

Groundwater Gazette

MUSKINGUM RIVER DRINKING WATER PROTECTION TEAM

WHERE DOES YOUR WATER COME FROM?

If you live in a city or village, your water most likely comes from community wells, provided by a Public Water System. If you live in the country, it often comes from a well in your yard. In some areas there is not enough ground water to even dig a well for a home, and water must be hauled in or piped through an extensive network. The hauled or piped water still usually comes from Public Water System wells.

Alongside the Muskingum River there lies a very rich groundwater aquifer, which is a source of drinking water serving the communities along the river and beyond. Freshwater from rainfall seeping into the ground, from river exchange and from freshwater springs fills the spaces between the particles of sand and gravel under ground. Because these underground areas near the river are made up of sand and gravel, they are particularly sensitive to contamination by a variety of pollut-

ants.

Consider this simple experiment. Pour a cup of water into a container of gravel or sand, how long would it take for the water to reach the bottom of the cup? Think about how the experiment would work if you used a container filled with clay.

Whatever goes onto the ground or into the ground in the areas where water wells are located will eventually end up coming out of the well. This means oil or gas either from leaking cars, from poorly maintained oil & gas wells or even from underground storage tanks; excess fertilizers, herbicides and pesticides used on lawns or agricultural fields, excess paint from rinsing out paint brushes; house hold cleansers; pet waste in your yard; or anything that goes into a septic system. The stronger the demand on the water supply- the more water being drawn out of the well by underground pumps, the more underground contaminants that will be drawn

toward the well field areas.

Protection areas surrounding the drinking water wells are often made up of a patchwork of private land uses, residential, commercial, industrial, agricultural, recreational, however, the water beneath these private lands is a shared resource. Because the water belongs to all of us, it is our shared responsibility to protect the drinking water well field areas from contamination so that this valuable resource will be available for generations to come.

If you turned on your faucet and the water came out green, would you drink it?

What if it came out clear, would it be safe to drink?

What color *is* water pollution?

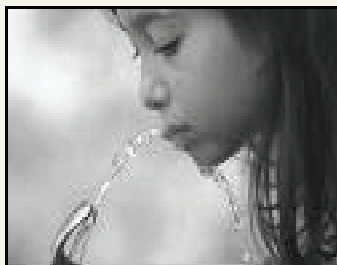
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DRINKING WATER PROTECTION

Drinking Water Protection Planning is underway in the Muskingum River Valley communities of Devola, Lowell & Beverly as well as the surrounding areas served by Tri County Rural Water & Sewer.

Local water districts have teamed up with the Ohio EPA and Friends of Lower Muskingum River, (FLMR) a local non profit organization concerned with water quality and conservation in the southern portion of the Muskingum River.

Drinking Water Protection Planning looks at an area surrounding each public water system's drinking water well fields called a "Protection Area." This area consists of two zones outlining the path water would take to reach the well with in one year (inner protection zone) and within 5 years (outer protection zone).

This area is determined by depth to water, amount of water usage, land formation and underlying geology, and land use in the vicinity of the wells.

In spring 2008, members of this partnership began holding public meetings in each community to introduce the topic of ground water protection and to review the individual situations in each of the areas. This was also intended to be an opportunity to get local input on the plan from community members.

The series of meetings continued throughout 2008. Topics introduced during the planning process have covered; emergency response for spills or emergencies occurring in the protection area; making an inventory of potential contaminants; prioritizing those

potential contaminants; determining protective actions to be taken; developing an outreach and community education plan and finally, contingency planning.

All of these elements will be combined into individualized Drinking Water Protection Plans for each water district, which will be sent to the Ohio EPA for approval. Once these plans have been approved each community will be eligible for additional grant funds and low interest loans to make necessary improvements to the water systems.

If you are interested in water quality in your community or would like to have input on your community's Drinking Water Protection Plan, please contact your local water district or Kristyn Robinson at FLMR.

