temporary drinking water source, the cost of investigating contamination sources, cleanup and remediation costs, increased monitoring costs, legal and consulting fees, and, if the situation deteriorates, the development of a new water source. Indirect costs of contamination include: loss of customer confidence in the local drinking water supply, devalued real estate, and potential lawsuits from consumption of contaminated water.

According to EPA, the cost of dealing with contaminated groundwater ranges from 30 to more than 200 times the cost of a wellhead protection program. Similar savings are possible for systems that use surface water as their source.

On-site Systems Work if Maintained

On-site wastewater treatment systems collect, treat, and release about four billion gallons of effluent per day from an estimated 26

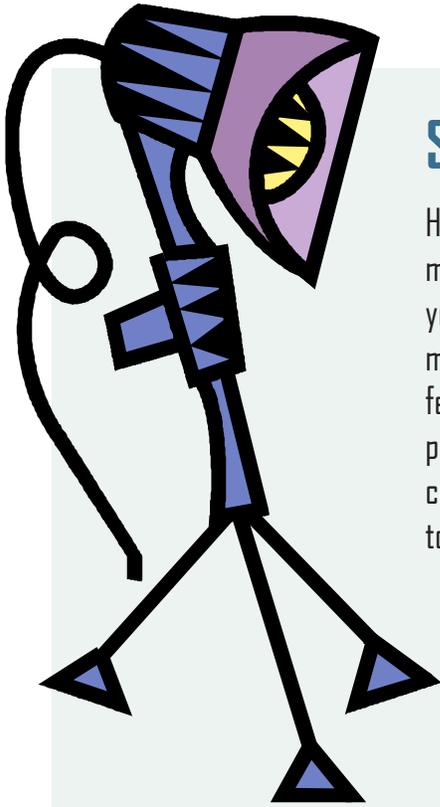
million homes nationwide. In predominantly rural states, on-site systems serve up to half of all households. Properly managed on-site systems are a viable long-term solution for wastewater treatment, malfunctioning on-site systems can pose a serious threat to public health, drinking water resources, and aquatic life. Surfacing sewage can be carried by storm water to neighboring streams or rivers and lead to contamination of surface waters. Malfunctioning on-site systems in areas with karst topography can lead to contamination of groundwater supplies because the soil cannot properly treat the waste water.

A conventional gravity-based on-site treatment system, which consists of a pipe from the home, a septic tank, a drainfield, and the soil, is the responsibility of system owners. All owners that use on-site systems should have them pumped and inspected on a regular basis.

When a septic system is not properly maintained or fails to work properly, untreated domestic wastewater can reach your source water. In these cases, what was initially a homeowner responsibility becomes a community problem. For many communities, having a source water or wellhead protection plan and putting it to use is the best way to assure good water quality.



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Spotlight on Success

Have you implemented a thriving education/outreach program? Are you utilizing developmental material created by ODEQ? Have you successfully developed and put into practice your Contingency Plan? If so, we want to hear about it! We would like to showcase communities that are making great strides with their Wellhead Protection Program. We hope to feature in each issue of the Wellhead Word Newsletter an article spotlighting communities putting the Wellhead Protection Program into action. If you would like to share ideas, success stories or offer suggestions for how we can improve our program please submit them to Amber McIntyre @ amber.mcintyre@deq.ok.gov or to the following mailing address:

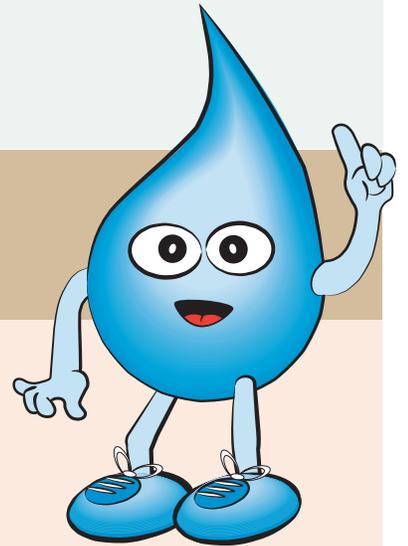
**Groundwater Protection Team
ECLS/ODEQ
P.O. Box 1677
Oklahoma City, OK 73101**

Who Can I Contact for More Information about Wellhead Protection Education?

- Your local DEQ office.
- Oklahoma City Groundwater Support.

H2O Joe says contact your local DEQ office for copies of:

- The Wellhead Word Newsletter
- Fact Sheets
- Bill Inserts
- Power Point Presentations

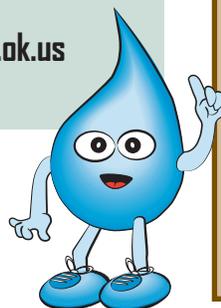


Environmental Complaints and Local Services Wellhead Protection Contacts

For more information about the Wellhead Protection Program contact your local DEQ office or Oklahoma City Groundwater Support Unit.

Groundwater Support
Oklahoma City:
(405) 702-6100
Matt Pace
Amber McIntyre
Lynne Moss

Web Site
www.deq.state.ok.us



Local Offices

Ada.....	(580) 332-3157	Miami.....	(918) 540-0150
Alva	(580) 327-2649	Oklahoma City.....	(405) 702-6100
Ardmore.....	(580) 226-2554	Ponca City	(580) 762-1907
Bartlesville.....	(918) 333-2734	Poteau	(918) 647-5734
Burns Flat.....	(580) 562-4394	Purcell	(405) 527-8738
Chouteau.....	(918) 476-8588	Tulsa.....	(918) 293-1600
Claremore	(918) 341-7179	Sallisaw	(918) 790-2498
Duncan.....	(580) 255-6068	Shawnee.....	(405) 275-7967
Durant.....	(580) 920-2037	Stillwater	(405) 372-7387
Enid.....	(580) 234-0997	Tahlequah.....	(918) 456-5714
Guymon.....	(580) 338-1357	Valliant.....	(580) 933-5566
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