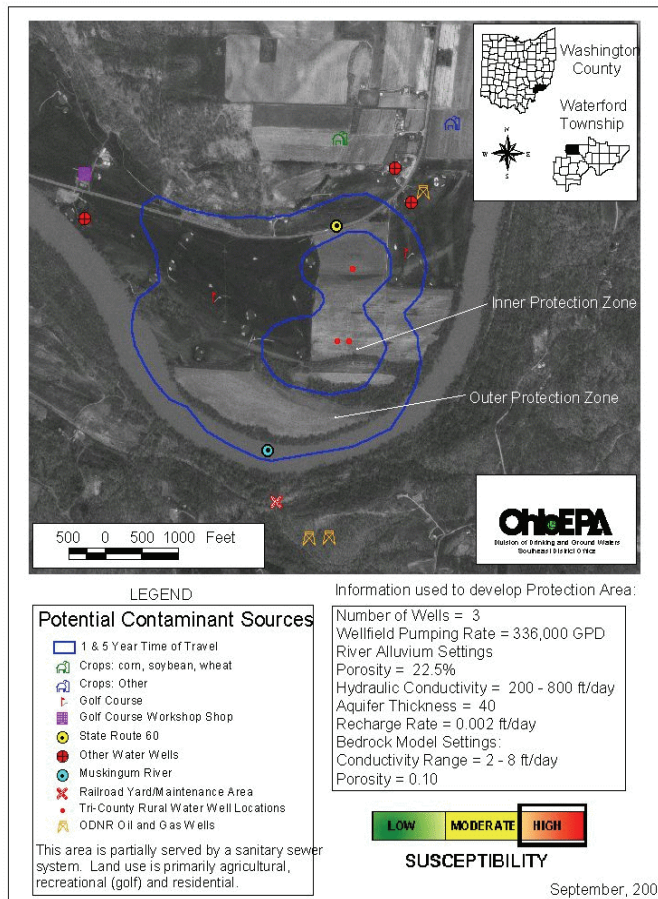


Figure 1. Drinking Water Source Protection Area for Tri-County Rural Water & Sewer # 8403112

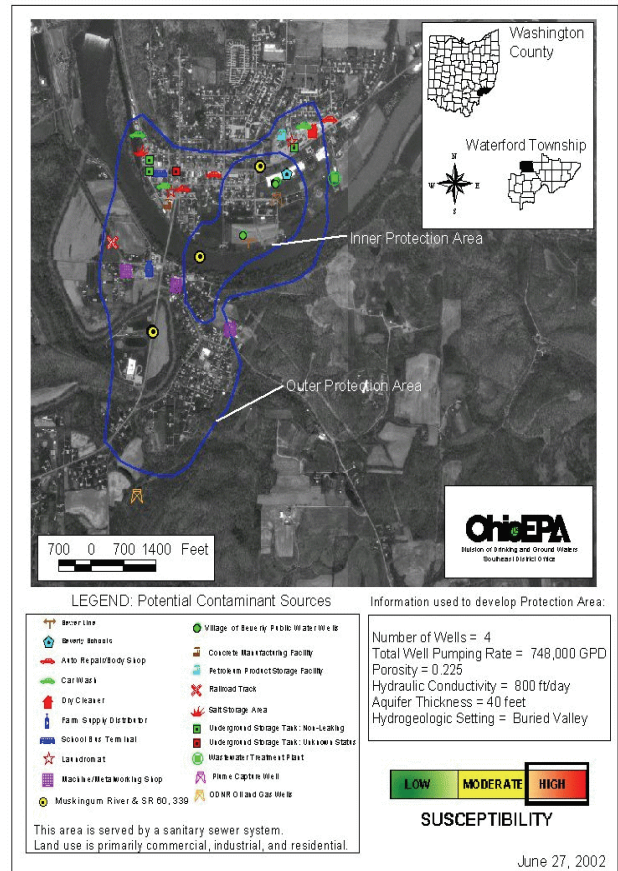
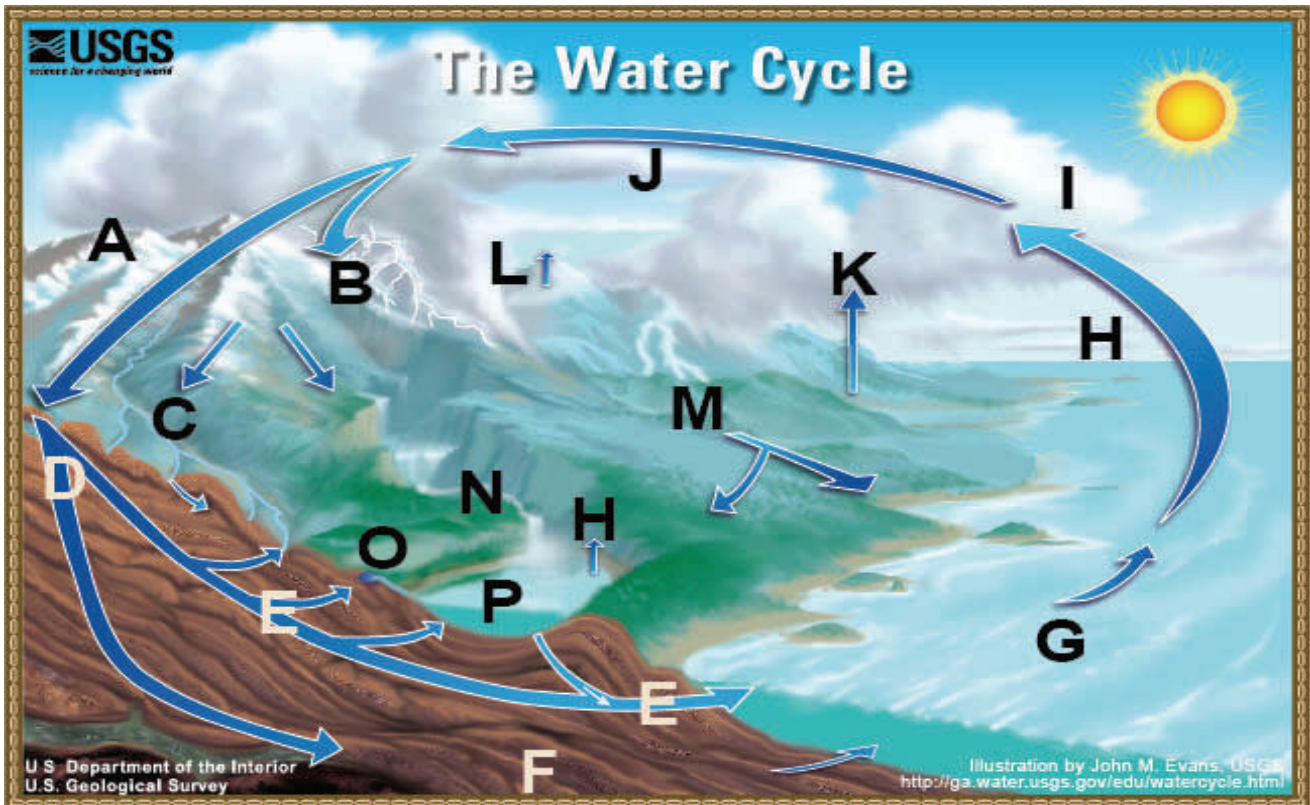


Figure 1. Drinking Water Source Protection Area for the Village of Beverly # 8400112

Match each letter with the correct water cycle term



- ___ Storage in ice and snow
- ___ Precipitation
- ___ Snowmelt runoff to streams
- ___ Infiltration
- ___ Ground-water discharge
- ___ Ground-water storage
- ___ Water storage in oceans
- ___ Evaporation

- ___ Condensation
- ___ Water storage in the atmosphere
- ___ Evapotranspiration
- ___ Surface runoff
- ___ Streamflow
- ___ Springs
- ___ Freshwater storage
- ___ Sublimation

Check your answers and learn more about water cycle terms at ga.water.usgs.gov/edu/watercycle.html

WATER CYCLE SONGS & RIDDLES

Sung to the tune of "She'll be Coming Round the Mountain"

- Water travels in a cycle, yes it does
- Water travels in a cycle, yes it does
- It goes up as *evaporation*
- Forms a cloud as *condensation*
- Falls down as *precipitation*, yes it does

Sung to the tune of "Clementine"

- Evaporation,
- Condensation,
- Precipitation on the ground
- Saturation
- Percolation.
- All the water goes round & round

A cloud was my mother,
The wind is my father,
My son is the cool stream,
My daughter is the fruit of the land.
A rainbow is my bed,
The earth my final resting place,
And I am the torment of man.
What am I?

I have a mouth but never speak,
I have a bed but never sleep
What am I?

You are next to a river,
you need to measure out
exactly 4 gallons of water.
You only have a 5 gallon jug
and a 3 gallon jug.
How do you do it?

Rain, A River, fill the 5 gal jug, pour 3 gal from the 5 gal jug into the 3 gal jug, pour out the 3 gal and pour the remaining 2 gal from the 5 gal jug into the 3 gal jug, fill the 5 gal jug again, pour to fill the 3 gal jug.

HOW MUCH WATER WILL IT TAKE ?

Match each water use activity with the correct amount of water used for each

- | | |
|--|-------------------|
| 1. Taking a shower | A. 30 gallons |
| 2. Watering the lawn | B. 180 gallons |
| 3. Washing the dishes | C. 4-7 gallons |
| 4. Washing clothes | D. 1/2 gallon |
| 5. Flushing the toilet | E. 39,090 gallons |
| 6. Brushing teeth | F. 62,600 gallons |
| 7. Drinking | G. 15-30 gallons |
| 8. Needed to produce one ton of steel | H. 9.3 gallons |
| 9. Needed to process one can of fruit or vegetables | I. 1 gallon |
| 10. Needed to manufacture a new car and its four tires | J. 9-20 gallons |



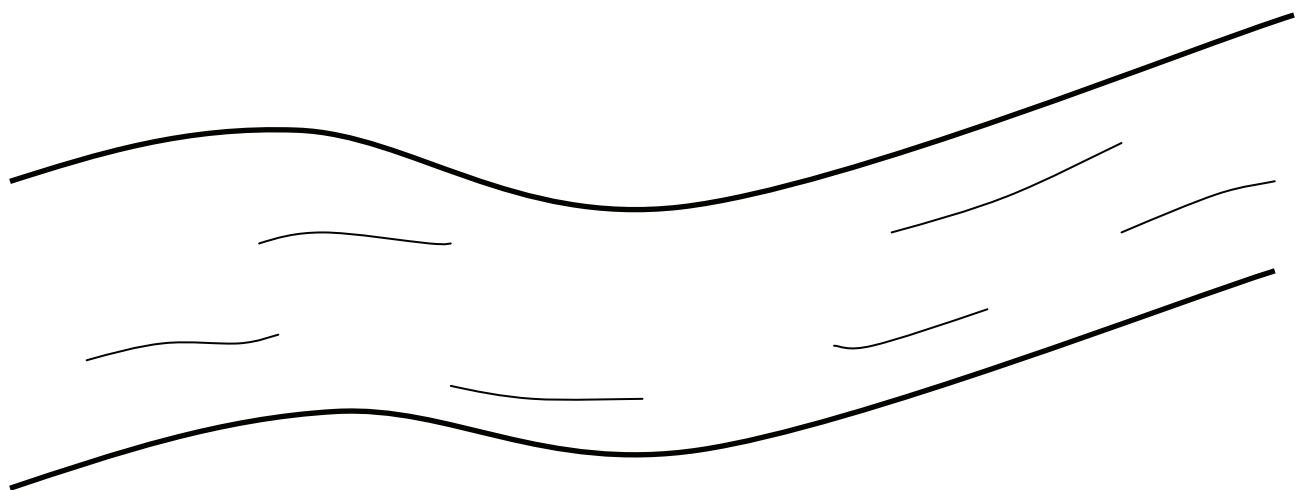
How much water does it take to make a hamburger?
 To grow wheat to make buns, grow lettuce & tomato, irrigation for cattle grazing and drinking needs and processing the meat—about 1300 gallons



Answers: 1-G, 2-B, 3-J, 4-A, 5-C, 6-I, 7-D, 8-F, 9-H, 10-E
 Office of Water (4606M) • www.epa.gov/safewater

RIVER RESTORATION

Draw a healthy river habitat. Include trees, bushes, grass, flowers, logs, rocks, bugs, birds, fish, frogs, turtles, deer, raccoons, otters



10 SIMPLE THINGS YOU CAN DO TO PROTECT YOUR WATER

The biggest threat to groundwater and surface water in our streams, rivers and lakes, is non-point source pollution. This is small amounts of pollutants spread throughout the landscape, often carried by stormwater; runoff from the streets, oil, gas, salt, excess fertilizer, pesticide, herbicide, dysfunctional septic systems, pet wastes, farm run off, erosion from construction, farming practices and modification to stream channels and acid mine drainage.

Because these are small amounts of pollution coming from a widespread area, every little bit of prevention helps. Here are some simple ways you can help reduce the amount of pollution in our water.

-Use compost or other organic materials to fertilize your gardens.

-Always follow manufacturers' directions when using lawn & garden chemicals. Sweep up and properly dispose of spilled lawn & garden chemicals.

-Use baking soda, vinegar, hot soapy water and elbow grease for household cleaning chores instead of cleaning with harmful chemicals.

-Clean up after your pet and dispose of waste in the trash. Pet waste in our neighborhoods and parks is untreated sewage.

-Promptly fix automotive leaks.

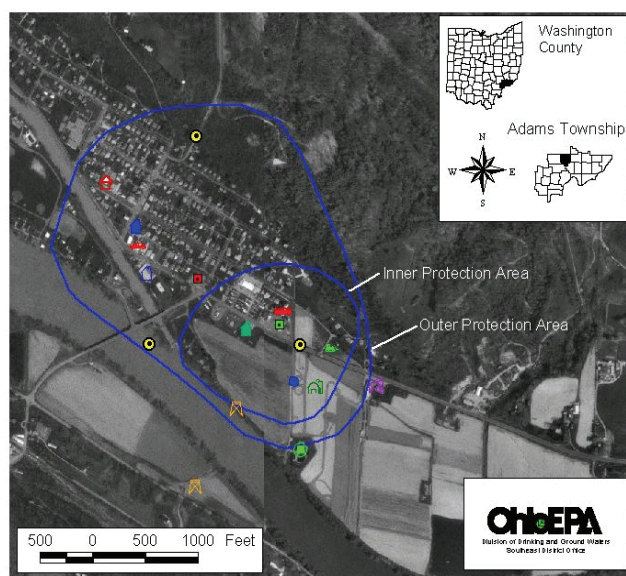
-Fix leaky faucets. This will save money on your water bill and reduce demand on groundwater.

-Properly dispose of all hazardous waste including; fluorescent lightbulbs, used batteries, TVs or computer monitors, aerosol cans, paints & paint supplies, lawn & garden chemicals, glues & adhesives and vehicle fluids

-Don't dispose of medicines down the drain or toilet. Discard in the trash.

-Recycle paper, plastic, glass and aluminum. Recycling these items keeps them out of our landfills and out of our rivers and streams.

-Volunteer for a community trash clean up or tree planting project.



LEGEND

- Village of Lowell Public Water Wells
- Produce Storage & Sales
- Building Contractor & Appliance Sales / Service
- Operating Gas Station
- Former Gas Station Site
- Wastewater Treatment Plant
- ODNR Oil and Gas Wells
- Muskingum River & State Routes 60 & 630
- Crops: corn, soybean, wheat
- This area is served by a sanitary sewer system. Land use is primarily residential and commercial.

Potential Contaminant Sources

- Auto Repair/Body Shop
- Beauty Shop
- Farm Machinery Storage
- Funeral Home
- Garage (Municipal)
- Laundromat

Information used to develop Protection Area:

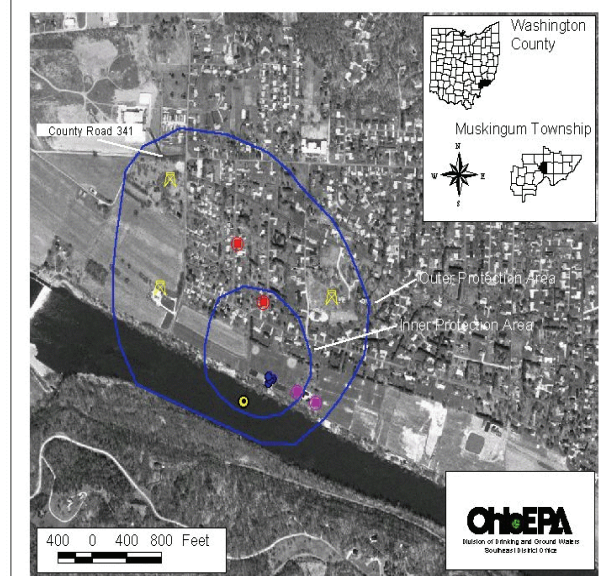
- Number of Wells = 2
- Total Well Pumping Rate = 67,000 GPD
- Porosity = 0.225
- Hydraulic Conductivity Values = (100 - 800 ft/day)
- Aquifer Thickness = 50 feet
- Hydrogeologic Setting = Buried Valley

SUSCEPTIBILITY

LOW MODERATE HIGH

June 26, 2002

Figure 1. Drinking Water Source Protection Area for the Village of Lowell # 8400312



LEGEND

- Putnam Community Water Association Public Water Wells
- Potential Contaminant Sources
- Muskingum River
- Unsewered Community
- Pool Septic System
- ODNR Oil and Gas Wells
- This area is not served by a sanitary sewer system. Land use is primarily residential.

Information used to develop Protection Area:

- Number of Wells = 4
- Total Well Pumping Rate = 262,000 GPD
- Porosity = 0.225
- Hydraulic Conductivity = ranged between 100 - 900 ft/day
- Aquifer Thickness = 55 feet
- Hydrogeologic Setting = Buried Valley

SUSCEPTIBILITY

LOW MODERATE HIGH

June 27, 2002

Figure 1. Drinking Water Source Protection Area for Putnam Community Water Association # 8400712

MUSKINGUM RIVER DRINKING WATER PROTECTION TEAM

MUSKINGUM RIVER
DRINKING WATER
PROTECTION TEAM

PUTNAM COMMUNITY
WATER ASSOCIATION

TRI COUNTY RURAL
WATER & SEWER

VILLAGE OF
BEVERLY

VILLAGE OF
LOWELL

OHIO EPA

OUR WATER, OUR WORLD

The Muskingum River Drinking Water Protection Team is made up of local water providers drawing ground water from the Muskingum River Buried Valley Aquifer, a water rich region which lies below and alongside the Muskingum River. The Ohio EPA, Friends of Lower Muskingum River, local emergency responders and local business people and area residents are all a part of the effort to protect the drinking water resources in the Muskingum Valley.

If you are concerned about your water supply or interested in becoming involved in drinking water protection, please contact your local water provider.

DIRTY WATER CANNOT BE WASHED~ AFRICAN PROVERB

C O N T A C T I N F O R M A T I O N

Friends of Lower Muskingum River (740) 374-4170 348 Muskingum Dr. Marietta OH 45750 www.muskingumriver.org

Putnam Community Water Association (740) 373-0975 545 Masonic Park Rd Marietta OH 45750

Tri County Rural Water & Sewer (740) 984-2348 20 Anderson Ln Waterford OH 45786 Board meets 3rd Monday, 7 pm

Village of Beverly (740) 984-2694 609 Mitchell Ave Beverly OH 45715 Board of Public Affairs meets 3rd Wed, 5 pm

Village of Lowell (740) 896-3046 PO Box 337 Lowell OH 45744 Board of Public Affairs meets 2nd Tuesday 7pm

Southeast Ohio Solid Waste Management District (740) 732- 5493 or (800) 860-8103

Ohio EPA Division of Drinking and Groundwater Southeast Ohio District Office (740) 385-8501 www.epa.state.oh.us/ddagw

Ohio EPA 24 hr Emergency Contact- Report Spills- 1-800-282-9378

Ohio Department of Natural Resources Division of Recycling and Litter Prevention (614) 265-6333

Washington County Health Department -Private well testing- (740) 374-2782

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